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THE MOTOR CYCLE

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No. 640. Vol. 15. Thursday. July 1st, 1915. Price 1d.

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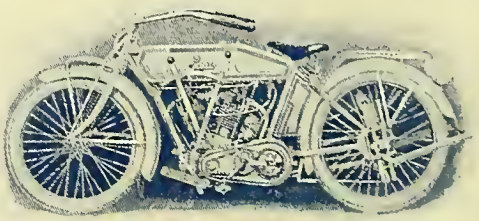

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Munitions and the Motor Trade.

IT is now two months since *The Motor Cycle* drew attention to the possibility of the British motor industry being thoroughly disorganised if it were found that an adequate supply of munitions of war could not be maintained, unless every engineering firm in the country concentrated their attention upon these munitions. At the time, it was pointed out that the motor industry was sufficiently patriotic to put aside all personal considerations, and to tackle seriously the more important work on hand, viz., that of suppressing Prussian militarism. In other words, they were prepared to sacrifice at one fell swoop the exalted position that had been gained for the British motor industry after many years of careful building up by the best brains of the country. We ventured to ask at the time whether the Government was composed of men sufficiently businesslike to comprehend that, if the munitions campaign were carried to excess, the possibility of the motor industry sharing the fate of other leading British industries, due to the war, would become a certainty?

In support of our apparent presumptuousness in introducing the question of business while more important work is on hand, we would repeat that the Board of Trade continues regularly to issue circulars providing information to manufacturers, with the sole object of "capturing enemy trade." We have already pointed out that the position is an anomalous one. One section of the Government is advising manufacturers to obtain orders and cut out the enemy, and another section is urging them to work in an entirely opposite direction with "Munitions" as their motto, regardless of everything else. Again, we repeat that, if such a step is necessary, the Government may rely upon the support of all true Britishers, but what makes us very much doubt if the wholesale commandeering of materials, factories, and labour is necessary, is the fact that another of those unfortunate statements has been made by a highly placed Government official, which is in direct contradiction to all other statements on the subject. We refer to Mr. Tennant's reply in Parliament to a question on the subject of shells, when he mentioned that there was no lack of shell cases (the parts which can be turned out by motor cycle manufacturers), but that it was the other components that were mostly needed.

If this statement is accurate and could be proved by fact, then our retort can only be that the important motor industry of this country is being wrecked to provide an article of which there is no shortage. One feels a natural reluctance to criticise the Government at this stage, but those who are interested in the welfare of the British nation cannot help throwing out a word of warning before it may be too late, and an industry not only endangered but irretrievably lost.

A Sound Proposal.

A suggestion has been made to us to enable manufacturers to keep in touch with their usual business channels that, instead of the War Office taking the whole output of certain makes of British machines, they take a certain portion only, and the remainder from an outside source of supply—almost certainly America. Thus, instead of the British output being absorbed by the Army and all other connections cut off, the British manufacturer would be able to deliver small numbers to his clients, and at the same time the Government's demands would be satisfied. In fact, it would mean that, instead of machines produced in the States solely being distributed among private buyers and all British machines used in the Army, half and half of either type would be available for each section. This scheme has much to recommend it, and with the certainty of greatly increased taxation in the future, it behoves us to look ahead, and particularly to develop our trade and to retain existing business connections.

An index to the advertisements in this issue will be found on the page facing the back cover

A NOVEL CHAIN GEAR BOX.

A Three-speed Box with no Pinion Wheels.

MANY have been the attempts to reduce the noise and increase the efficiency of countershaft gears, but perhaps the most interesting construction yet devised has recently been designed by the Coventry Chain Co., Ltd.; this will shortly be placed on the market.

All those who are conversant with modern automobile practice are aware of the success of the "Noiseless" chain gear boxes employed on London motor 'buses and certain makes of taxicab, and, encouraged by their success in these directions, the Coventry Chain Co. determined to procure equally satisfactory results for the motor cycle. The most obvious difference is that in the motor cycle box roller chains are employed instead of the Noiseless type, this being due to a combination of circumstances which render the roller type more suitable to the conditions existing on modern motor cycles.

Unusual type of dog clutch used in the new Coventry Chain gear box.

Except for the fact that chains and chain wheels replace the gears, the general lines of the box resemble existing types of the countershaft gear box. Three chains only are employed, and each is in constant motion, the sprockets being locked to the shafts as required by dog clutches.

The Working of the Gear.

The primary drive (from engine to gear box) is intended to be by Noiseless chain through a three-plate cork clutch, which has three rows of corks in the single plate, thence the power is conveyed to the mainshaft, the final drive being by roller chain. The "constant" sprockets are keyed to the shafts, and there is also a pair of loosely mounted sprockets on each shaft. Top gear, or direct drive, is engaged by locking the final driving sprocket member to the mainshaft by means of a dog clutch sliding on a squared portion of the mainshaft. If this dog clutch be moved in the opposite direction, it locks another loose sprocket to the mainshaft and provides the middle ratio, the drive being from the mainshaft to the loose member on the layshaft and back to the final drive sprocket member.

To obtain the low ratio, the dog clutches already mentioned are brought to the neutral position, and a dog clutch on the layshaft locks the loosely mounted member to its shaft; thus the drive is through the constant chain to the layshaft and back to the final driving member.

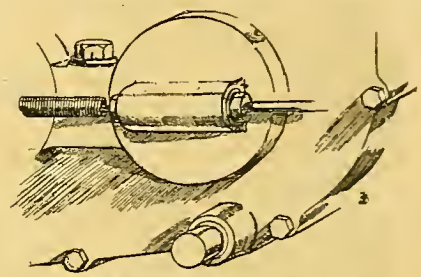
An explanation of the action is apt to sound complicated, but in reality the change speed mechanism is particularly simple, the striking forks for moving the dogs being operated by a single sliding cam plate located in the top of the box. The striking member and quadrant are attached direct to the gear box, so that the adjustment of the selecting mechanism is not disturbed by variations of the box position to compensate for chain adjustment.

The clutch actuating rod passes through the main shaft to a groove formed longitudinally in a short bar, and the groove is shaped to give the necessary lift to the push rod when the bar is pulled forward in its bush. Thus a straight pull is obtained, and dust is excluded from the point of contact.

Both main and lay shafts run on ball bearings, and the box, which is solidly constructed, is designed to clamp on to the bottom bracket.

A discussion of the merits of the chain gear box led to an interesting conversation on chain drive for motor cycles, and in particular on the use of a Coventry noiseless chain for the primary drive (as used on Matchless and Rover machines). We are informed that it has been conclusively proved that the noiseless chain provides the most flexible drive, and gives an increase in speed, due to reduction of wheel slip, with a consequent reduction in wear to the final drive and rear tyre.

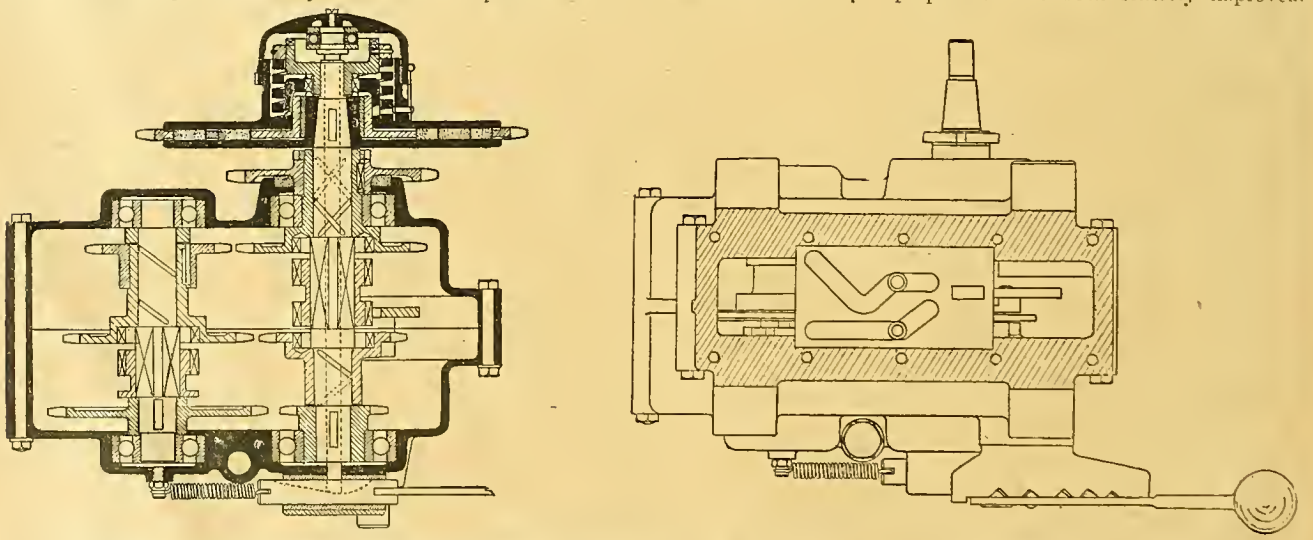
To a certain extent the noiseless chain is self-adjusting under running conditions, owing to the fact that the chain has a tendency to ride on the sprocket teeth; and whereas a roller chain and sprocket,



Clutch operating bar on Coventry Chain gear-box.

when worn, have only a line contact, and the transference of load from tooth to tooth is bound to cause noise, the silent chain, even when slightly worn, maintains a certain driving contact with many teeth at the same time. Added to this the construction of the noiseless chains renders them infinitely more suitable than the roller for the high chain speeds common to the primary drive, and, provided that the chain centres are kept short, a noiseless chain should run throughout a good season's work without any attention or adjustment.

The latest type of Coventry noiseless chain has a considerably increased rivet diameter, with the result that its wearing properties have been sensibly improved.



The Coventry Chain Company's chain gear box specially designed and built for motor cycle work. (Left) Sectional view showing dog clutches and sprockets. (Right) Plan view showing cam-plate striking gear.

Gear Box Grease Plugs.

Sergeant Harold Karslake, R.F.C., writes from "Somewhere in France" to exempt the 5-6 h.p. Ariel, which he was riding till war broke out, from my strictures on microscopic gear-lubricating plugs (of course, these criticisms were never supposed to apply to every make). His machine had a gear box inspection plate 3in. in diameter secured by three noble nuts with spring washers beneath them, and in its centre was mounted a substantial inch plug. His plan was to remove the 3in. plate once in every 1,500 miles for the insertion of half a shilling tin of Ambroleum, supplemented every 500 miles by adding a quarter of a pint of Price's hub lubricant through the 1in. hole. My paragraph brought me a number of letters; one was particularly irate. Its writer is using a peculiarly tiresome gear box, with no other means of access than a brass tap of the kind usually employed as a compression or injection cock for engine cylinders. The makers supply no grease pump, but blithely recommend that half a pumpful should be injected every 500 miles. As they do not specify the size of the pump, the user is left guessing, and he cannot verify whether the oil is above the bearing height or not without removing the gear box bodily from the frame; to do this, he must remove half-a-dozen other bulky items, including the engine!

Securing Nuts.

It may, or may not, be true that a satisfactory locking washer has yet to be invented; but the fact remains that the trade consistently warns us against its own shortcomings. Every instruction manual advises the purchaser to "go carefully over all nuts with a spanner every week," and all experienced riders are aware that if they neglect this counsel they will frequently send orders to the stores department for odd nut replacements at the absurd prices of 2d., 3d., or 4d. a time, fees which are necessary from a trade standpoint, but far outweigh the value of the nut, and represent stockcarrying, wages, and postal charges. That our machines shed nuts is hardly surprising, if we realise that plated nuts are fitted to plated bolts, that no spring or locking washers, or castellated nuts and split pins are employed on a number of machines. I admit that locking washers are expensive and imperfect; and that castellation and split-pinning adds unreasonably to the cost of a machine, and is often regarded by users as a nuisance. But here is the solution adopted by a manufacturer of a very cheap light car. Under every single nut on the car there is a split spring washer. After every nut is put in place, the bolt head is given a light tap with a copper-headed hammer, which imposes just sufficient "burr" to prevent the nut ever vibrating clean off its thread. Finally, every single bolt and nut is painted over with a thick black paint, which makes the nut absolutely vibration proof, and can easily be replaced by any private owner after the nuts have been removed for any purpose. Weekly routine, lost nuts, and rusty parts are thereby eliminated at one stroke, and that with the minimum of expense. There is much to be said for the notion. Highly plated nickel looks splendid on a show stand, but the rough rider has nothing but bad words for it after a ride.

Cleaning out a Levis.

My Levis Popular has just completed 1,900 miles by speedometer, which with a few unchecked rides, just about makes up the 2,000. It has been running as well as ever, but I was impatient to see the inside, so the other day I took the engine down, and found that the three bolts attaching the engine to the frame could not be pulled out because they were too tight, and could not be driven out, as the flywheel got in their way. Presumably the makers intend one to detach the flywheel, but not every amateur possesses a drawing tool (the last borrower appears to have annexed mine permanently!). I suggest to Messrs. Butterfield that if they drilled a couple of holes in their flywheels this nuisance would be overcome. As it was, I wriggled the engine out by removing the cradle bodily. I was astounded at the exiguity of the carbon deposits. There were a few flakes barely jutting into the exhaust port, the cylinder head was practically clean, the deflector on the piston carried perceptible deposits on its steeper slope, but its gentler slope was merely stained. Cleaning these two-stroke engines is child's play; they can be carried in one hand, and are readily made to look like new by brushing in a small basin of paraffin. Let nobody in future try to contradict me when I say that drip-feed oiling, with ducts, is the goods, for I have yet to unearth an air-cooled four-stroke engine which can run nicely for 2,000 miles without a clean. Of course, the drip has to be adjusted to suit one's speed, but in practice one soon learns that it has just two positions, viz., "traffic" and the "open road." In time, no doubt, some genius will invent a truly automatic system for the babies; in the meantime, the duct-drip is good enough for me.

A Rare Bird.

The other day I met a *rara avis* in the shape of a motor cyclist who uses a motor attachment clipped inside the diamond frame of a pedal cycle. I had fancied that this species was practically extinct. His particular mount took the form of a J.E.S. attachment, and he thinks nothing of doing 120 miles in a day, of averaging 20 m.p.h. in the level Midlands, and of covering upwards of 150 miles on a gallon of petrol. His sole complaint is that the swinging pedals make extremely uncomfortable footrests on long rides—a weakness from which the earlier motor cycles suffered, as I well remember, and that the frame dimensions and construction do not readily lend themselves to the attachment of a pair of fixed rests in a convenient position.

SPRING FRAME DESIGN.

Some Notes on the Cantilever Spring as Applied to a Motor Cycle.

THE progress which has attended the evolution of the motor cycle is distinctly remarkable. Its simplicity of construction and operation, its great economy, and its convenient dimensions render the motor-propelled cycle an object of the keenest interest to the general public. The astonishing efficiency of the modern air-cooled engine, together with its chief adjuncts, the carburetter and high tension magneto, has long since banished all doubt as to the utility and advantages of the motor cycle.

Now there is no doubt whatever that to impart the finishing touch to the success of the motor cycle as a means of locomotion for the masses, to make it appeal immediately to every class and condition of the community, and last, but not least, to ensure an undeniably reliable high speed and a strong machine for our military service, a perfected principle of frame suspension is essential. So long as the motor cycle continues to be constructed as a rigid, or partially rigid, vehicle, so long will that complete success and general favour, which it deserves, remain in abeyance. This is the conclusion at which I arrived nearly two decades ago, and to-day I see no reason to change the judgment then expressed. The spring front fork is a fair palliative, but a vastly improved method of suspension is the desideratum at present lacking.

A Period of Transition.

In the early years of the motor movement I used the only vehicle then evolved, namely, the motor tricycle, followed in speedy stages by the Bollée type tandem, the quadricycle, the Werner and other front-driven two-wheelers, and then the four-wheeled car. Thus gradually the sterling simplicity of the motor cycle was forsaken for the comparative complication of the motor car proper. My reason for this transition from the lesser to the greater vehicle was the natural one of seeking greater comfort a-wheel by avoiding the effects of vibration. That reason, coupled with the knowledge of long experience that machinery racked by rough road surfaces becomes deranged rapidly, was, and is still, the chief objection to the motor bicycle. Most cheerfully would I re-adopt the mount of bygone days if I and it might traverse the highway protected properly from the dire evil of vibration.

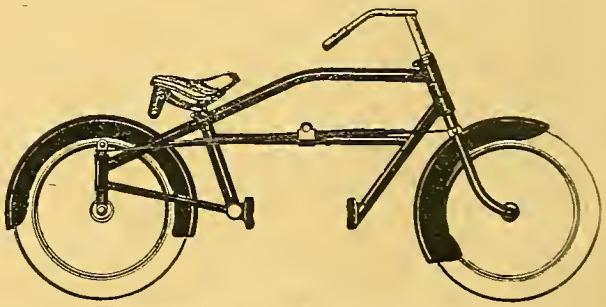
More than five years ago a description was given me of a new notion to supersede the rigid-framed motor cycle. The system was simple enough: that is to say, a pair of short semi-elliptic springs was interposed between the machine's fork ends on either side of each wheel.

Those who are acquainted intimately with the constructional evolution of the four-wheeled motor vehicle know full well that considerable ingenuity has been exercised in endeavours to improve the spring system. Every imaginable kind of spring has been tried—the helical spring, the bow spring, the grasshopper spring, transverse front or rear springs, etc., etc. From all this there has emerged triumphantly, and in no uncertain fashion, what is termed the cantilever spring, that is to say, merely an inverted nearly flat grasshopper spring, hung at three points in a special manner.

It is now proposed to place this system of springing within the reach of the motor cyclist, and to afford him easily, and with the utmost simplicity, the means to enjoy all the comfort that is at present only obtainable on the seat of an expensive, high-powered touring car. The motor cyclist possesses already speed in abundance, accompanied, as I have pointed out, by truly remarkable economy and efficiency. All he asks for is the comfort of a perfect spring frame.

Detailed Description.

Briefly, then, as will be gathered from the drawing at a glance, this most desirable innovation is accomplished by using a single pair of cantilever springs, bracketed by a trunnion on the centre tube of the frame, and terminating at each extremity on enclosed cylindrical slides attached to the front and rear axles respectively. These slides, to which the spring ends are linked to constrain the vertical motion of the wheels to a straight line path, are interesting in that



The spring frame described by the writer of the accompanying article.

they remind the practical engineer of the horn-plates familiar to the locomotive driver. It is also to be observed that these twin springs, set laterally, and in close proximity with the frame tubes and held by a single trunnion, have a very important characteristic. For they are capable of being rendered more supple or less elastic, according to requirements, because the bracket trunnion is slidable along the frame tube to which it is secured by a readily adjustable clamp. In this manner, if the clamp be moved rearwardly the back halves of the pair of springs are stiffened thereby, while, coincidently, the flexion of the front halves is rendered more lithe as the position of the pivoted point of support is changed.

The writer considers this novel, neat, and eminently workmanlike utilisation of what is virtually a single spring for a pair of wheels constitutes one of the most valuable improvements yet devised for the motor cycle, and that the manner of resisting the stresses and the great length of the spring in proportion to that of the machine itself is an unrivalled advantage. Again, the feature that the springs are situated at the upper part of the frame is excellent, inasmuch as dirt and grit are prevented from impairing their action.

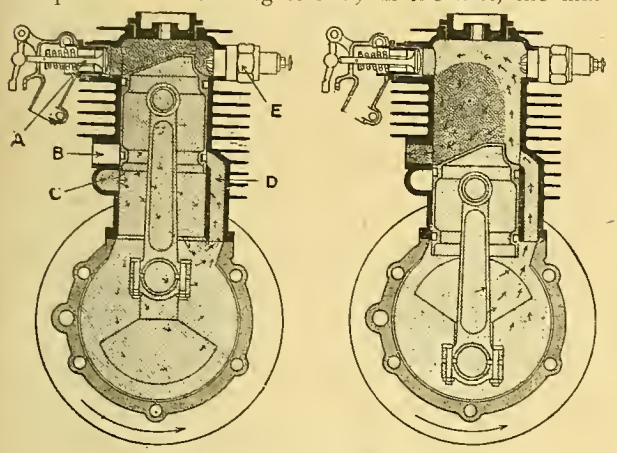
JOHN ARMSTRONG.

ROAD TESTS OF NEW MODELS.

THE 2¼ h.p. TWO-STROKE ENFIELD.

Engine 64 × 70 mm. bore and stroke (225 c.c.) Two-speed gear, ratios 5·4 and 9·3 to 1. Chain transmission, slipping clutches, and cush drive.

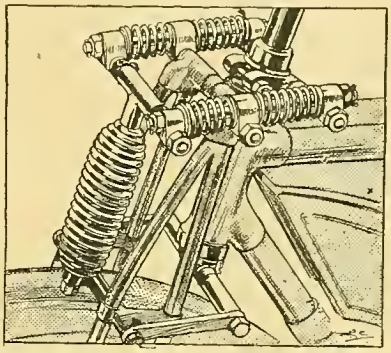
WE have recently been putting the 2¼ h.p. Enfield two-stroke lightweight to a practical test on the roads. By way of preface a few words on the construction of the machine will not be out of place. The engine is of the usual three-port variety, having the inlet and exhaust ports in front and the transfer port in the rear. The release valve is connected with the exhaust pipe—a very desirable feature. The accompanying sectional drawings show the engine in two positions, at the commencement and completion of the firing stroke; in the first, the mixture is entering the crank case at the inlet port C, and a charge is compressed above the piston; in the second the charge is being transferred through the port D from the crank case to the cylinder, where it is taking the place of the exploded charge shown by the darker shading; the latter at the same time is making its exit through the exhaust port B. Contrary to usual practice the flywheel is mounted on the right-hand side, the left end of the crankshaft being reserved for the sprockets carrying the driving and magneto chains.



Enfield 2¼ h.p. two-stroke engine.
A. Release valve. B. Exhaust port. C. Inlet port.
D. Transfer port. E. Sparking plug.

The lubrication is on the "petroil" system, a small cup being provided as an oil measure; this cup must be emptied into the tank six times for every gallon of petrol placed therein. The cup is filled from the tank by a pump, and when not in use it is carried clipped below the tank covering the pump nozzle.

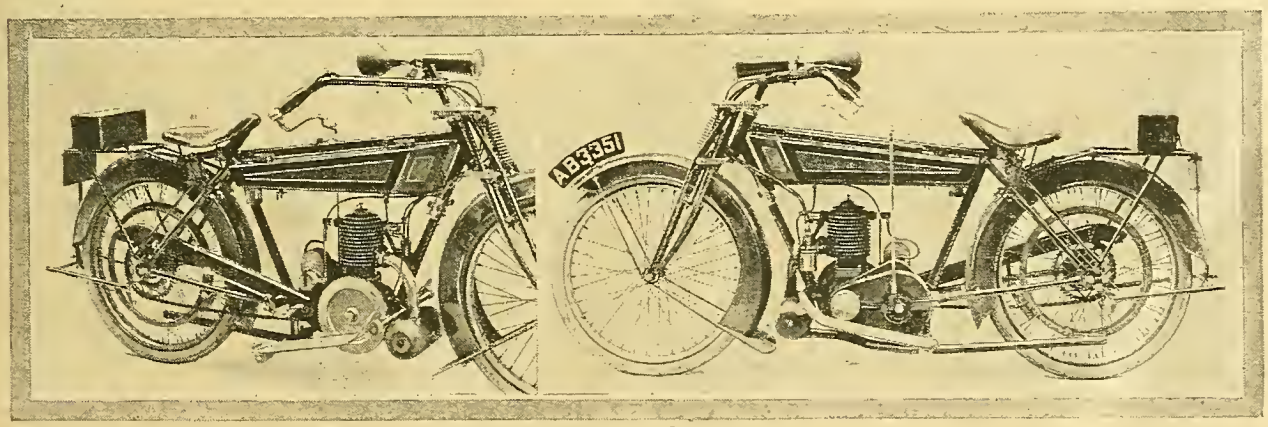
The Enfield two-speed gear naturally finds a place on the machine; this can hardly be misused by the veriest novice, and is well-known for its reliability. The front fork springs contain a novelty which is clearly shown in the sketch on this page, and combine the up and down movement of linked forks with the rocking, or backward and forward, movement peculiar to the hinged variety.



New design spring forks designed to give a combined movement.

On the Road.

When we took the machine on the road its hill-climbing ability was at once apparent, and we found that the Coventry test hill at Stoneleigh could be easily ascended on top gear with a hot engine. Starting was extremely easy; the machine could be paddled off, whether hot or cold, in a yard or so, and was pleasant and comfortable to ride at moderate or slow speeds, but when the pace was increased, the writer, being accustomed to the 3 h.p. twin Enfield, which runs very smoothly, found the vibration in the handles and footboards more noticeable. The



Both sides of the Enfield two-stroke lightweight.

Road Tests of New Models.—

handle-bars were not the standard pattern, but were extra long. This possibly accentuated the vibration; also it is only natural that metal footboards should vibrate more than wooden ones sprung at the forward end.

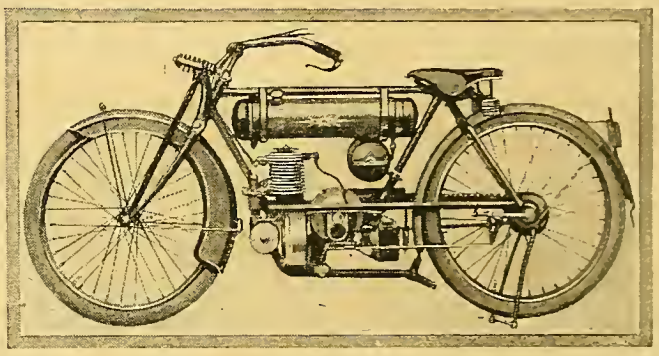
We made no endeavour to reach the extreme speed, but the machine touched 30 m.p.h. without being opened out fully. The exhaust was quiet, unusually so for a two-stroke engine which is often very noisy.

We noticed that, in case of tyre repair, the back part of the rear mudguard, together with the carrier, could be quickly removed after slackening two nuts—the nuts need not be taken off; we did not have to experiment with this, but the toolbox contained a repair outfit ready for emergencies, spare links for the chains, and a roll of tools.

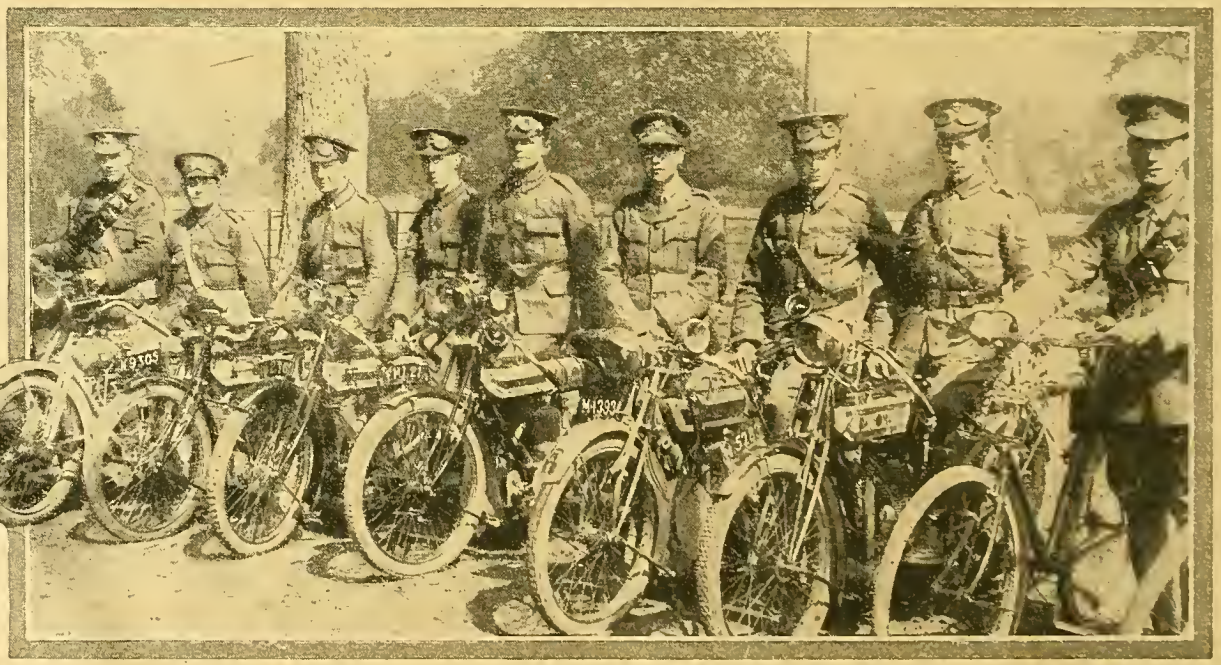
Finally, we must mention the fact that the entire output of this little machine has been booked for some months to come.

A New American Lightweight.

A TWO-STROKE lightweight embodying some novel points is being produced in Cleveland, U.S.A. The engine, which has a bore and stroke of 63.5 × 70 mm. (222 c.c.), is of the three port type, mounted with its crankshaft longitudinal in the frame, and drives the two-speed gear by means of a shaft and worm which also drives the magneto; this is placed in an inverted position behind the gear box. Driving ratios of 5 and 10 to 1 are provided. A large multi-plate clutch is placed between the gear box and the chain to the rear wheel. The chain sprockets are of equal size, and both small. The machine is equipped with a B. and B. carburetter and Brooks saddle, and although many of the features are unusual, several are strongly reminiscent of a well-known Coventry machine, notably the front forks, mudguards, tank fixing, and cylinder. A consumption of nearly 120 m.p.g. is claimed, the tank holds 1½ gallons, and an extra tank, which acts as a reserve, is provided. The lower part of the frame is double, the motor being mounted within the side members. A band brake is fitted on the rear wheel operated by the left foot. Other features include 26in. × 2¼in. tyres, knock-out axles to both wheels, and a 52in. wheelbase. Lubrication is on the petroil system, and the machine is said to be capable of a speed of 35 m.p.h.



A two-speed two-stroke American-made lightweight, which, in certain parts, bears a strong resemblance to a famous English machine.



DESPATCH RIDERS ATTACHED TO THE CHESHIRE YOEMANRY.

Reading from left to right: Lance-Corporal Smart (Bat), Lance-Corporal Bruce (Triumph), Artificer Williams (Triumph), Lance-Corporal Richards (Triumph), Lieut. Wilbraham, Corporal R. Locke (Matchless), and Lance-Corporal H. Locke (Rudge).

THE BRITISH MAGNETO SUPPLY.

PRESENT OUTPUT OF BRITISH-MADE MAGNETOS AND FUTURE PROSPECTS.

READERS will recollect that since war broke out we have on more than one occasion referred to the magneto supply question. To refresh short memories it may be mentioned that up till last August about nine-tenths of the magnetos used in England came from Stuttgart, consequently a rather serious position arose, as, owing to lack of support by British car and motor cycle manufacturers, British electrical firms had devoted very little attention to the production of magnetos, and the output of the British-made article was so small as to make very little difference to the general outlook. Fortunately, American electrical manufacturers came to the rescue, and since the war British firms making magnetos have, by reason of great efforts, arranged for considerably increased outputs, the only limitations to which at present are shortage of labour and material.

In order to obtain an idea of the present position and prospects of the future, we have asked the principal makers of British magnetos their views, and the replies set forth below are both interesting and instructive. We give herewith a copy of the letter addressed to the magneto manufacturers. Immediately following are the replies received:

[COPY OF LETTER SENT TO THE PRINCIPAL BRITISH MAGNETO MANUFACTURERS BY THE EDITOR OF *The Motor Cycle*.]

"I am writing to ask you if you will kindly give me some information for the benefit of the readers of *The Motor Cycle* as to your present output of magnetos and future prospects in this direction. There appears to be a great amount of misconception among users as to the present magneto position. Some people think that after peace is declared motor cycle manufacturers may be obliged to fall back upon German and American sources of supply through the home magneto makers not being in a position to deliver the necessary quantities. This assumption is natural, seeing that motor cycles are still being delivered with magnetos not of British origin, whereas the public were led to suppose that by this time British makers would be in a position to satisfy all needs.

"*The Motor Cycle* has always encouraged the British-made article, and I would appreciate a brief statement from you suitable for publication."

REPLIES FROM BRITISH MAGNETO MAKERS.

C. A. Vandervell and Co.

(Makers of C.A.V. magnetos.)

"Our output of magnetos suitable for motor cycles is at the present time about six hundred machines per week—in other words, about a hundred per working day—but it is only a question of securing the raw materials and overcoming certain difficulties in regard to labour that is preventing us from manufacturing double this number.

"As we believe you are aware, we in the first place avoided introducing a full range of models, our idea being to concentrate upon one particular type suitable for motor cycles, and thus enable us to get on to a proper manufacturing basis quickly. We thought that doing this was far better than attempting to produce several models, as this would naturally handicap any manufacturing proposition of this character.

"Your remarks that many people consider that motor cycle manufacturers will, after peace is declared, fall back upon German and American sources are undoubtedly only too well founded, for we have ample evidence already that motor cycle manufacturers in this country are not prepared to pay more for the British-made article, although it may be infinitely superior in every way to the foreign machine.

"Whilst manufacturing conditions are more or less normal in the States, they are, as you are fully aware, very abnormal here. The prices ruling for raw materials and also labour in connection with magnetos are extremely high; in fact, both labour and materials have gone up from 50% to 100% since the war started. In the case of ebonite parts 500% advance would be nearer, and while we are working under such disadvantages compared with America, it is naturally impossible for us to produce as cheaply as they do, although we flatter ourselves that we are producing a much superior article.

"What Germany will be able to do after the war in regard to competition is another matter; but we are inclined to think that things will level up somewhat then in regard to price all round. But the competition from Germany will naturally be very keen, as well as from America; and if motor cycle manufacturers are not prepared to pay a little higher price for the British article, in preference to either the German or the American, until such time as we are able to produce in very large quantities and thus bring down the manufacturing cost, we are afraid that British manufacturers of these specialities will have to play 'second fiddle,' or the British Government will have to look after their interests by making a small protective tariff of something in the neighbourhood of 10%."

The M.L. Magneto Syndicate, Ltd.

(Makers of Morris-Lister magnetos.)

"We are increasing our output week by week, the present output being 200 per week. The difficulties in obtaining labour and material have prevented a more rapid increase, but these difficulties are being overcome, and in the near future we shall be turning out between 400 and 500 magnetos per week for which we already have the necessary machinery and plant.

"At present our business is confined to a few well-known firms, to whom we have been making good deliveries since the end of last year. A good proportion of this output is for Government requirements.

"We have in hand a scheme for increasing production up to 1,000 magnetos per week, but under present conditions it is not possible to say when this will be completed. The necessary arrangements are being pushed forward as far as possible in order that we may be in a position to accept substantial contracts immediately conditions become more normal.

The British Magneto Supply.—

"In our opinion, there should be no necessity for motor cycle manufacturers to purchase abroad after the war. The number and standing of the firms who are taking up the manufacture of magnetos in this country is ample to ensure a production equal to the demand.

"That motor cycles are now being fitted with foreign-made magnetos is due to the difficulties under which British firms are working, difficulties which American competitors are not experiencing. In such a crisis as the present, Government requirements must have first call on all labour, plant, and material.

"But there will be big developments after the war, and we hope that you will use your influence to secure such encouragement from the Government and from the motor trade as will see this new industry firmly established.

"The old policy was a dangerous one. To depend entirely on foreign supply for any military or industrial necessity might easily result in a hopeless handicap in the event of war."

Nicole, Nielsen and Co., Ltd.

(Makers of Watford magnetos.)

"We have just completed an extension to our works capable of accommodating four hundred workmen, and have acquired sufficient land for further extensions to enable us, if necessary, to erect buildings to accommodate several thousand men; so you will see that we are not going into the magneto business with the idea of manufacturing only in such quantities as may be required during the war."

Thomson-Bennett Magnetos, Ltd.

(Makers of Thomson-Bennett magnetos.)

"The fears which are entertained by a section of the public remind us very much of the fears which are entertained by others as to the ability of this country to furnish itself with supplies of war material.

"It seems to us that a section of our fellow countrymen are always under the impression that there is no enterprise in this country, and that, unless we are booming every move that we have taken, nothing whatever is being done. On the other hand, there is a large section of manufacturers who go to work without talking about it, and are more concerned with getting on with the business than in making statements as to what they will be doing.

"That, we think, is the explanation of why more has not been written from the magneto manufacturers' point of view of what has been undertaken since the war broke out.

"One reason why the private owner is not seeing as many British magnetos as he expected is due to the fact that, first and foremost, the requirements of the naval and military authorities are receiving attention. We doubt if the outside public realises the immense number of petrol-driven engines of every possible description that is being supplied to the Government at the moment. The private owner only gets the balance. This may not be as great as was anticipated, but the war has brought problems to be solved which were not anticipated some months ago.

"You can assure your readers, therefore, that they need have no fear; matters are being pressed on with all the speed that is possible. As regards our own concern, we could give you names of dozens of manufacturers who are using our magnetos in large numbers, and are satisfied with the quality. The output is being increased every week, and on the return of normal conditions, when we are freed from the necessity to give first attention to war material, there will be a large additional number released for ordinary requirements.

"As we can supply in this country the best of all other fitments for the motor trade, and in the large quantities which are required, so it will be with the magneto, and any firm who wishes to supply all-British machines from start to finish will be able to do so."

The Electric Ignition Co. (1913), Ltd.

(Makers of E.I.C. magnetos.)

"Our present output of magnetos is about 300 per week, and it is our intention to equip for an output in accordance with the demand.

"Your knowledge of the average British manufacturer will help you to appreciate the trouble we have had to obtain many materials which hitherto had not been made in this country, and for which the British makers, with their usual pessimism, did not believe there would be a lasting market.

"If the trade union rules which prohibit the employment of female labour were suspended, it would be a very great assistance to us, as to many other manufacturers.

"The chief trouble, namely, difficulty of obtaining material, is one that should disappear after peace is declared, and then we could supply the bulk of the home trade with magnetos suitable for two-strokes or any single-cylinder engine up to 6 h.p.

"At the present time we know of several firms who are fitting foreign-made magnetos purely from a point, as they say, of a slight saving in actual cost; in fact, it may interest you to know that several firms have been patriotic enough to tell us that as soon as they can obtain the German machine again they will fit it."

The Runbaken Magneto Co., Ltd.

(Makers of Runbaken magnetos.)

"We are afraid at the present moment the British manufacturers are placed at a serious disadvantage against American makers. We, ourselves, together with practically every large firm in this country, are at present engaged on Government work, and are also handicapped through shortage of skilled men; the manufacture of magnetos is not receiving the attention it should.

"The writer also regrets to say that most of the English machines that he has so far inspected are very shoddy, and in no way to be compared with the German machines, and unless the various manufacturers are able to give more attention to the making of these machines, there is a very big chance of the car and motor cycle manufacturers falling back on the former sources of supply."

A. H. Boulton and Son.

(Makers of Boulton magnetos.)

"We have made magnetos for three years, but previous to the war we obtained most of our materials from Germany. We have now succeeded, after a great struggle, in obtaining British material, which is as good as the German.

"We have ample proof that our magnetos are as good as those made in Stuttgart—in fact, they are copies—but the prejudice is so great that we believe that on the cessation of the war German firms will be flooded with British orders, and American magnetos will be very cheap. There are secrets in the manufacture of magnetos, without which it is like trying to 'make a silk purse out of a sow's ear.'"

British Thomson-Houston Co., Ltd.

(Makers of B.T.H magnetos.)

"It would appear from your letter that the manufacturing difficulties are not fully appreciated by your readers. It must be remembered that up to the time the war started British manufacturers had received so little encouragement that practically no magnetos had been manufactured in this country, and it was found that on the outbreak of the war the source of supply had suddenly become interrupted, and English manufacturers were then immediately appealed to to undertake the manufacture of magnetos.

"Even in peace times, when material and labour could have been obtained in plenty, it would have been no easy matter to start this new industry and give adequate supplies of the completed article. In war time the development has naturally been much more difficult, and has taken a much longer time, owing to the very great difficulty experienced in obtaining the necessary material and suitable labour.

"It will, no doubt, be of interest to your readers to know that the development stage has now passed, and the necessary tools, etc., have been mostly completed, and the quantities being delivered are increasing every week. As to when the total demands are likely to be satisfied with British-made magnetos, it is somewhat difficult to decide, owing to the total requirements being somewhat indefinite, but it may be accepted as a fact that directly the war is over, and the material and labour market return to their normal position, there should be no difficulty in satisfying the demands.

"Another reason why it is difficult to give the manufacturers all they require at the present time is the large amount of Government work which must necessarily be undertaken by the various factories engaged upon magneto work."

THE NEW COUNTER-SHAFT

ROVER

Extract from Ireland's "Saturday Night":

RELIABILITY TRIAL IN CONNECTION WITH THE ULSTER CENTRE OF THE MOTOR UNION.

"George Graham (3½ h.p. Rover and Sidecar) was first . . . . . .

"I am sure that all his fellow-competitors will agree no better sport could have won the event than George Graham, whose new Rover covered itself with glory by the way in which it took all the test hills including the terror at Feestown. It was a supreme test of hill-climbing for a passenger mount of such moderate horse-power."

SIDECAR COMBINATION COMPLETE

£80 : 0 : 0

The Rover Co., Ltd., Meteor Works, Coventry.

117 & 118, **CHEAPSIDE,** and Milk Street Buildings, **LONDON, E.C.**

JOHN PIGGOTT'S JULY SALE

68 PAGE LIST FREE.

MOTOR CYCLISTS' OVERALLS. FOR WIND, RAIN, or DUST. **WATERPROOF DEPARTMENT.**
All Garments are guaranteed absolutely Waterproof. All Seams stitched through, overlapped, cemented, and taped. When ordering Motor Suits, please state Chest Measure taken over jacket worn, and inside Leg Measure.
RJ71. **OUR FAMOUS "J.P." TOURIST OVERALL MOTOR SUIT.**—Strong and Waterproof, made of extra stout untearable Fawn Twill, double texture. This material is specially recommended to stand the hard wear that Overalls usually get. **The Jacket** is made double-breasted, 36in. long, with Prussian collar, throat tab, inside wind cuffs, adjustable, tabs on sleeves, square pockets stitched right through, cut roomy, with loops for belt. **The Trousers** are made in the Seatless Overall style, with spat and gaiter front, storm gusset, lever clip fastening leather waist and boot strap, and shaped to fit well up in fork of leg. **This Outfit complete is offered during the Sale only at 30/6.** Usually sold 40/-.
JACKETS ONLY, **20/3.** Usual price, 21/6.

MOTOR CYCLISTS' DUST OVERALLS.
KJ241. **Olive Heavy Twill Drill Double-breasted Jackets and Seatless Gaiter Trousers** (heavily rainproofed). Usual price, 28/-. **Sale Price, 23/4.**
Sizes stocked, 36 to 44 chest.

KJ242. **EXCEPTIONAL OFFER. SHOWER AND DUST-PROOF MOTOR SUIT** in Olive Twill, very strong. The Jacket is Double-breasted, fitted with elastic wind cuffs, the overalls fasten with side strap to brace buttons, are easily slipped on and off, and the spat is kept in position by small strap, making a most sightly and useful Suit. Worth 25/-. **Our Special Price, 1 /-.**
36 to 44 chest in stock.

KJ243. **8 Pairs only Shower and Dustproof SEATLESS GAITER TROUSERS.** Fitted with Gusset and Patent Fasteners at side, easily slipped on, in the following sizes only:
Sale Price, 9/6
Postage 4d.

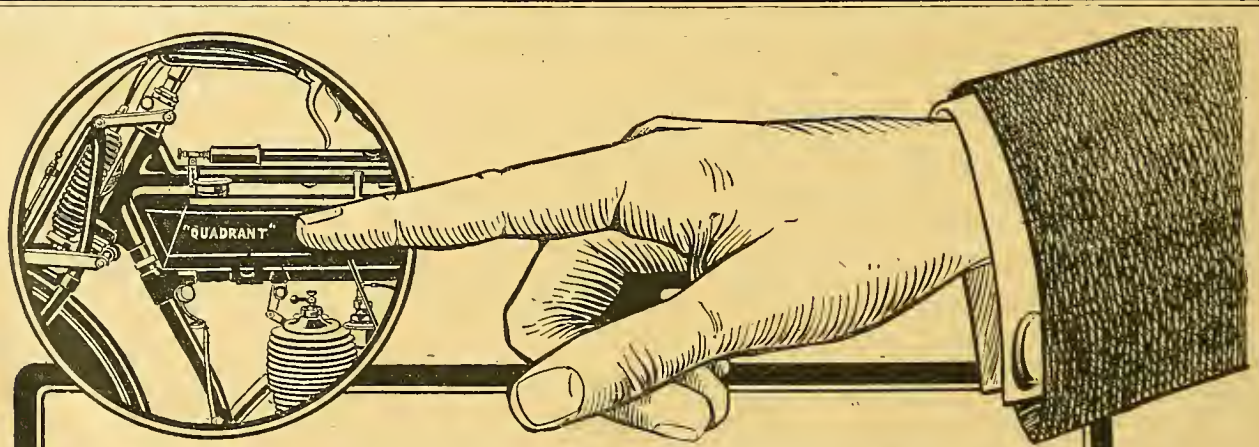
Waist	32	32	34	40	40
Leg	31	33	33	31	33

Cannot repeat when sold.

KJ244. **15 Pair only Shower and Dustproof LEGGINGS**, fitted with Gusset and Patent Fasteners and Side Strap to fasten on brace buttons. **Sale Price, 7/6.** Postage 3d.

HOLLAND DUST JACKETS, &c.
"The Road" (as sketch). **Holland Dust Jackets and Overalls.**
KJ245. **STRONG WASHABLE HOLLAND JACKETS.** Usual 6/6. **Sale Price 5/11**
Postage 3d.

KJ246. **HOLLAND LEGGINGS, to match ROAD JACKET.**
Usual price, 3/6.
Sale price, 3/-
Postage 2d.



That's the Name

which enables you to get the best out of the pastime. That's the name without a query—

QUADRANT—

the name which is spoken of with the greatest possible enthusiasm by every rider of the mount which bears it—the name that ensures a faultless service—a service which again ensures a "touring time" of unalloyed enjoyment. No query—no trouble—a really "trusty steed" never failing "out or home." It is made in several models—here is one—

THE QUADRANT 4½ h.p., with B.S.A. Countershaft 3-speed gear—solo £55; combination £66 - 11 - 0.

Let us send you fuller details.

QUADRANT WORKS, Lawley St., Birmingham. London Depot—78, Gt. Queen St., Kingsway.
Note that the above and all other Quadrant prices are now advanced by 5%.

No Query about Quadrants

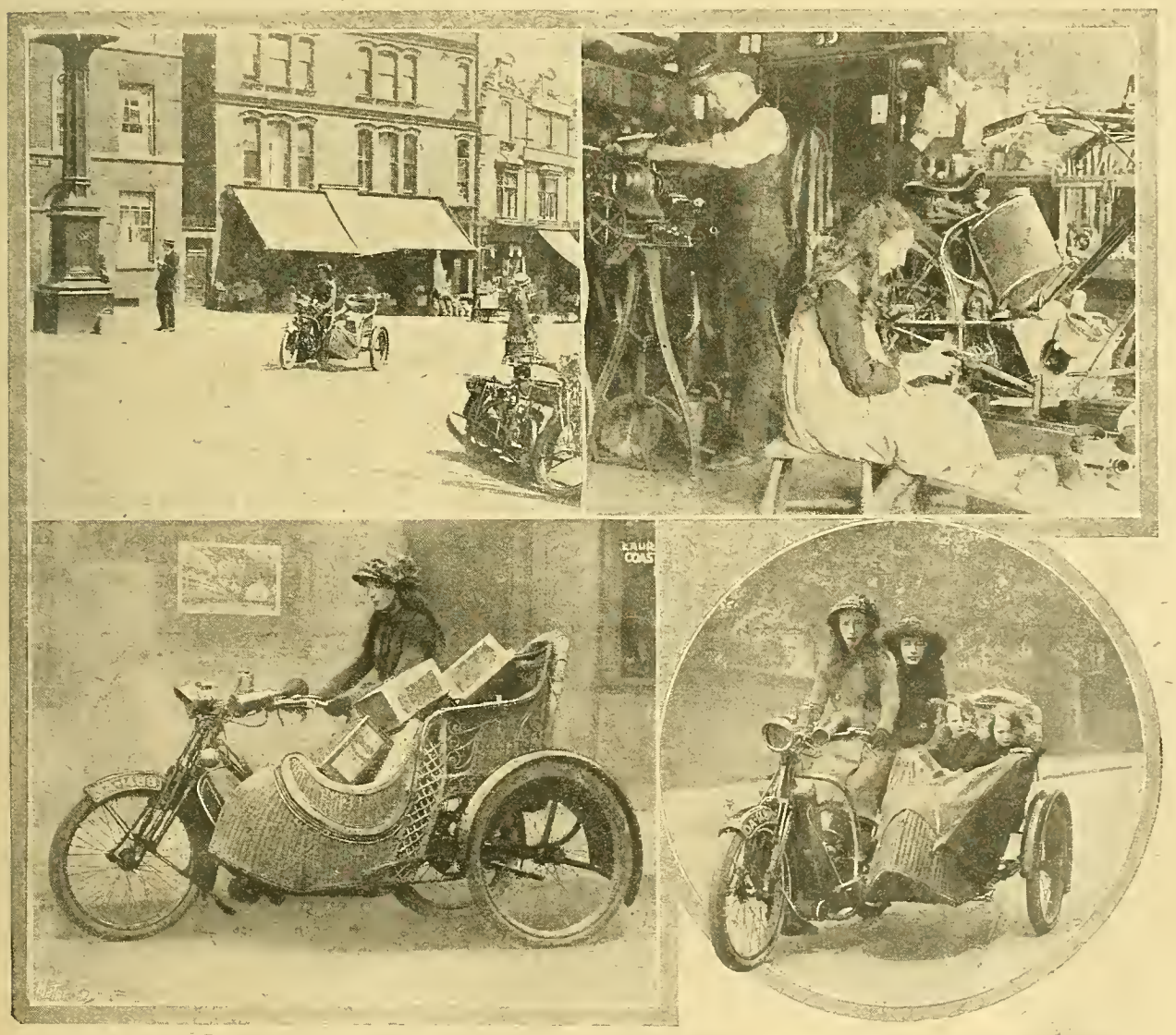
The British Magneto Supply.—

From the tone of these letters it is surprising to learn that after peace is declared motor manufacturers may fall back upon German and American magnetos. Whether this would be due to lack of magnetos from British makers, or because of the slight extra cost of the British-made article it is difficult to say. In all probability if the war is over in another year it will be due to both causes. There is no doubt that in spite of improved output the number of magnetos being produced in England is still far short of requirements, and although this shortage will gradually be lessened, no vital change can be expected whilst there is a lack of labour and material—both due to the war.

It is to be regretted that there is still in some quarters a disposition on the part of car and motor manufacturers "to throw cold water" on the efforts of the British electrical firms.

An Accomplished Girl Mechanic-driver.

IN these days of women replacing men in so many and varied spheres of work, it is interesting to record the duties performed by the daughter of a Birmingham dealer. Miss Louie Ball, age 15, is something more than a keen motor cyclist. She knows all about the machine she rides, and is capable of tuning up and generally helping her father, the Scott sub-agent for the Edgbaston district. Besides making short trips delivering petrol and oil she has on several occasions driven Mr. Ball to the Scott works at Shipley, a distance of 120 miles, to take delivery of new machines. On these occasions her father occupies the sidecar, and drives back the new machine while Miss Ball follows with the empty sidecar.



Miss Louie Ball passing Five Ways, Birmingham, with a load of petrol in the sidecar.
Starting off to deliver petrol

Helping to tune up a Scott in her father's repair shop.

Taking her sisters for a run.

MOTOR MACHINE GUN SERVICE.

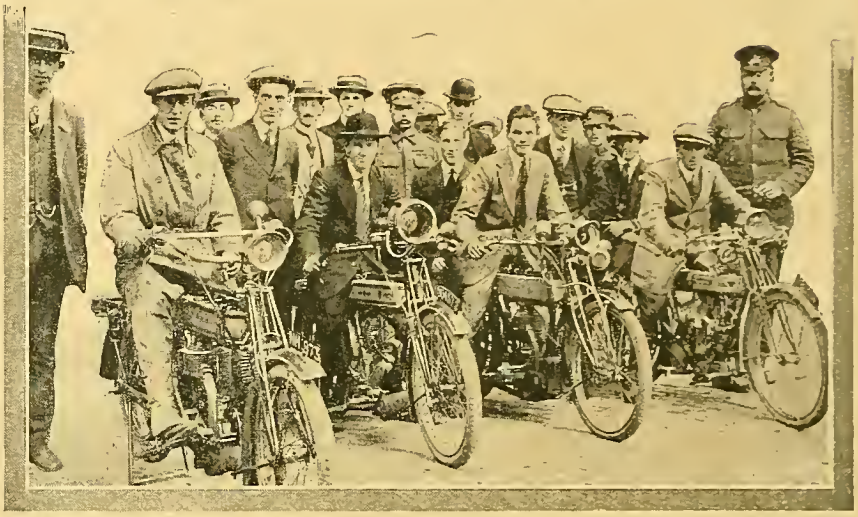
Vacancies for Motor Cyclists, Mechanics and Car Drivers.

FIFTY first-class motor cyclists are required immediately for enlistment in the M.M.G.S. (R.F.A.), pay 1s. 2½d. per day, all found, usual separation allowance. Also a limited number of qualified car drivers and mechanics, the pay in this section being 6s. per day, all found, the usual separation allowance. Car drivers must have had at least three years' driving experience, and be able to execute all running repairs. Candidates for enlistment as artificers must have held similar positions in motor cycle factories or leading garages, and be able to perform any repair to an engine, gear box, or other part of a motor cycle, no matter how difficult. Two references are required. Age limit, 19 to 38; ex-soldiers up to 45.

Further particulars may be obtained from Mr. Geoffrey Smith, Editor *The Motor Cycle*, 19, Hertford Street, Coventry, and all recruits who can possibly do so should attend an inspection to be held at the Recruiting Office, Masonic Buildings, Little Park Street, Coventry, on Wednesday next, July 7th, between 2.30 and 4 p.m., when men accepted will leave for the training centre forthwith. Married men should bring with them their marriage and children's birth certificates. Groups of friends who now wish to enlist will, as far as possible, be allotted to the same battery. Motor cyclists in the Bristol district should apply to Mr. H. Smith, Inspecting Officer, South Midland Divisional Area, Queen's Hotel, Bristol.

During the last few days the following have been attested for the M.M.G.S. :

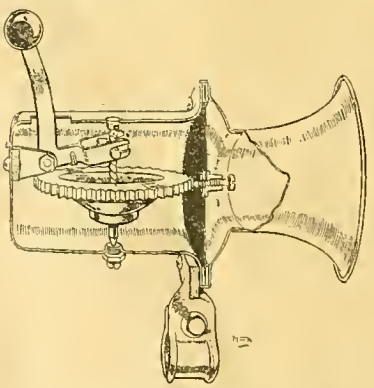
G. F. Bainbridge E. W. Macro W. Letheren	Motor cyclists
H. Colwell T. C. Pett	Car drivers.
W. R. White J. Henderson	Artificers.



A batch of recruits accepted by the editor of *The Motor Cycle* on the 23rd ult. The four motor cyclists in the foreground were passed for the waiting list of despatch riders, whilst the others were enlisted in the Motor Machine Gun Service.

THE SPARTON HORN.

A USEFUL accessory which we lately had an opportunity of inspecting at Messrs. Brown Brothers is the Sparton horn—a hand-operated horn emitting a Klaxon-like note. It is brought into operation by pushing forward a lever, attached to which, inside the body of the horn, is a thick piece of felt, which prevents the dust from entering the mechanism. The latter is quite interesting, and works on the principle of the Archimedean drill. It is, moreover, simple to use, the principal moving part being the large toothed wheel driven by the Archimedean screw, the teeth of which come into contact with the point on the diaphragm.



The Sparton mechanical horn cut away to show method of operation.

SOUTH AFRICAN ROAD RECORDS.

SOME little while ago we alluded to records claimed to have been made in South Africa, and to the fact that we had received a letter from an independent source throwing some doubt upon the genuineness of these records. Since then we have received letters and certificates from the organisers and time keepers, which leave no room for doubt that every care was taken to ensure accuracy in the measurements and times. It is to be regretted that there is no ruling body in South Africa to pass and hall-mark records made in that country. In the absence of such a body, and in the interests of our readers, we find it necessary to exercise great care, but now that we have received full particulars and guarantees respecting the time-keepers and their watches (at the high speeds attained an error of three-fifths of a second means a difference of over 2 m.p.h.), we are glad to give publicity to the figures. The attempt was made by three riders of the 7 h.p. Indian, on a straight stretch of road twenty-four miles west of Johannesburg, and the following are the times credited :

ONE MILE, FLYING START.

*D. Owen	...	46⅗s. = 77.25 m.p.h.
H. E. Kelly	...	53⅕s. = 67.67 m.p.h.
G. Weddell	...	56s. = 64.28 m.p.h.

HALF-MILE, FLYING START.

*D. Owen	...	21⅗s. = 83.33 m.p.h.
H. E. Kelly	...	25⅕s. = 71.44 m.p.h.

*Road records.

MOTOR CYCLE RECRUITS WANTED.

MOTOR cyclists are wanted for the Royal Flying Corps. Suitable men of nineteen to forty years of age may enlist for duration of war, and men from eighteen to thirty for normal period, *i.e.*, four years with the Colours and four years with the Reserve. Pay 2s. per day. Candidates must be able to execute all running repairs and have the usual riding experience.

Corporal W. H. Garlick, of the 30th Signal Company, R.E., now stationed at Grantham, on his 2¾ h.p. Hobart. In pre-war days, as at present, Mr. Garlick was a keen Hobart rider, and won his class at the Pen-y-Ball hill-climb in September, 1913. His machine is giving him every satisfaction.

The survival of the fittest

To-day the only Sidecar Combination the War Office is ordering

is the Clyno. "Yesterday"—in the early stages of the War—practically every other similar machine was submitted to official tests—many were ordered and utilised for actual war service, but few were capable of withstanding the rigours of use and abuse that war service entails.

Naturally it became a question of "the survival of the fittest," and the experience of ten months of active warfare is followed by the present sole selection indicated.

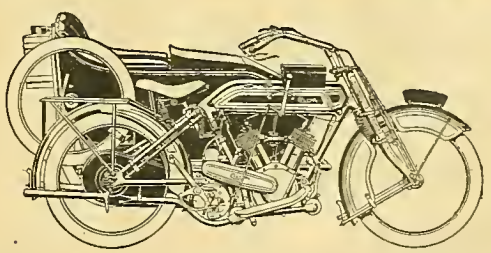
That fact is worth remembering and the machine that can so unmistakably demonstrate its merit and superiority—worth waiting for.

Keep in touch with us.

THE CLYNO ENGINEERING Co., Wolverhampton.

Telegrams—"Clyno, Wolverhampton."
Telephone—992 Wolverhampton.

The CLYNO



In answering this advertisement it is desirable to mention "The Motor Cycle."

B3

SEND THAT BURST TYRE RIGHT ON TO US.
IT IS UP TO YOU TO GET THE LAST MILE OUT OF IT.
EVERY CLASS OF REPAIR & RETREADS HANDLED BY EXPERTS
REMUNERATIVE MILEAGE WITH EVERY REPAIR UNDERTAKEN.

TOM CANN, LEICESTER.

— like
riding on
a cloud —
would probably best
describe that somewhat
indefinable floating
motion associated with Canoelet comfort.

CANOELET COMFORT
is something that cannot be adequately described however—it must be experienced.

SEND FOR CATALOGUE OF MODELS.

MEAD & DEAKIN, TYSELEY, Birmingham

Read what
"The Challenge"
says about
Overheard at the Front

By CHAS G. HARPER.

Obtainable from leading booksellers and bookstalls, or direct from the Publishers: ILIFFE & SONS LIMITED, 20, TUDOR STREET, LONDON, E.C.

PRICE 1/- net. By post 1/3.

Ear-Witness at the Front.

Overheard at the Front. By CHARLES G. HARPER. 110 pp. Iliffe & Sons. 1s. net, paper.

Mr. Harper possesses the essential qualification for writing a book of this character, a quick observation, a retentive memory, a keen sense of humour, and the ability to make himself at home under strange circumstances and in strange places. In these tales, which are largely in dialogue, Mr. Harper shows us the cheerful soldier, preserving a humorous and cheerful outlook under the most depressing circumstances, and seemingly indifferent to the magnitude of the great struggle in which he and his fellows are bearing their part

I tried one inn at a venture. . . . The place was pretty full of soldiers and tobacco smoke I called for a glass of beer, interrupting a conversation at the bar, in which, as far as I could make out, two of the Worcestershires were vainly trying to make a French girl understand that she was a "bit of all right, an' that's a fact." . . . .

"Tell 'er she's made us love 'er, but we didn't mean to do it. . . . Go on. See what she's got to say about it."

This is a sample, at a venture, of Mr. Harper's amusing experiences.

MILITARY NOTES.

MOTOR CYCLISTS MENTIONED IN DESPATCHES.

AMONG the list of those mentioned in despatches we notice the name of Second-Lieutenant L. S. Smith, Motor Cyclist Section, R.E. Special Reserve. In the *Gazette* we notice Corporal W. N. Gurdon, Special Reserve of Officers, Reserve Units Corps, R.E., Motor Cyclist Section, to be temporary Second-Lieutenant. We presume that this is Corporal W. Gurdon, Motor Cyclist, Meerut Signal Company, 2nd Presidency Volunteer Rifles, who was awarded the D.C.M. "for conspicuous gallantry at Neuve Chapelle for carrying important despatches under fire by day and night, and always with success," whose name appeared in the *London Gazette* of June 3rd.

In the Motor Machine Gun Section are mentioned Captain H. G. Bird (now Major), No. 4 Battery, Reserve of Officers (engaged in the successful operations at Hill 60), temporary Second-Lieutenant J. Clough, and temporary Second-Lieutenant J. R. Farrington.

NEWS FROM No. 5 BATTERY.

J. COCKER, a member of the No. 5 Battery M.M.G.S., in the course of a letter to the Editor, acknowledging receipt of the boxing gloves and footballs sent by the Coventry and Warwickshire M.C., gives some interesting news. He writes as follows:

"I am writing on behalf of the battery to thank you and the Coventry M.C. for the set of boxing gloves. I expect you know that Sergeant W. A. Davenport has left us. He has been in hospital with bronchial pneumonia, but seems to be better now. The battery has been doing trench work for some weeks now, and things are fairly quiet just at present. I get *The Motor Cycle* regularly every week, and it is always in great demand I can assure you. I met E. and C. Williams recently, and we had a long chat over old times. We are all quite well, and as fit as fiddles."

SERGT. DAVENPORT GETTING BETTER.

IN the letter from which we have quoted J. Cocker informed us of the extremely bad time Sergeant Davenport had been having, so that we were relieved to hear from Davenport himself that he is now on the right road to recovery, though still some way off complete fitness. Sergeant Davenport is with the No. 5 Battery M.M.G.S., and before the war was with the Lea-Francis Co., and well known to Scottish and English "Six Days" competitors. The following are extracts from Sergeant Davenport's letter:

"I had a lot of trouble with my foot, and the doctor thought it would be necessary to operate. I came to the base, and while I was down here I fell sick, since when I have been seriously ill with pneumonia. I have been in hospital for almost a month, and I have not been out of bed yet, but I am getting better, and hope to get up shortly. I shall get a sick furlough, which will mean a holiday in Coventry.

"Major Waring, who is second in charge of the hospital here, brings me *The Motor Cycle* regularly, and I can assure you it helps me pass a good many weary hours. Major Waring is the owner of a Sunbeam, and, of course, we have a lot to talk about in the motor cycle line."

SIXTEEN DESPATCH RIDERS SEND MESSAGE FROM THE DARDANELLES.

WE have received the following letter from a group of Manchester motor cyclists now serving as despatch riders with the Mediterranean Expeditionary Force:

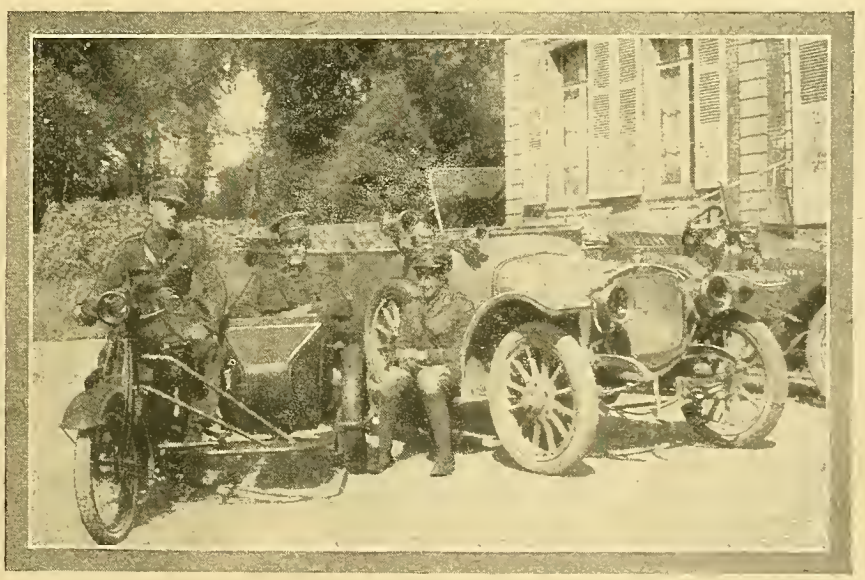
"We have noticed an article by Bernard Rice in your edition of May 20th (page 486), and should like to pass a few comments upon it. He mentions such unknown luxuries in this country as lunch in a farmhouse and beer served by a nice girl. Since landing here such things are sweet memories of the past. He also refers to the unearthly roar of a gun as if it were a rare occurrence. Out here it is one incessant boom, and all our despatches are carried under both shell and rifle fire over broken country where roads are mere tracks

"But these difficulties all add zest to our work, and make us all the keener to uphold the splendid name that motor cyclists have earned in this campaign. We are indeed glad to say that our section is still complete, well and happy, and are longing for the time when we shall be able to exchange experiences with the motor cyclists who are serving in France.—M.O., J.F.S., A.L.S., J.B., T.D.T., W.L.H., R.H., C.F., W.A.T., C.D.M., J.L.Y., J.S.S., F.L., W.W., A.R., P.B."

TRAINING WITH THE M.M.G.S.

THE Editor receives many letters from men he has recruited for the M.M.G.S., which confirm, if any confirmation were needed, the healthy and interesting life led by those in training at Bisley. Not one appears to have regretted joining, and though the work is at times hard it is very enjoyable, and the great desire of all is to get out to the Front. The following letter from Mechanic Alfred Fielder, now at Bisley camp, is typical of many received: "Just a line to thank you for helping me to join the M.M.G.S. I consider my joining about the best thing I have ever done. I have been in the Army now about six weeks, and like the open air life very much; in fact, it is a holiday, but we are being paid for it. The only thing I should like better is to be out in France with the boys, as no doubt we shall soon. I used to be a competition rider for the New Hudson Co., but some of the roads here are worse than in any trial."

"You will be pleased to hear that I like the work very much, and certainly we cannot complain of being overworked. We knock off at 4 p.m., and can do what we like until 9.30 p.m. There is plenty of bathing, and I get a run on my Indian every day."—Extract from letter from Harold H. Bowen, the well-known amateur rider, now with the M.M.G.S.



Second-Lieutenants C. T. Newsome, S. A. Rowlandson, and D. H. Noble, photographed "Somewhere in France" one day last week. Of the hundreds of former trials riders now serving their country, few are better known than this trio. They competed in practically all the big events—Noble and Newsome on Rovers and Rowlandson on a Rudge. In the above picture Noble and Rowlandson occupy the Clyno sidecar outfit, whilst Newsome is seated on the running board of the Sunbeam car.

CURRENT CHAT

TIMES TO LIGHT LAMPS.

July	1	... ...	9.18 p.m.
,,	3	...	9.18 ,,
,,	5	... ...	9.17 ,,
,,	7	... ...	9.17 ,,

The War Office and Spares.

In the case of machines ordered for use in the Army, the War Office stipulates that in future spare valves for motor cycle engines shall be fitted in a wooden holder to protect the seat, the valve being held in place by a spring and cotter. Motor cyclists will know that a number of firms have made a practice of sending out their spare valves packed in this manner for some time past.

Second-hand Prices.

We give below the average prices of the various second-hand models offered for sale in the last issue of *The Motor Cycle*, and also the average prices for the last eight weeks. The prices quoted may be regarded as their standard value.

Make.	Year.	H.P.	Last week's average.	Average for past 8 weeks.
A.J.S.	1914	6 3-sp. sidecar ..	£71	£75
,, ...	1914	2¾ 3-speed	£45	£43
,, ...	1913	6 3-sp. sidecar ..	£55	£57
Ariel	1914	3½ 3-speed	£45	£41
Bat	1913	6 2-sp. sidecar ..	£53	£50
Bradbury ..	1914	6 3-sp. sidecar ..	£50	£61
B.S.A.	1914	4 3-sp. sidecar ..	£61	£55
,, ...	1914	4 3-speed	£48	£47
Chater-Lea .	1914	8 3-sp. sidecar ..	£78	£72
Clyno	1913	6 3-sp. sidecar ..	£60	£55
Douglas ...	1914	2¾ 2-sp. kick start	£42	£42
,, ...	1914	2¾ 2-sp. T.T.	£37	£39
,, ...	1913	2¾ 2-sp. kick start	£36	£36
Enfield	1914	6 2-sp. sidecar ..	£65	£65
,, ...	1914	3 2-speed	£42	£41
,, ...	1913	6 2-sp. sidecar ..	£50	£53
Humber ...	1913	3½ 3-speed	£35	£36
,, ...	1913	2¾ T.T.	£25	£28
Indian	1914	7 2-sp. sidecar ..	£68	£63
,, ...	1913	7 2-sp. sidecar ..	£55	£55
James	1914	4½ 3-sp. sidecar ..	£52	£53
Matchless ..	1914	7 3-sp. sidecar ..	£72	£75
,, ..	1913	7 3-sp. sidecar ..	£52	£56
New Hudson	1914	6 3-sp. sidecar ..	£55	£60
,,	1914	4 3-sp. sidecar .	£52	£49
,,	1913	4 3-speed	£35	£35
N.U.T.	1914	8 3-sp. sidecar ..	£60	£64
Premier ...	1914	7 3-sp. sidecar ..	£75	£68
,, ...	1914	3½ 3-sp. sidecar ..	£55	£50
,, ...	1913	3½ 3-speed	£39	£39
P. and M...	1914	3½ 2-sp. sidecar ..	£69	£64
Rover	1914	3½ 3-sp. sidecar ..	£52	£52
,, ...	1913	3½ 3 sp. sidecar ..	£46	£44
Rudge	1914	5 Multi sidecar..	£50	£56
,, ...	1914	5 Multi	£46	£46
,, ...	1913	5 Multi	£36	£39
Scott	1914	3¾ 2-speed	£50	£47
,, ...	1913	3¾ 2-sp. sidecar ..	£45	£44
Sunbeam ..	1914	6 3-sp. sidecar ..	£74	£74
Triumph ..	1914	4 3-sp. sidecar ..	£58	£54
,, ...	1914	4 3-speed	£45	£44
,, ...	1914	2¼ 2-speed	£35	£34
,, ...	1913	3½ 3-sp. sidecar ..	£45	£46
,, ...	1913	3½ F.E.	£35	£35
Zenith	1914	8 Gradua sidecar	£55	£57
,, ...	1914	4 Gradua sidecar	£55	£55
,, ...	1914	6 Gradua	£45	£49

Magneto Position.

So much interest having been taken in the British-made magneto, the position of British magneto manufacturers is outlined in the present issue, and the progress recorded since our last reference to the subject.

Obtaining a Recruit.

A native of Ceylon, who had been contemplating the purchase of a motor cycle, happened to see in a street in Colombo a scrap of paper with a picture of a machine on it. The paper turned out to be a page, torn from *The Motor Cycle*, containing an advertisement of the Hobart, the result being that the man sent an order to the Hobart Bird Co. for one of their 2¾ h.p. machines.

A.A. and M.U. Notes.

LOCAL LIGHTING REGULATIONS FOR SIDECARS.—In these days of reduced lights on motor vehicles, it should be noted that in certain places where bye-laws are existent, rendering it compulsory for three and four-wheeled motor vehicles to show two white lights to the front, summonses are being taken out against motorists who omit to carry the additional light.

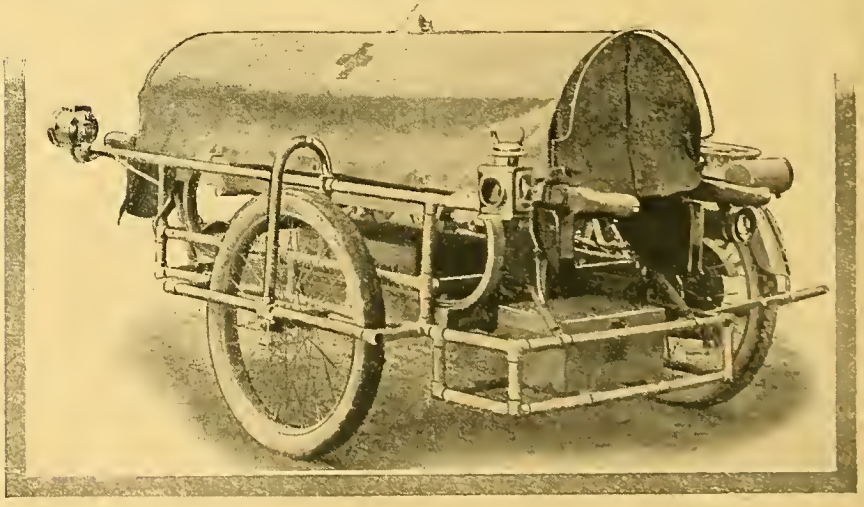
The following are the counties and towns in which there is an obligation upon motorists to show two white lights to the front, the lamps to be situated one on either side of the machine. The places are: County Councils of Glamorganshire and Staffordshire, Town Councils of Neath, Merthyr Tydfil, Hanley, Dudley, Newcastle-on-Tyne, Stafford, Monmouth, and Birmingham (the latter only during fog).

EXCESSIVE SPEED WARNINGS. — The authorities at Hucknall Torkard, Notts., have communicated with the Automobile Association with regard to the excessive speed at which numerous motorists pass through this district. The local authorities are reluctant to take drastic steps, but they feel it their duty to protect the public interests. They, however, hope that this warning will prevent any necessity for action by the local police.

Complaints have also been received by the A.A. regarding the speed of motor vehicles travelling through Horley (on the Brighton Road), and as accidents have resulted the authorities are being approached to take strong action against drivers travelling in this district at excessive speed.

SPECIAL FEATURES.

THE BRITISH MAGNETO SUPPLY.
A CHAIN GEAR BOX.
MILITARY MOTOR CYCLING MATTERS.



Improved pattern sidecar ambulance designed by Mr. T. H. Henderson, Superintendent of the St. John Ambulance Brigade, Randwick Division, New South Wales. It is mainly intended for city accident work, and many, we are told, have already been put into service. The bicycle is a 7-9 h.p. two-cylinder American Pope. Great attention has been paid to the suspension, and the tyres are 700 × 85 m.m.

Features of This Issue.

An exclusive illustrated description of the Irish open twenty-four hours trial appears in this issue, as also the week-end doings of the Midland Motor Cyclists Volunteer Corps—a week in advance of other journals.

A Spanish road race which resulted in a British victory is also illustrated and described, in addition to our regular features and other special articles.

Suggested Race for Officers at Brooklands.

An officer writes suggesting that there should be motor cycle races at Brooklands for the many officers now quartered in and around Aldershot and in the Brooklands district. The writer mentions that he has many officer friends who would compete.

We are afraid that the present condition of the track would render long distance events impossible.

The War Funds.

Continuing our practice of quoting some of the war funds, we may mention the following totals at the beginning of the week :

Daily Telegraph Belgian Fund	£148,599
Queen's Work for Women Fund	£160,207
National Committee for Relief in Belgium	£442,000

The Despatch Riders' Section.

We recently met Sergt. Albert Milner, the Birmingham motor cyclist, who will be recalled as an expert trick rider on a sidecar and Levis motor bicycle. Milner enlisted with F. C. North (the Ariel rider) and H. R. Davies (of Sunbeam fame) last autumn, but having experienced a fall and consequent trouble with his knee-cap, was detained in England, and is now at the Signal Depot, where despatch riders are trained. In charge of his section is Lieut. Busby, and a fortnight ago Sergt. A. J. Sproston took up his duties at this centre. As may be imagined, the despatch riders' training centre is a hive of activity. There is an over-abundance of applications for service in this section, and men are often on the waiting list for weeks.

An American Reliability Trial.

Californian motor cyclists have recently held a 640 miles reliability trial of a most gruelling nature, mainly through the burning, shifting sands of Southern California. Twelve competitors faced the starter at Los Angeles, and seven finished to schedule time on the following day. The temperature throughout the run was in the neighbourhood of 120°. The seven riders who made perfect scores were mounted on the following makes : Harley-Davidson (1), American Excelsior (3), Henderson (1), Indian (1), and Thor (1).

Belgian Government and Motor Cycles.

H. G. Bell, formerly of F.N. (England), Ltd., is now temporarily in the service of the Belgian Government. We had the pleasure of meeting him in the Midlands last week, whither he had journeyed in connection with orders for cycles and motor cycles for the Belgian Army.

The 500 c.c. Records.

There was a slight error in the figures sent to us in connection with the recent record made by Lavanchy on the 3½ h.p. Motosacoche. His best time for the kilometre was given as 27⅘s., whereas it should have been 27⅖s., which just beats O'Donovan's Brooklands record made last year. Recent records for the flying kilometre are as follows :

O'Donovan (3½ Norton) 27.6s. (81.1 m.p.h.)

Lavanchy (3½ Motosacoche) 27.4s. (81.6 m.p.h.)

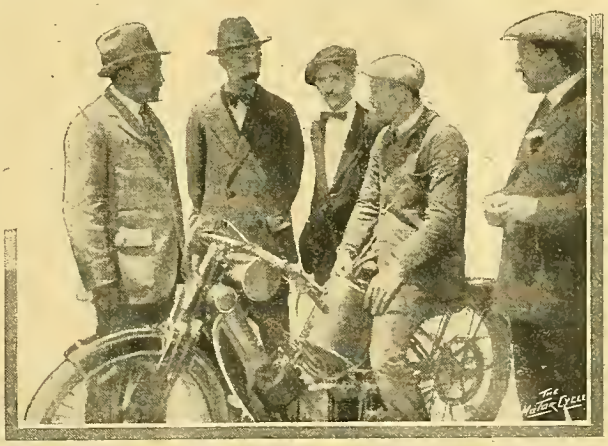
O'Donovan (3½ Norton) 27s. (82.8 m.p.h.)

Motor Cycles used in the Italian Army.

We mentioned last week the fact that the Italian authorities are alive to the value of the motor cycle in warfare, as are the British authorities, and we now hear that most of the racing men, including Baj Badino (the well-known Douglas rider), Cerizza, Guzzi, Scotti, and Monti, are at the Front. Since mobilisation the Italian Government has bought up practically all the motor cycles over 3 h.p. considered suitable for war service. The four most prevalent types are British-made machines, viz., Triumph, Rudge, Sunbeam, and Lea-Francis. Among the sidecars which are used for the transport of officers, the Motosacoche and 7 h.p. F.N. are pre-eminent. The purchases included private owners' machines, and the price in each case was fixed by a Commission of motor cycle experts and officers. Among the experts were several well-known sportsmen of the Moto Club Italia, and their ruling gave entire satisfaction. The machines thus obtained were used in the formation of a motor cycle corps which is established in Monza, together with the Automobile Corps.

Independent of this section are the Volunteer Motor Cyclists, who use their own machines, and are now being instructed in Gallarate.

With the big demands for motor cycles made by the Italian Government, it will occasion no surprise to learn that there is a scarcity of motor cycles at present, and it is unfortunate that British manufacturers are not in a position to take advantage of it.



The Spanish 130 miles road race. Discussing events with the winner, M. Lliviria, who rode a Scott. He did not use goggles, and averaged forty-five miles an hour. (See page 16.)

Lightweights in America.

No doubt influenced by the progress in England, America is now turning her attention to the lightweight motor cycle. The bad roads in the States have delayed the production of the smallest and lightest power propelled two-wheeler.

Stolen Machine.

A 1911 Triumph motor cycle, engine No. 1,319 B11, Stelastic tyre on rear wheel, Dunlop on front, free engine, was stolen from Stephenson Place, Birmingham, last Saturday. The owner, Mr. F. E. Tims, 146, Wheelwright Road, Erdington, offers £1 reward for information leading to its recovery.

Sauce for the Gander.

A superintendent of police appeared last week at the Stroud Police Court charged with having driven a motor cycle in a dangerous manner. The evidence was very conflicting. The prosecution alleged that the motor cycle had been driven "very fast," while the defence estimated the speed at from two to four miles per hour. From what we know of police estimates of pace, we should therefore be inclined to divide by the usual factor and to place the speed at ½ m.p.h. The defendant said that he rode out of George Street at a speed slower than a man could walk! A fine of 10s. was imposed.

The Road Board.

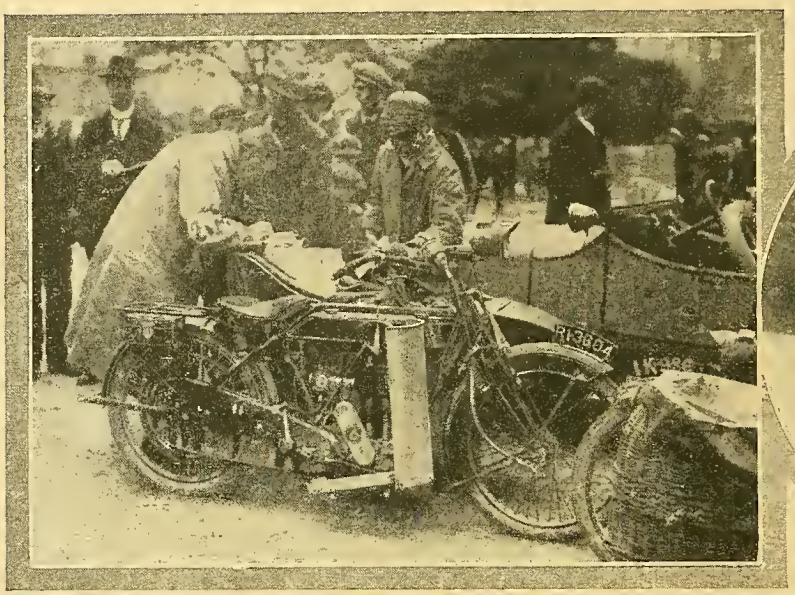
In opening the County Councils' Association Exhibition of road materials and machinery and appliances for road construction at the Royal Horticultural Hall, Westminster, on Friday last, Mr. Walter Long passed some remarks on the need for reform in traffic control. He also criticised the Road Board's practice of stipulating, when making grants to urban and county authorities, that the authorities themselves should bear portions of the costs entailed for the work in hand. In this way, said Mr. Long, ratepayers found at the end of a year or two that, though millions had been paid from the Exchequer, there was no relief from their burdens because of the demands accompanying the gifts.

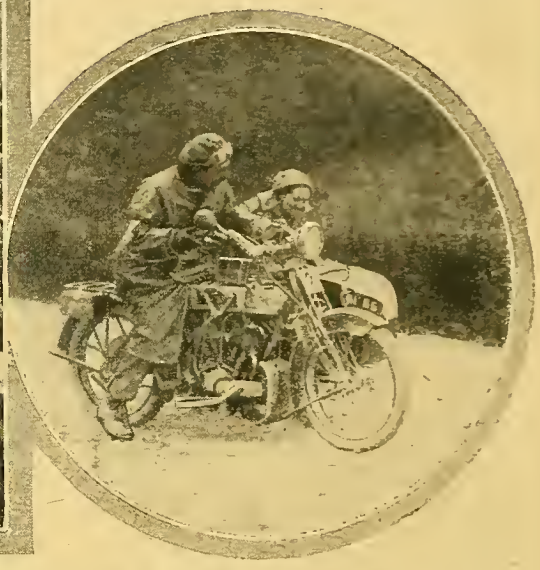
Camping Holidays.

Military camps have absorbed most of the young and able-bodied male members of the Amateur Camping Club, but the club's flag is kept flying by the ladies and the veterans, and the first of a series of holiday camps is being held this week at Cropthorne, near Pershore, a convenient centre for Shakespeare's Country. On Saturday the tents will be pitched at Symond's Yat, on the Wye, and then for consecutive weeks the camping centre will shift to Llangollen, Chelford, Grasmere, Windermere, Ullswater, Hexham, Ilkley, and "somewhere in Derbyshire." The club's headquarters are at 4, New Union Street, Moorfields, E.C.

Irish Open Twenty-four Hours Trial.

35 Starters—29 Finish within Time Limit. Only 8 Clean Ascents of Glengesh Hill.





There were several sidecar outfits in the Dublin and District M.C.C.'s trial, and in some cases the passenger was a lady, as shown in these two pictures. (Left) W. H. Allen (3½ h.p. Sunbeam and sidecar) signing the sheet at a control. (Right) A. W. Mooney (6 h.p. Bradbury and sidecar) finds Glengesh a stiff proposition.

THE open twenty-four hours trial of the Dublin and District Motor Cycle Club received a very fair measure of support considering the existing state of affairs. The event took place on Friday and Saturday last, and every one of the thirty-five entrants were sent away at one minute intervals from Drumcondra Bridge from eight o'clock onwards. The Cork Club reciprocated the support given to their open "twenty hours" at Whitsuntide by sending up half a dozen competitors.

Climbing Glengesh Pass.

The trial, as in previons years, was a 400 miles run to Donegal and back, and Glengesh Pass—the steepest hill to be found on any main road in Ireland—was the crucial part of the test. It was a condition necessary to the winning of a first-class award that a clean ascent of the hill should be made at the first attempt, a secondary one being that the rider should not lose more than ten marks at the open controls. We may anticipate by saying that of the twenty-five competitors who got over the hill only nine made clean ascents—eight solo machines and a cycle car—and as amongst those who ranked as failures were included experts of the class of C. B. Franklin and A. W. Mooney, it can well be imagined that the conditions were very unfavourable. Glengesh has never been publicly climbed by a 3½ h.p. machine and sidecar, and this year it was in a worse state than ever. Not one of the sidecars went round the first of the hairpin bends under its own power, and most of the singles that did so immediately came to grief through the combination of surface and gradient. It was universally agreed that the hill was in much worse condition than on the occasion of any previous trial, chiefly owing to the long spell of dry weather preventing the new metal and earth that were spread on the road in the spring becoming consolidated.

The Starters.

The weather conditions gave promise of a very agreeable time as the men were sent away from Dublin. Previously their toolbags were sealed at Wallen's Garage, repairs, adjustments, and breakages *en route* being penalised. J. Brown led the way on his Rover at eight o'clock, and at one minute intervals the field was despatched in the following order:

J. Browne (3½ Rover)
A. W. Mooney (6 Bradbury sc.)
P. Grimes (5 Indian)
T. Woods (4 B.S.A.)
W. J. Henderson (7-9 Harley-Davidson sc.)
E. J. Jack (3½ Rover)
J. Doleman (3½ Rover)
J. F. A. Day (3¼ Sun)
D. Allen (2¼ Sun)
C. S. Kettle (4 B.S.A. sc.)
M. English (2¾ Douglas)
F. L. Dooly (4 sc.)
W. H. Freeman (7-9 Indian)
G. Hartigan (3¾ Scott)
C. B. Franklin (7-9 Indian sc.)
T. Toole (4 B.S.A.)
W. W. Wayte (7-9 Harley-Davidson sc.)
Geo. Rocho (3½ Rover)
J. C. Cunningham (4 Bradbury)
H. W. Allen (3½ Sunbeam sc.)
C. Taylor (3½ P. and M.)
T. W. Ladd. (4 Bradbury)
J. O'Dwyer (4 B.S.A.)
A. J. Winstanley (3½ Zenith)
R. Walshe (4 B.S.A.)
R. Swanton (3½ Indian)
F. J. Travers (5 Indian)
J. J. White (2¼ Sun)
R. Sullivan (5 Indian)
D. S. Dick (2¼ New Hudson)
D. Doolin (10 A.C. c.c.)
J. M. Gardner (Lagonda c.c.)
R. Chambers (6 New Hudson sc.)
A. Blair (3¾ Scott)
D. Parbury (7-9 American Excelsior)

In the first section of 101 miles to Belfast there was only one check, viz., at Dunleer, and Belfast was reached by the early arrivals at one o'clock, an hour being allowed for supper. There were few missing at this control, but amongst them was the holder of the Rudge-Whitworth Cup, Henderson, who won it last year on a 5-6 h.p. Rudge solo, and who was this year on a 7-9 h.p. Harley-Davidson with sidecar. He was in tronble before the dawn came owing to the loss of a high-tension terminal. A. W. Mooney came in with his wife on the carrier, having picked up a man who had been involved in a motor car accident ontside Belfast.

Dawn came before the last of the men left Belfast for Londonderry, a fortunate circumstance, for the run across took the men over the Glenshane Pass, a crossing of the Spern Mountains in Co. Tyrone, that presented sufficient difficulties without the added terrors of darkness. Most of the men made clean ascents. It was one of the three non-stop sections of the trial, and the only one on the first half of the journey. There were many cases of mysterious overheating, due to the fact that the hill rises imperceptibly for a considerable distance before the actual Pass is reached. Most of the men were on time at the breakfast control at Londonderry. D. S. Dick, who had the pluck to start on a single-geared two-stroke New Hudson, was amongst the late.

A Trying Run.

The journey across the Co. Donegal to Glengesh Hill was a very trying one, the roads being in an appalling state of looseness. Those who met with no trouble were only able to average twenty miles an hour by going all out, and those who punctured—a very common experience—could not pick up time. At Ardara, the town at the foot of the hill, there was a fifteen minutes stop, and it was noted that there was little of the usual waiting outside the town to kill time.

Irish Open Twenty-four Hours Trial.—

Clean Ascents of Glengesh.

The climb over Glengesh reduced the possible number of gold medal winners to nine. The eight solo riders who made clean ascents were :

J. C. Cunningham (4 Bradbury)
W. H. Freeman (7-9 Indian)
E. J. Jack (3½ Rover)
J. Doleman (3½ Rover)
T. Toole (4 B.S.A.)
R. Walshe (4 B.S.A.)
G. Hartigan (3½ Scott)
R. Swanton (3½ Indian)

The only passenger-carrying machine to make a clean ascent was D. Doolin on a 10 h.p. A.C. light car, but he lost the possibility of gaining a gold medal by having to stop to repair a puncture in the non-stop section, which ran on to Donegal. Every sidecar machine failed before the first of the two hairpins was reached. Most of the singles also failed to get around the first corner. This was altogether due to the state of the surface, which was admittedly abnormally bad, as, while the hill is a very severe climb, it is not an impossible one, as is evidenced by the fact that two years ago T. E. Greene got up on a single-geared 3½ h.p. Rudge, and last year, in the trial, Hugh Gibson took a 2¼ h.p. Clyno two-stroke over it. Indeed, many of those who failed on Saturday were successful in previous years on similar machines, A. W. Mooney being a case in point.

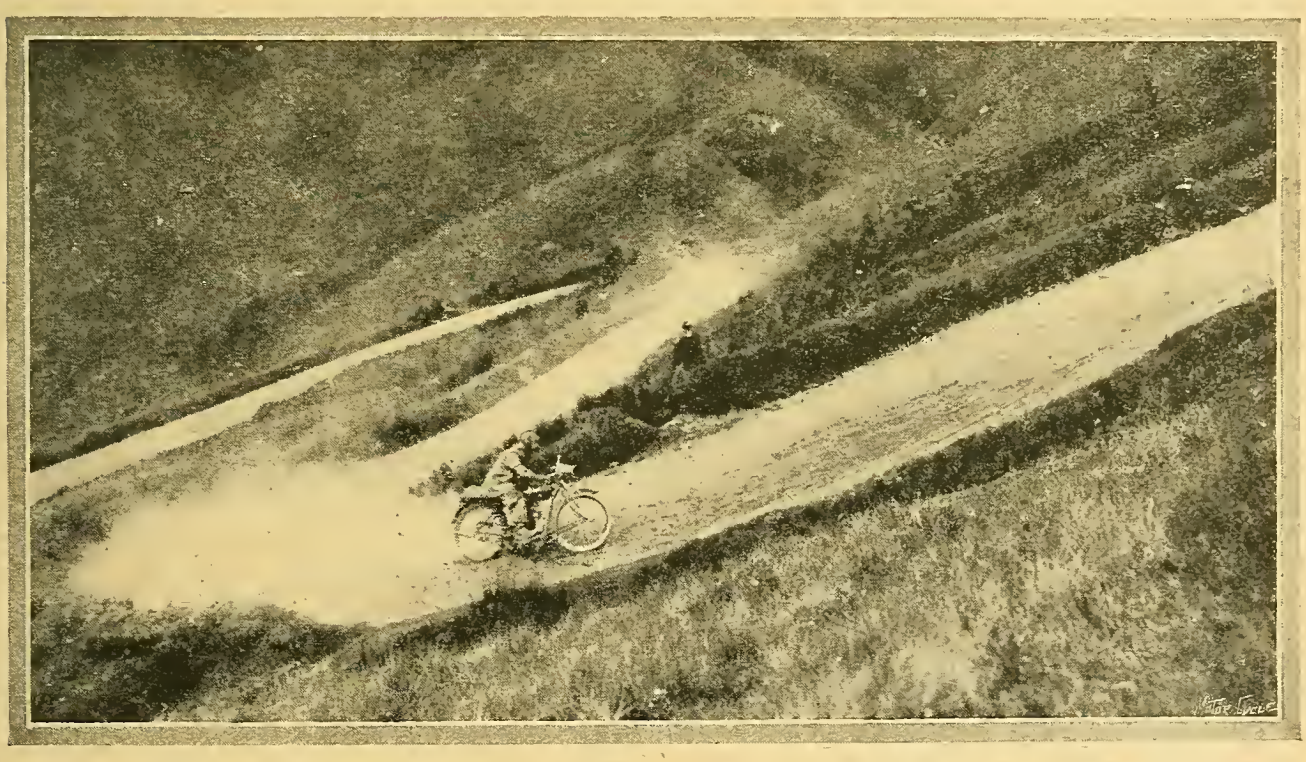
There was some lively scurrying across the country to the Donegal control, but twenty-five of the thirty still in were on time or near it when the luncheon stop was reached. After an hour's delay, the third and final non-stop section to Enniskillen was entered on, but the surfaces gave more cause of complaint than the gradient. Rain commenced to fall before Cavan was reached for tea, but from that point onwards to the finish good roads were traversed, and all of those who checked in at the last open control completed the sixty miles to Dublin with the exception of Blair (3¾ h.p. Scott). Freeman and Franklin fell asleep on the way and found the ditches, but otherwise there was no incident of note. There were two secret checks in this section to assist in the possibility of finding a winner in the event of a tie.

Finishers to Time.

The following completed the trial within the allowed margin of 30m. of the scheduled time :

J. Browne (3½ Rover)
A. W. Mooney (6 Bradbury sc.)
P. Grimes (5 Indian)
T. Woods (4 B.S.A.)
E. J. Jack (3½ Rover)
J. Doleman (3½ Rover)
J. F. A. Day (2½ Sun)
D. Allen (2¼ Sun)
M. English (2¾ Douglas)
F. L. Dooly (4 B.S.A. sc.)
W. H. Hartigan (3¼ Scott)
C. B. Franklin (7-9 Indian sc.)
T. Toole (4 B.S.A.)
Geo. Roche (3½ Rover)
J. C. Cunningham (4 Bradbury)
H. W. Allen (3½ Sunbeam sc.)
C. Taylor (3½ P. and M.)
T. W. Ladd (4 Bradbury)
J. O'Dwyer (4 B.S.A.)
A. J. Winstanley (3½ Zenith)
R. Walshe (4 B.S.A.)
R. Swanton (3½ Indian)
F. J. Travers (5½ Indian)
J. J. White (2¼ Sun)
R. Sullivan (5 Indian)
D. Doolin (10 A.C. c.c.)
J. M. Gardner (Lagonda c.c.)
R. Chambers (6 New Hudson)
D. Parbury (7-9 American Excelsior)

Henderson retired near Dundalk; Kettle was run into by another competitor and his sidecar broken; Wayte retired at Glengesh; Dick was not reported after Londonderry; and Blair unfortunately had to retire on the last section of the journey.



The double hairpin corners on Glengesh Hill—the *picce de resistance* of the Irish twenty-four hours trial. Just as this photograph was taken an Indian rider had tackled both corners successfully.

DEFINITION OF A CYCLE CAR—IRISH SOLUTION.

AT a recent conference between the Irish Automobile Club and the Motor Cycle Union of Ireland concerning the control of cycle car competitions in Ireland, it was decided to retain the 7 cwt. weight limit, but such weight is to be exclusive of hood, screen, spare wheel, oil, and petrol. The engine limit is still 1,100 c.c.

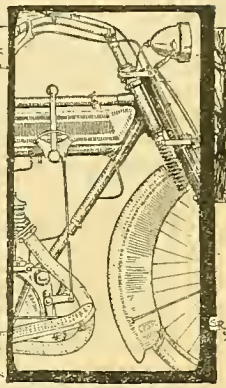
It will be within the memory of most of our readers that the R.A.C. and the A.C.U dropped the weight limit altogether about eighteen months ago. At the time we advocated reducing the engine limit to 1,000 c.c. also, but this part of our suggestion was not adopted, the present A.C.U. definition of a cycle car being simply that the engine capacity is not to exceed 1,100 c.c. Thus, such well-known vehicles, built on strictly large car lines, as the Stellite, Morris-Oxford, Standard, Singer, and many others, are, according to the A.C.U., cycle cars.

This new move on the part of our Irish friends does not appear to be a forward one. In all competitions, excepting purely speed events, it is very uncommon to find a competing car minus hood and screen, so that competitors in Irish events will, before having their cycle cars and light cars weighed, have to take off hood and screen, and empty the petrol tank. In a big open trial trade drivers will not worry about details like these, but it will not encourage the private owners.

BI3

A Road Race in Spain.

Scott Rider wins at an Average Speed of 45 m.p.h.



WITH threequarters of Europe engaged in the bloodiest struggle in history, and motor contests consequently things of the past, it is quite a relief to hear of a road race for motor cycles held recently in Spain. Until within a couple of months ago our Italian friends ran some occasional trials, but now that they have joined the Allies, competitions with them are out of the question, practically all the well-known riders being either in the Army or engaged on some kind of Government work.

This Spanish race was organised by the Motor Club of Madrid, and, compared with previous events, it appears to have been indeed a severe test. The total distance was 206 kilometres, or 130 miles, and there were many hairpin corners, besides the crossing of two mountain ranges. On each side of the latter the gradient, of an average of 12%, extended for about ten miles. A continuous ten miles climb at racing speed on a hot day is a good test.

SCENES IN THE SPANISH ROAD RACE.

(Upper) The Scott team, showing the winner, M. Lliviria, on the right.
(Middle left) A Motosacoche rider rounding a bend.
(Middle right) Victor Landa (T.T. Rudge Multi) third to finish, just after passing the timekeepers.
(Lower) Rippolez, one of the Scott riders, starts on the second lap.

Competitors were divided into three classes, the engine limits being 300 c.c., 500 c.c., and unlimited. The winner, M. Lliviria, rode a Scott, and covered the total distance in 2h. 52m. 1s. (=45.25 m.p.h.) The first dozen finishers arrived in the following order:

Lliviria (Scott).
Landa (Indian).
Landa (Rudge).
Cardenal (Indian).
Adariaga (Scott).
Santoyo (Scott).
Rippolez (Scott).
Manzarraga (Indian).
Pidal (Indian).
Rudernos (Indian).
Rivera (Indian).
Azqueta (Indian).

Dunlop tyres appear to have been used not only extensively but successfully, as riders of machines so fitted filled the leading places in each class.

Midland Motor Cyclists' Volunteer Corps.

THE WEEK-END AMBULANCE PRACTICE.

CORPS drills in connection with the team displays took place every night during the past week. On Saturday next the men will give a military display in aid of the Birmingham charities. This is the first occasion that a display of a military nature by motor cyclists has been given.

On Sunday the corps paraded for a field day. The corps was divided into troops under the officers, each troop having its own duty to carry out. A Troop came in off patrol and camped for the night, throwing out a screen of vedettes and outposts. These were driven in by B Troop, who made an attack on the camp, which was repulsed.

B Troop now attempted to force a despatch rider through to their reinforcements, represented by C Troop. The despatch rider was captured, and A Troop also sent out a despatch rider to their main body, represented by D Troop.

Ambulance Work.

It was assumed that a number of men had been wounded and left on the field. The ambulance section now came on the scene, but before the ambulance could become effective it was not only necessary to beat off the enemy, but also to bring in the wounded men.

Riders now went out and picked up the wounded men, placed them on their backs, mounted, and brought the wounded in—a smart piece of work.

The enemy had now retired, and the ambulance was sent out. The corps has stretchers attached to the sidecar punt. The sides of these stretchers can also be used as punt poles when joined together. First aid was given, and the men treated in a satisfactory manner.

An outpost section of the M.M.C.V.C. in action.

The whole corps was shortly afterwards assembled, and a route march to Birmingham ended a useful day's work.

THE UTILITY OF MOTOR CYCLISTS IN WAR.

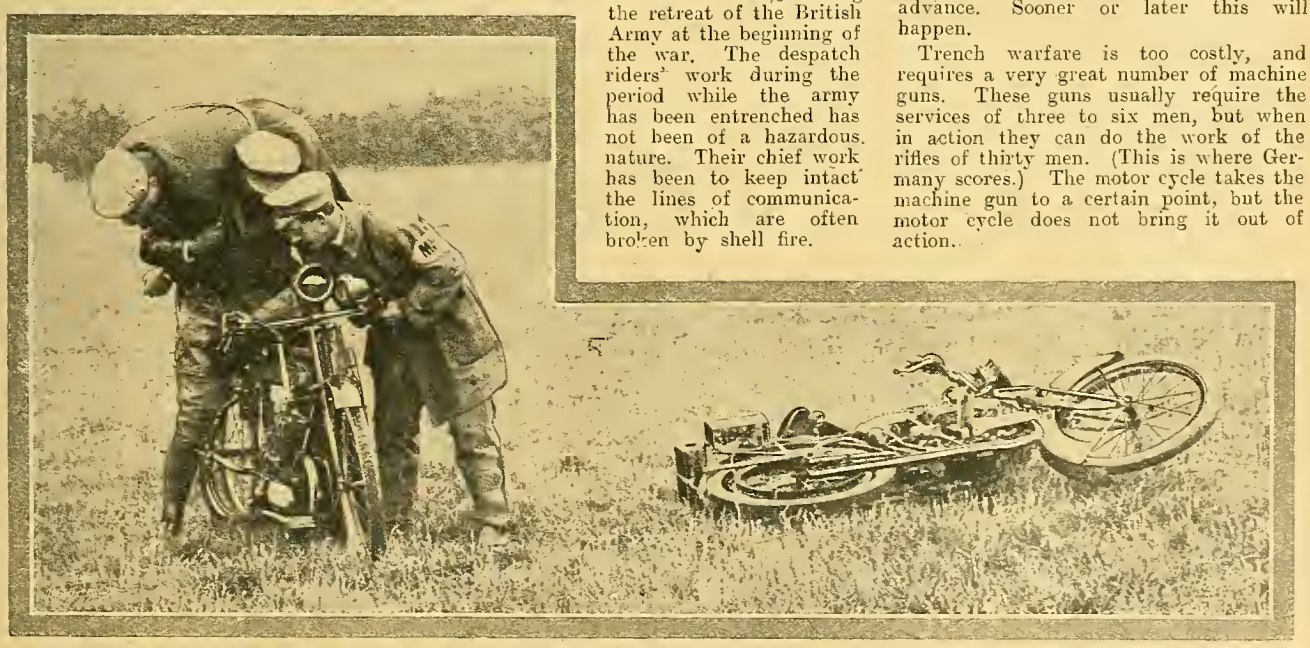
The Commandant, commenting on the utility of motor cyclists in the present war, expressed the opinion that the motor cycle could serve a purpose equally as useful in war as in the time of peace.

The Motor Cycle states that 75% of the work done by despatch riders is by no means dangerous. Possibly this is correct, but this figure was in the neighbourhood of 20% during the retreat of the British Army at the beginning of the war. The despatch riders' work during the period while the army has been entrenched has not been of a hazardous nature. Their chief work has been to keep intact the lines of communication, which are often broken by shell fire.

The machine gun is also brought to a point near the fighting by motor cyclists. Seldom are the drivers under fire when running along the road. Usually the motor cycle and gun chassis are left a mile or two behind the first line trench. The guns are mounted on tripods. Therefore it is apparent that under the existing conditions the claim of 75% of work done is not dangerous is a reasonable statement.

Against this, as *The Motor Cycle* points out, much depends on the man's temperament. Many men doubtless consider they are constantly doing dangerous work. They are perfectly correct, but not the hazardous duty which will be required of them when the Allies advance. Sooner or later this will happen.

Trench warfare is too costly, and requires a very great number of machine guns. These guns usually require the services of three to six men, but when in action they can do the work of the rifles of thirty men. (This is where Germany scores.) The motor cycle takes the machine gun to a certain point, but the motor cycle does not bring it out of action.



AMBULANCE PRACTICE. Two members of the Midland volunteers bringing in a wounded comrade from the field of battle.

After the day's work—yarns round the camp fire. A scene at last week-end manœuvres of the Midland Motor Cyclists' Volunteer Corps.

What can trained motor cyclists do when the Allies advance? Their mobility gives them possibilities which no other arm of the service, except aircraft, possesses. They make ideal mobile scouts. During the advance motor cyclists could be employed as reconnoitring patrols, co-operating with units of the machine gun sections. Bridges, stations, and villages could be seized and held until the slower-moving units have had time to come up. Mobility also enables motor cyclists to be of very great service to the Royal Engineers, assisting in their demolitions and constructions, laying of cables, and keeping the lines of communication.

Their mobility gives them an advantage over cavalry, hence their value to the Headquarters Staff, Divisional and Brigade Commanders is great. The despatches entrusted to them can be delivered more rapidly and over greater distances.

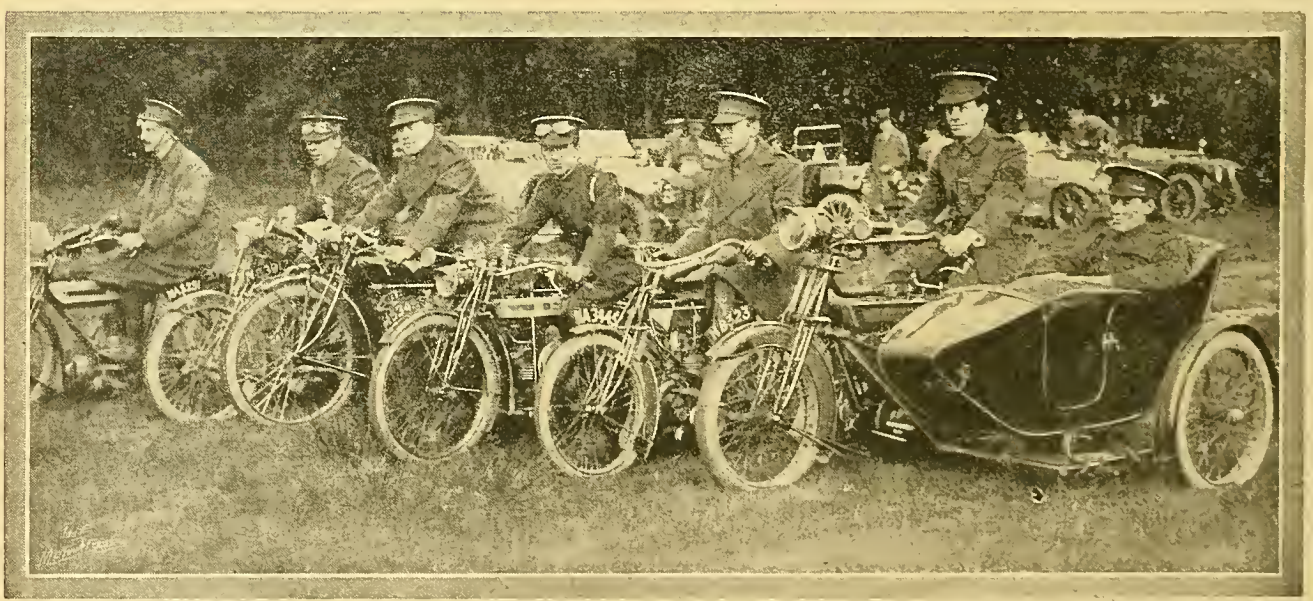
The artillery units often require information of various positions, etc. Usually the O.C. requires the information quickly. Here again motor cyclists can be very prominent.

Acting with the corps which has the advantage over them in mobility—the Flying Corps—the motor cyclists' utility would be great. They could give assistance in conveying information from the aircraft to headquarters, establishing new bases, keeping up communication, and many other important duties.

The motor cyclists' part in a retreat (the Commandant gave it as his confident opinion that it will not occur again to the Allies in the present war) would be to destroy, or rather to assist in destroying, bridges, railways, and other positions, and thus hamper the enemy.

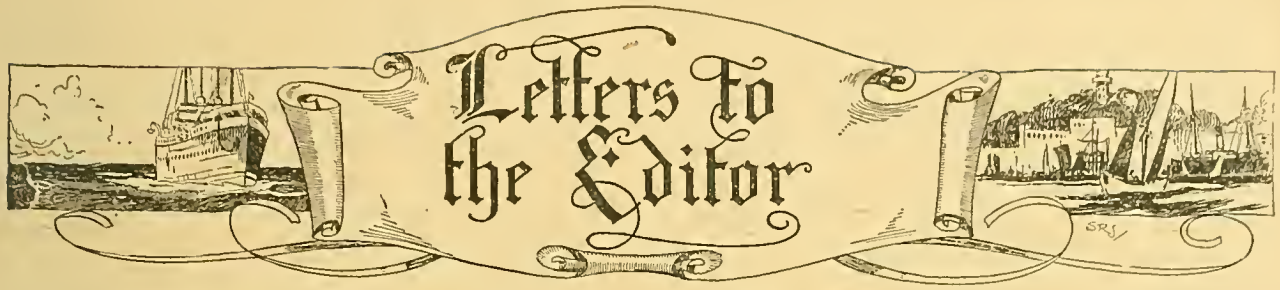
The motor cyclist can co-operate with all arms of the Service, but to serve the purpose intended, he must be a trained man. His training would be one which requires the highest intelligence; in fact, greater than that required of any other arm of the Service. The courage required of him would also be above the average.

The motor cyclist, therefore, will have ample opportunities to gain the premier award in this world's competition—the V.C.



THE NATIONAL VOLUNTEER MOTOR RESERVE.

Motor cyclists attached to the Manchester Section. The picture was taken at Tatton Park, Lord Egerton's estate, near Knutsford, which is lent to the Manchester Volunteers for week-end drills.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Freak Hills in Derbyshire.

Sir,—It may interest readers to know that Hunger Hill, Cathole, was climbed both by Mr. Waddington, of Chesterfield, and myself, each with 3½ h.p. engines with sidecars, and passengers approximately weighing 28st. I might also add that the hill was in much worse condition then than at present. I should have loved to have been with the party when making their attempts, as I have had some enjoyable hours' sport on Hunger in company with other freak climbers.

JACK HASLAM.

Fitting a Sidecar.

Sir,—A week or two ago I read an article in *The Motor Cycle* on tho fitting of sidecars, in which the writer contended the sidecar wheel should be about two to three inches in front of the back wheel. Since then I have seen an article in a contemporary in which it is stated that the axes of the two rear wheels should coincide.

As this is a matter which is of great interest to me, and no doubt to thousands of other sidecar riders, I think it would be very instructive to have a discussion, with your permission, on the correct position of fitting a sidecar to a motor cycle.

GEORGE E. RIGBY.

Clubs and the War Loan.

Sir,—With regard to the new War Loan, I should like to make a suggestion to the motor cycle clubs, many of whom have considerable funds in hand, and which at the present time are not being made use of, viz., to invest the cash in the War Loan. This will realise a better interest than can be obtained on a deposit account, and at the same time the money will always be readily accessible when wanted after the war. In addition to this, club officials will have the satisfaction of knowing that they are able to further even in a small way the complete success of the War Loan.

N. T. DOWNS.

[We must say that the suggestion made above strikes us as a particularly happy one.—ED.]

The Boycotting of German Motor Cycles.

Sir,—The response to my invitation for support in organising an anti-German boycott has been gratifying, although the actual number of letters I have received on this subject is but a small proportion of the total number of British motor cyclists. It was clear to my committee, however, at their last meeting that there is every probability of "Britisher's" proposals being successfully carried out, but it was felt that sentiment alone would not be sufficient to ensure their success. It is hoped that a conference will shortly be arranged with the Manufacturers' Union, and that as a result some practical scheme will be evolved whereby manufacturers and retailers can be protected from unwittingly dealing in German goods and the production of British substitutes encouraged. In this connection Mr. Hunt's excellent suggestions should be a considerable help, and much could also be done by the vigorous enforcement of the Merchandise Marks Act, which at present is in many ways a dead letter.

"Britisher's" proposal to enrol all the motor cyclists of the country for this specific purpose in the Auto Cycle Union for a nominal subscription shall have my committee's careful consideration, but there must be no suggestion that the A.C.U. is actuated by self-interest, whilst I would remark that the present subscription is, in fact, a nominal one!

T. W. LOUGHBOROUGH, Secretary A.C.U.

Sir,—With regard to the further communication in the issue of *The Motor Cycle* for June 24th under the signature of "Iddo," this gentleman is entirely wrong in stating that the patents of the N.S.U. do not apply to the 3½ h.p. and 6 h.p. engines. Certain of the patents which we have obtained possession of are used on both the 3½ h.p. and 6 h.p. twin, therefore the same applies whether a maker attempted to manufacture a 2 h.p. unit or a 6 h.p. unit. We are aware that there are other patents on the 6 h.p. unit which we have not attempted to conserve, but that will not have any bearing on any maker attempting to use patents used on the whole of the range of N.S.U. motor cycle engines of which we are the owners for the time being. As regards the second paragraph of "Iddo's" letter, really there is very little difference in the two engines. The wearing parts of one are interchangeable with the other, the only radical alteration being that, instead of fastening the engine to the frame by means of lugs cast on to the engine, we have reverted to the better liked type of plate fastening.

HUMPHRIES AND DAWES, LTD.

Plagiarism.

Sir,—Being a lover of British fair play, I think it only just and right to let you know that a local newspaper—*The Evening News*—has, for some time past, acquired the habit of copying paragraphs from *The Motor Cycle* and presenting them to the motoring public as being "specially written for *The Evening News*."

The offence is aggravated by the fact that the newspaper in question is incorporated with the (morning) "Press"—the acknowledged Government organ here—which has, until recently, shown anything but a friendly spirit towards "motor hogs" (the editorial pet name for motor cyclists). Latterly the management of the above journal has begun to realise that "motor hogs" form a very considerable section of the reading public, hence the inauguration of "Motor and Motor Cycling Notes."

The Motor Cycle paragraphs are cunningly worked into the body of the "notes," and not the slightest indication of their origin is given. I send you an example.

Christchurch, New Zealand. DISGUSTED.

[The cutting sent is actually word for word from *The Motor Cycle*.—ED.]

Collisions at Cross Roads.

Sir,—I note in the last issue of *The Motor Cycle* there is a reference to my accident at Tamworth on the previous Saturday. I write to you as there is something to be said on my side of the affair. Here was a cross-road, no warning posts, high hedges, and narrow roads. The hedges were so high that I noticed that unless it was a large covered car one could not see it over the hedge. The road I was on had a slight turn in it, and till I was twenty yards away I could not see the cross-road. I immediately applied my brake and blew my horn, but, owing to the high hedges, neither of us heard each other. I have written to the police at Tamworth suggesting that they should urge that danger posts be put up. I am an experienced motor cyclist, and have ridden for some years, and have already done 7,000 miles this year. Having a week-end leave I was riding from Winchester to friends in Cheshire to enjoy it.

Please insert this in your paper if there is room, as it may warn others of these cross roads. They are at Bonehill farm, off the Coventry road. I shall soon be on the road again.

FX 2563.

The Cost of Running.

Sir,—As a regular reader I have been much interested as to the details of "Running Costs," recently discussed in *The Motor Cycle*, and think you may be interested in the following particulars of a 3½ h.p. machine, which has been used in all parts of the country and in all weathers since June, 1913, and which I have now sold (in splendid condition) for considerably more than half its original cost! (The machine is a 3½ h.p. 1913 clutch three-speed Premier.) Total mileage 9,945.

Running Expenses.			
Petrol, 112¾ gallons	£10	9	9
Oil, 5½ gallons	1	9	8
Licences	3	15	0
Insurance	5	17	0
Law costs	3	2	3
Tyres, tubes, and belts	5	18	0
Lamps	1	15	0
Automatic pump		15	6
Overalls	1	0	0
Sundry repairs	11	5	0
Depreciation	25	0	0
Total	£70	7	2

This works out at a running cost of ¾d. per mile for petrol and oil. With depreciation the total cost works out at just over 1½d. per mile. No longer can it be said that motor cycling is expensive in relation to the pleasure and convenience it affords! If you care to publish these details, doubtless they will be of interest to new riders.

L. STANLEY PAGE.

English v. German Motor Cycles.

Sir,—May I say a word for a certain English-made motor cycle, which should appeal to "Iddo," the champion of the N.S.U.?

He asks for an engine with overhead inlet valve, gear-driven magneto, reliable, etc., etc. Has he considered the 3½ h.p. Rudge-Multi? It has the excellent type of valve he refers to. This design is certainly good, as the cool incoming charge impinges direct on the exhaust, and for theoretical reasons it is good, as the combustion head is more compact than the side-by-side valve type. The magneto is gear driven—in front of the engine it is true, but high up and well shielded, whilst the vernier adjustment is far superior to that on the German machine.

The N.S.U. two-speed gear is doubtless good; the Multi gear is delightful. Has the N.S.U. done anything to speak of, beyond giving satisfaction in private users' hands, such as a strenuous test like the Senior T.T. and countless Brooklands races and records besides reliability trials? The Rudge machine is fitted with the C.A.V. magneto; the earlier models were made in Stuttgart, but I believe I am right in saying the later models are made in England by Messrs. C. A. Vandervell.

I have ridden a 1913 T.T. Multi 9,603 miles, per speedometer, and I have yet to have my first involuntary stop or mechanical breakage, while the plating and enamel look like new.

Can "Iddo" do sixty miles per hour—by accurate speedometer, not guessing? Can he average ninety miles per gallon of fuel? Will a belt last him 2,500 miles? My Rudge has done, and will do, any of these.

The N.S.U. is a good enough machine, but if "Iddo" looks round he will find plenty of English machines that are better, and in fairness to our own makers I write this letter.

May I add I have no interest in the firm beyond that of a satisfied user. H. G. HARRISON.

A North Wales Test Hill.

Sir,—It seems to me, after reading Mr. Abraham's interesting article in your Summer Number, that these are the kind of trials we want to improve our machines for service under the present conditions. What do the party say to a hill which climbs 1,400 feet in about a mile, giving an average gradient of about 1 in 3.8? There is such a hill at Trefriw in North Wales starting by the bridge over the Crafnant river on the road leading to Lake Conlyd over the Creigian Gleision, which they might try. It has over a dozen hairpin bends, and on some of these I found gradients in the neighbourhood of 1 in 2.5 by the rough tests I made when I took my 2¾ Douglas up a few weeks ago. It is said by the people at the farms by the lake to be the first machine to get up. The gear was lowered by the adjustable pulleys to 11½ to 1, but otherwise the machine is an ordinary 1913 model T.T. Douglas without a clutch, and what made it more interesting was that the cylinders have not been cleaned for nearly 3,000 miles, and the climb was started on the spur of the moment with a fairly warm engine. I have no connection with the Douglas firm, but any credit for the climb must be given to the fine engine and the possibility with an adjustable pulley of suiting the gear to the work. R. C. MEESON.

Motor Cycle Front Hubs.

Sir,—I would like you to spare me a little space in your excellent paper to point out to "All Weathers" that the James hubs are really weather-proof. Instead of simply fitting a dust shield at the side of the hub, they screw end plates into it. The plate revolves with the hub, consequently there are no joints to let dirt in; but I find if I use oil it is thrown out through the oil cap. So now I use grease, and never have any trouble, and only have to add a new charge every 1,000 miles. I am surprised that such a vital part of a motor cycle has received such little attention by the designers. It will be a matter of general interest for readers to learn that the 4¼ h.p. James has Timken adjustable roller bearings in the front hub. I notice interest is now being displayed in spring frames, but nobody points out that the spring frame Indian is as perfect as one could wish. I found that my 1913 and 1914 models had no signs of side play at the pivoted chain stay joints or spring joints after 8,000 and 6,000 miles. I could do 420 miles in one day, but with a rigid frame 200 is quite enough. Why are front rim brakes still fitted? They only scrape the plating off the rim, and if they were of real use one dare not use them riding solo on grease, for a locked front wheel means a fall, whereas a locked back one does not matter much.

I would like to point out there are several machines with a tank control to the clutch. Now, if one is going along a main road and a cart suddenly swings out from a side street it is rather an awkward matter controlling the machine, for one has to adjust the throttle, declutch, sound the horn, and put the hand brake on; and you are expected to do all this with the right hand, and steer with the left.

I have no financial interest in any motor cycle firm, but merely desire to point out the merits of the only two machines I have liked out of eight. RED INDIAN.

Lending Spares on the Road.

Sir,—My faith in the freemasonry of the road has received a shock. Apparently the road sponger still exists. On Sunday, May 30th, I encountered in Abridge a young fellow who had come to grief with a machine through a broken plug. He explained to me that he had several spares at home, and asked if I could lend him one. I did so, the plug being a new Lodge. He then found his gear rod had come apart, and I put him right again by giving him the necessary bolt and nut. He took my address, and promised to return the plug and the bolt the next day. They have not yet come to hand.

I mention the incident not for the value of the articles, but as a warning to others not to part with similar accessories to strangers without some sort of guarantee that they will be returned. Perhaps the young gentleman concerned in this instance may have mislaid my address. If so, perhaps the publication of this letter will enable him to put himself right in my estimation.

A. WEBSTER.

SUMMARY OF CORRESPONDENCE.

We have received a long letter from Mr. T. W. Loughborough, the secretary of the A.C.U., in which he criticises the circular letter sent out to club secretaries by the Coventry and Warwickshire Motor Club; but as we have the assurance of the treasurer of that club that the question does not affect the A.C.U. (the 6d. affiliation fee amounting to only a small sum), but concerns rather the car members' fee of 7s. 6d. per head to the R.A.C., we do not consider it advisable to open our columns to a controversy on this subject.

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THE PERFECTION OF AIR-COOLING.

The Harcourt Radiators maintain the full efficiency of engine under the worst conditions: OIL CONSUMPTION HALVED. OVERHEATING ABOLISHED.

WHAT USERS SAY.

MR. H. LINDLEY, Less Yard, Meadow Lane, Leeds, (Humberette.) "I am pleased to say all overheating troubles have been overcome. Before fitting these I have tried repeatedly to climb one or two hills with two up on top gear, and could not do so. But now I have the satisfaction of going up on top gear and having a cool engine to finish with."

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J. Barran-Ackroyd, 147-9, Hyde Park Road, Leeds.
H. V. Prescott, 199, Deansgate, Manchester.
Robins & Day, Ltd., The Motor House, Rochester.

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GREATEST MILEAGE.

Proved by actual experience with different tyres.

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4,762 MILES STILL RUNNING.

(3,792 Miles Back Wheel—970 Miles Front Wheel.)

Another Pedley Tyre ran 4,206 miles

before the canvas began to show.

"Magnet" remarked this was the longest mileage ever obtained from one cover used solely on the back wheel.

(The machine was the big Clyno Sidecar Outfit.)

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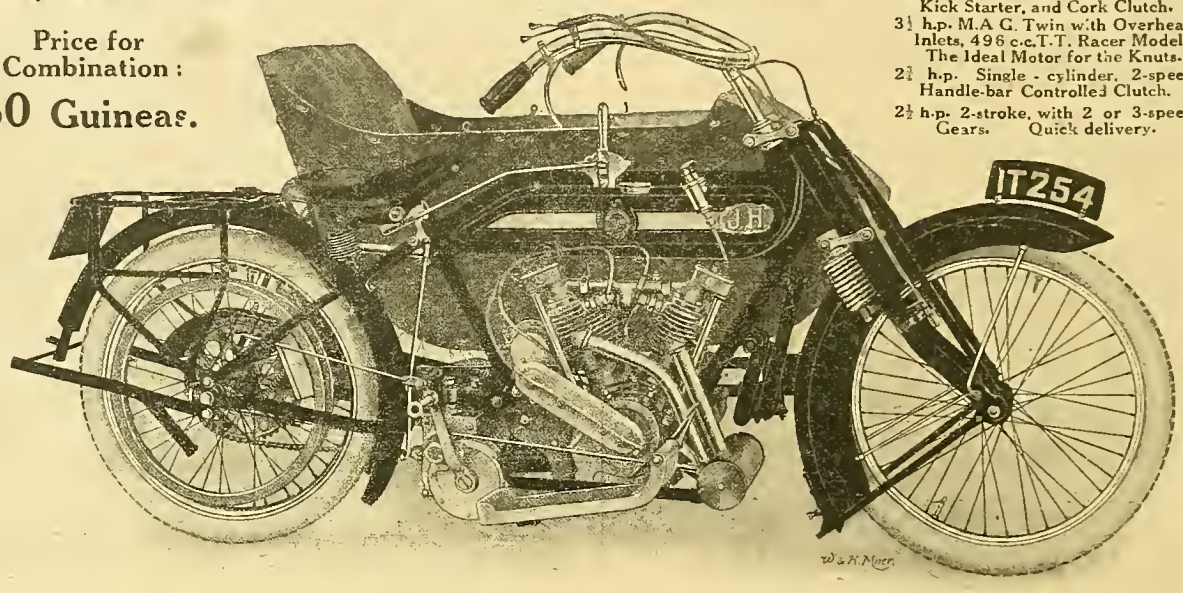
3½ h.p. M.A.G. Twin with Overhead Inlets, 496 c.c. T.T. Racer Model The Ideal Motor for the Knuts.
2¾ h.p. Single-cylinder, 2-speed Handle-bar Controlled Clutch.
2½ h.p. 2-stroke, with 2 or 3-speed Gears. Quick delivery.



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Write for Catalogue at once. JAMES HOWARTH, Proprietor.

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VALVE STRESSES.

Mr. Granville E. Bradshaw's Reply to his Critics.

MR. W. L. SPENCE, in replying to my article on the above subject, is quite incorrect in saying that I put "far too much emphasis on inertia stress when attention should really be directed more to heat stress." I should be very pleased to have Mr. Spence's views as to how heat can increase the *stress* in the valve. The heat certainly reduces the strength of a valve to resist the stress, but there can be no doubt of the fact that the chief stresses are induced by the items I mentioned.

Mr. Spence goes on to say that "if the chief stresses are caused by the valve stem, etc., being brought to rest in an extremely short space of time, then obviously one should have nearly as much trouble with the inlet valves as with the exhaust valves." I am at a loss to understand how Mr. Spence can have arrived at this conclusion from the reading of my article, for, as already mentioned, I clearly indicated that the strength of material in the cool valve may be 40 tons per square inch, and in the red-hot valve 1 ton (or less) per square inch; and whilst under equal conditions with regard to strength of valve spring, weight of valve stem, etc., both the inlet and exhaust valves are stressed the same amount, the reason why the exhaust valve gives all the trouble is because its strength to resist the stress is so very small compared with the strength of the inlet valve.

The valve with the shouldered stem, shown by my sketch (fig. 1), is not thoroughly bad, as Mr. Spence indicates, but is at least 10% stronger than if the small diameter stem were carried right up to the radius under the head, because in the first place the length of the small diameter part of the valve is reduced by 10%, and in the second place the part which gets really hottest, and is consequently considerably weaker, is largely increased in sectional area, and therefore more capable of resisting the stress.

Mr. Spence then states that, "assuming the primary importance of reducing inertia stress be correct, all that is necessary is to drill up the stem with a series of stepped holes, each advance being of smaller diameter than the previous one, and then reamed out to make a conical hole of fair outline." This is quite nice in theory, but does not work out in practice, and it is an idea that I tried over two years ago.

Whilst it practically removes the tendency of the valve to become over-stressed, it is not by any means a simple matter, with present-day materials, to drill and reamer out a valve stem in this way.

As I mentioned at the conclusion of my article, engine design of any sort is a compromise, and the best points of design have often to be discarded because some other detail is inferior in consequence. In this latter case the material left in the valve stem at the cotter hole proved so small that the cotter was cut through very rapidly, and new cotters were necessitated every 2,000 miles. In addition to this, the valve steel I have been using is of such tensile strength and hardness that it is almost impossible to find drills and reamers that will remove the material at all, much less do this cheaply enough to admit of the design being adopted.

With regard to Mr. A. W. Montgomery's letter, pointing out that a combination of steel and tungsten is utilised by a certain American firm in the manufacture of valves, I note that he states he has used a set of these for six months without stretching, breaking, or *appreciably* pitting (the italics are mine). I have made very careful tests with tungsten steel, and although it is almost impossible to break valves made of this material, I find that such valves require grinding in from five to eight times as often, and the valve seats are in an extremely bad condition after 500 miles.

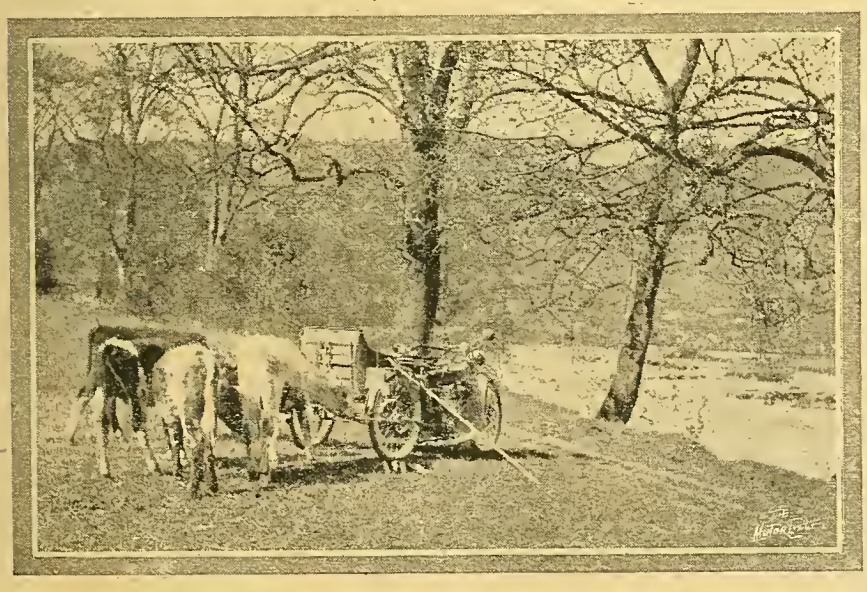
Your correspondent "Valvular" also refers to tungsten steel valves, but I do not agree with the person who told him that these valves were unaffected by any temperature in an engine in use for ordinary road work. The material is remarkably strong compared with other steels when in a red hot state (from two to three and a half times the tensile strength at 700° C.), but the valve stems and seats scale very badly if the heat is maintained for any length of time.

"Valvular" is correct when remarking on the cost of tungsten steel valves. I have had 3% nickel valve stampings quoted at 4½d. each, and the same valve stampings in tungsten steel have been quoted at 6s. 6d. each, and on top of this the cost of grinding tungsten steel valves from the stampings and machining 3% nickel valves is almost in the same proportion as the cost of the stampings themselves.

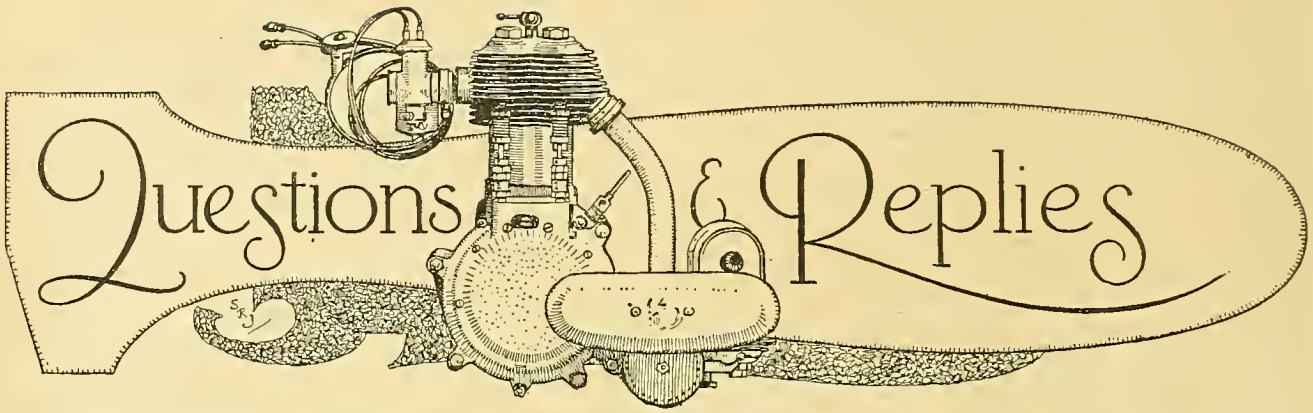
Whilst on the subject of materials, I might mention a very troublesome point that has arisen, probably due to the rush on materials, and particularly high-grade steels, since the outbreak of war. Before the war broke out, we had with A.B.C. engines experienced only two valve breakages in the machines turned out in two years, and with the so-called same material delivered after war and during the steel makers' rush we have had no less than five valve breakages since February of this year.

It appears, therefore, that the steels now obtainable are not so reliable as formerly, and this has necessitated further investigation with a view to reducing valve stress still further to accommodate the inferior material. I wonder how many other manufacturers have experienced the same trouble with materials?

GRANVILLE E. BRADSHAW.



An angler's P. and M. sidecar outfit becomes an object of interest. Calves are not particular as to diet, a fact worth remembering when leaving one's mount amid rural surroundings.



Questions & Replies

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Registration.

I have had a new engine fitted to my motor cycle. Will it be necessary to communicate with the registration authorities? The old one is registered a De Dion; this is an M.M.C.—E.B.

Yes, you should communicate to the registration authorities any change in the construction of your machine which would require an alteration in the register.

Lubrication.

I have just purchased a 220 c.c. two-stroke, and no instructions as to oiling were sent. It is a drip feed, and I find one drop every five seconds gives best results. Is this sufficient? At first I over-oiled and used a pint to fifty miles.—B.F.

We should say that the lubrication suggested in your letter would be correct.

Warming the Carburetter.

I own a 6 h.p. twin motor cycle, which is fitted with a long exhaust pipe. If I clipped a 4ft. copper pipe, say, of ½in. inside diameter, to the outside of the exhaust pipe and led it to the main air intake of the carburetter, would the warm air passing into the carburetter be of any benefit? If I fitted an arrangement whereby the exhaust gases would pass direct from the end of the exhaust pipe, through this pipe, and thence into the carburetter, would I get increased speed, or would the hot exhaust gases interfere with or upset carburation? The inlet and exhaust valves are interchangeable. Is it advisable to give the exhaust valve a slightly bigger lift than the inlet valve, in order to facilitate the exit of the gases?—A.W.

The exhaust gases may be used to warm the carburetter, but should not be mixed with the air entering through the air intake, as this would affect the carburation. It is all right, however, to introduce these to a jacket round the vaporising chamber. The lift in both cases should be about ½in. There is no particular object in altering the lift of the exhaust valve from that which the makers have arranged.

Licences for a Dealer.

Having been a reader of your paper for a number of years, and now being about to start in business as a dealer, can you tell me what licences (if any) are taken out by a motor cycle agent?—P.R.B.

The licences required by a motor cycle agent are: Driving licence, obtainable from the local licensing authorities, and also trade licences for riders to take out machines for testing or demonstration purposes; registration and licence for machine for your own use, which are best obtained from your local licensing authority; and a licence to sell and store petrol, obtainable from the local inspector under the Petroleum Act.

Coventry to Torquay.

I shall be grateful if you will give me—(1.) The best route from Coventry to Torquay. (2.) Information as to hills, police activity, and lighting regulations. (3.) The average speed possible for the journey on a modern 3½ h.p. machine. (4.) Would you recommend a variable pulley gear or a three-speed model for sidecar work and also for solo use?—A.C.W.

(1.) We recommend the following route: Coventry, Kenilworth, Warwick, Stratford-on-Avon, Winchcombe, Cheltenham, Painswick, Stroud, Nailsworth, Bath, Radstock, Wells, Glastonbury, Durston, Taunton, Cullompton, Exeter, Chudleigh, Kingsteignton, Newton Abbot, Torquay, or Exeter, Dawlish, Teignmouth, Torquay. (2.) There are no hills which would worry a modern machine on this journey. The police are not likely to give trouble if you drive carefully in towns and villages, nor are the lighting regulations likely to give you trouble until you get near the coast. An article dealing with the lighting regulations in force in different parts of the United Kingdom was published in *The Motor Cycle* of March 18th. (3.) You should be able to average twenty miles an hour with this machine. (4.) Probably the three-speed model is better for sidecar work, as it allows you to have a lower bottom gear. For solo work, the low gear on the variable pulley is low enough for ordinary purposes.

Redditch to Weston-super-Mare.

Will you please let me know the best route from Redditch to Weston-super-Mare, together with the total distance?—A CONSTANT READER.

We recommend the following route: Redditch, Evesham, Cheltenham, Painswick, Stroud, Nailsworth, Bath, Marksbury, Stowey, Compton Martin, Blagdon, Weston-super-Mare. The distance is approximately 110 miles. This is a pleasanter run than through Gloucester and Bristol, though the latter is shorter, and Bristol can be avoided by turning to the right at Filton and going over Clifton Downs and across the new bridge over the Avon (not the Suspension Bridge).

Overheating with a Two-stroke.

I should be much obliged if you could suggest any reason for the trouble I am having with a 1910 machine. It seems to overheat badly, the crank case getting extremely hot. It does not answer to the throttle at all. I use Reliance plugs. The compression is not very good, I fear; cylinders are free from carbon, and I keep the spark well advanced. Is it possible that any of the exploded charge gets into the crank case and causes it to overheat?—L.S.D.

It seems highly probable that the overheating trouble with your engine is due to worn pistons, which allow the explosion gases to pass into the crank chambers on the firing stroke. In this event it is obvious that the worn pistons will not allow sufficient suction on the carburetter, since the crank chambers are partly full of hot gases. The inability of the engine to answer the throttle, and the overheating, are also indirectly due to the incomplete crank chamber suction. As the machine is approximately five years old, and has probably seen a good deal of wear, we should think the best thing that could be done would be to have the cylinders rebored and new pistons fitted, when the efficiency of the engine should be completely restored, provided the crankshaft compression washers and transfer port gauzes, etc., are all in good order.

An Oily Engine.

(1.) When changing to high gear on my 2¾ h.p. lightweight the explosions change to a sort of clicking or hitting noise for a short distance, in place of the usual round full tone of the ordinary explosion. There is nothing metallic about the sounds, so I am not quite sure if this can be termed "knocking." The same thing takes place also when slowing down on high gear. (2.) I find that the countershaft belt pulley does not run quite freely. I mean that when the belt is removed the pulley (when in neutral position, of course) does not revolve smoothly with a twitch of the hand, but has practically to be pushed all the way round. There is practically no force required, but I thought that the pulley when free from the belt could be sent spinning round easily. If it is too tight, how can I remedy the trouble? (3.) My engine regularly gets absolutely spattered with oil, even on short runs. I suspect a leaking pump. I have an ordinary plunger pump, raising it to draw oil from tank, and depressing it to send it down, through a spring valve, to the engine. This spring valve, to all appearances, is all right, so that I can hardly account for any oil getting past it, unless it be that the suction from the engine tends to pull the valve downwards, and so opens it; but I take it that there would be no oil to pass until the plunger is raised. Can you suggest anything? My oil tank is frequently empty when I am under the impression I have given about two pumpfuls, when running, but the oily condition of the engine points to it getting far more oil than this.—W.J.M.

(1.) The trouble is probably caused through having the spark too far advanced when you change up, or probably you have not accelerated sufficiently on the low gear before changing. The noise is a sort of knocking caused by pre-ignition. (2.) The reason why the pulley does not revolve freely may be due to an excessive amount of grease in the gear box, or to grease which is rather too thick. If this is the case, try Ambroleum, or some similar semi-liquid grease. Do not forget that there are gear wheels attached to the pulley-shaft, the teeth of which have to cut through the grease. (3.) The only thing you can do is to clean the crank case thoroughly, and then run the engine on the stand, and examine where the leakage is taking place. This ought to be quite easy to find. It may, of course, be at the union or at the crank case joints. If the former, this should be tightened up, and if at the latter, if the leakage is serious, the crank case will have to come apart and be repacked with brown paper soaked in boiled linseed oil. It will be best to take the pump apart, and see that the valve is quite sound, and that there is no possibility of leakage. Perhaps a stronger spring would cure the trouble. Do you find that the engine smokes? If it does not, the leakage may not be due to excess of oil, but merely to defective unions or crank case joints.

Bicester to Llandudno.

Would you kindly give me the route from Bicester to Llandudno, and if possible an alternative route for the return?—H.G.

Either of the following can be recommended, though the former is the prettier: Bicester, Banbury, Stratford, Alcester, Kidderminster, Bridgnorth, Much Wenlock, Shrewsbury, Llangollen, Corwen, Bettws-y-Coed, Llanrwst, Llandudno. Approximate distance 180 miles. Bicester, Brackley, Towcester, Weedon, Daventry (turn right at bottom of hill), Crick, Three Pots, Atherstone, Fazeley, Gailey, Weston (turn right), Newport, Hinstock, Whitchurch, Wrexham, Mold, St. Asaph, Abergele, Colwyn Bay, Llandudno. Approximate distance 192 miles.

Timing a Twin.

Would you kindly let me know the correct method of timing a 1913 6 h.p. twin engine, as I have had to order the entire parts, and the old parts are not marked; also do you advise packing the new parts in grease?—S.

We should recommend you to time the engine in the following way: Set the exhaust valve to close just after the completion of the exhaust stroke. It will then commence to open when the piston is about one-seventh of the length of the stroke from the bottom of the firing stroke. The inlet should commence to open as the exhaust closes, and remain open for one complete stroke of the piston, or while the flywheels turn through 180°. Time the magneto as follows: Place the piston exactly on top of the compression stroke, and connect up the magneto with the points just about to break and the ignition lever two-thirds retarded. It is not usual to use grease for the timing gear; a little oil is all that is necessary.

The Petroil System.

I have recently bought a second-hand two-stroke, and I am not quite certain of the correct proportion of lubricating oil to petrol. Could you kindly inform me what is the usual mixture?—N.A.

Some makers recommend a proportion of one part of oil to fourteen of petrol, others one to sixteen, or half a pint of oil to one gallon of petrol. This should be taken as a minimum quantity of oil. When an engine is new it is advisable to exceed this and keep the engine smoking slightly for the first two or three hundred miles.

READER'S REPLY.

Valve Trouble or Worn Piston Rings.

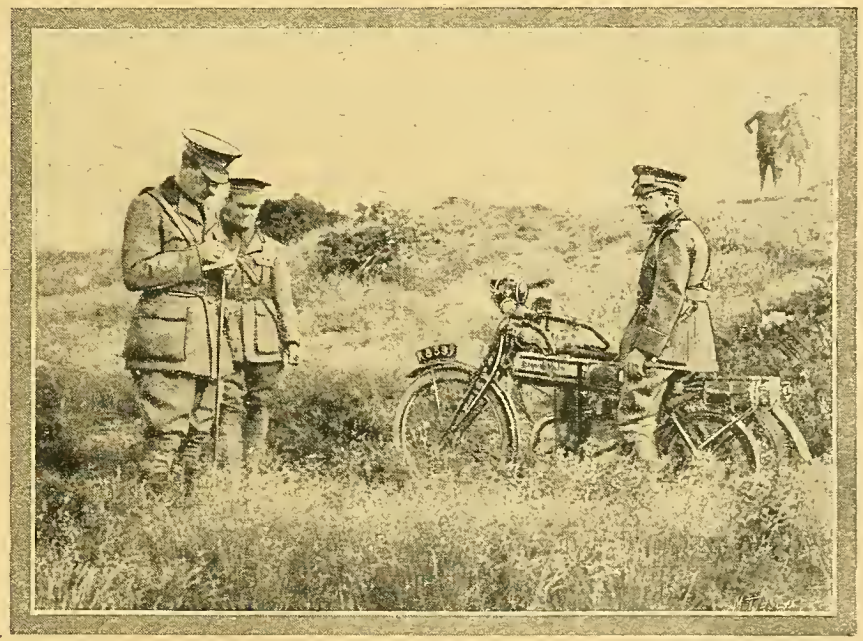
I notice that you give valve trouble as the cause of "G.W.'s" complaint, but I am pretty certain that it is due to worn piston rings, as I suffered from this same complaint on a machine that had run 10,000 miles, and cured it by fitting new rings.—C. S. ROSCOE.

EXPERIENCES WANTED.

"H.W." (Newry).—Binks carburetter on 1914 or 1915 6 h.p. Enfield with sidecar. Ease of starting, consumption, free engine running (tick over), power on hills, and sizes of jets used.

"R.C.G." (Bridlington).—8 h.p. 1914 Chater-Lea and 8 h.p. Zenith with countershaft gear, for sidecar work. Speed, consumption, tyre wear, and reliability.

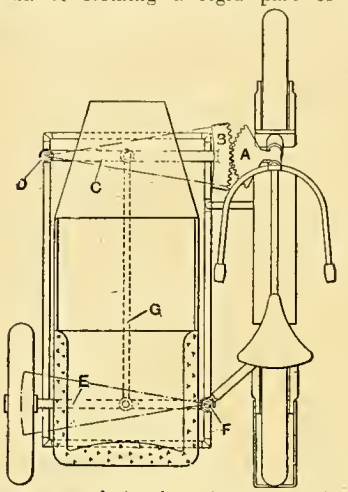
"A.M." (North Finchley).—4¼ h.p. three-speed James and sidecar. Reliability under continuous hard usage, consumption, power, wear on chains, ease of steering, and stability on grease. Also 4¼ h.p. three-speed B.S.A. with sidecar.



MOTOR VOLUNTEER TRANSPORT SECTION.
Despatch rider, mounted on a Rudge-Multi, waiting for message from officer commanding Liverpool Motor Transport Volunteers, N.V.R.

A Steerable Sidecar Suggestion.

With the object of facilitating the steering of a sidecar, the sidecar wheel is caused to move in unison with the front wheel of the bicycle. A toothed segment A is mounted on the steering stem and engages a corresponding segment B carried by an arm C pivoted at D to the sidecar frame. The sidecar axle E, instead of forming a rigid part of the



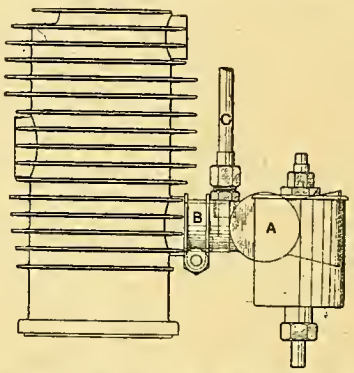
frame as usual, is pivoted at F, so that it can move in a horizontal plane, and the axle F and arm C are coupled together by a rod G, so that the sidecar wheel follows the movements of the steering wheel. One is left in some doubt as to what supports the near side of the sidecar,

PATENTS BY ERIC W. WALFORD.

seeing that the axle has only a pivoted connection at F.—W. A. James, No. 16,167, 1914.

The Villiers Two-stroke Lubrication System.

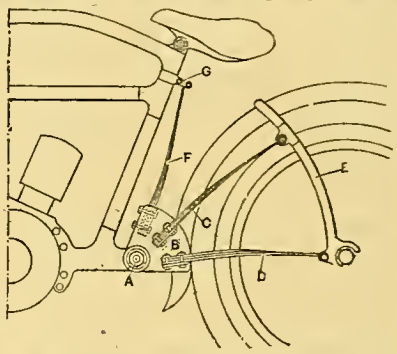
In the Villiers engine, it will be remembered, the oil passes with the ingoing gas into the cylinder, although it



is not first mixed with the petrol. The drawing shows the fitting by which this is accomplished. The carburetter A is clipped to the cylinder at B, and adjacent to the attachment a pipe C enters the gas passage. This pipe is supplied with oil from a drip feed device, so that the oil is taken direct into the cylinder.—C. G. Garrard, F. H. Farrer, and the Villiers Engineering Co., Ltd., No. 14,174, 1914.

Rear Spring Suspension.

Pivoted at A is a sector B, to which are attached five laminated springs. Of these, C and D are duplicated on each side of the wheel, and are attached to a tubular member E, which passes right over the wheel and carries the ends of the spindle. The fifth spring F is equal in tension to the other springs added



together, and it has a sliding connection at G to the main frame, passing between a pair of rollers to reduce friction. It is stated that no guides are required, as the arrangement of the springs affords sufficient lateral rigidity.—J. E. Spedding, No. 17,783, 1914.

A 48 lb. Sidecar.

In describing the Henderson sidecars in our issue of the 3rd ult. we should have stated that the latest coachbuilt model scales approximately 48 lb.

A.C. Sociables.

We are informed by Auto-Carriers, Ltd., that all communications relating to the sale and repairs of the light cars, sociables, etc., should be sent to the company's London address, 181, Hercules Road, S.E.

1916 Models.

Mr. Victor Welsford, London manager of the Harley-Davidson Motor Co., Newman Street, Oxford Street, W., has left England for the United States, whither he has gone for the purpose of arranging for the 1916 Harley-Davidson models at the Milwaukee works.

Spring Fork Links.

We are informed that the spring fork links sold by Messrs. Herbert Terry and Sons, Ltd., Redditch, are now made in a specially light form for machines of less than 2 h.p. These links increase the comfort of certain forks very considerably.

Racing in Australia.

We are informed by Messrs. Zenith Motors that at the Easter Carnival at Goulburn, N.S.W., the thirty-three miles handicap for members of the Sydney club resulted in a first for Sergeant Fair on a 6 h.p. Zenith. The third place was obtained by H. Bartlett, also on a 6 h.p. Zenith.

SPARKLETS

A Cheap Insurance Policy.

The Mutual Property Investment and Accident Co., Ltd., of Manchester, have inaugurated a new coupon policy for motor cyclists, the annual premium for which is only 5s.

New Birmingham Repair Depot.

The Colmore Depot has just opened new repair shops in Station Street, Birmingham, quite close to the firm's showrooms in John Bright Street. A speciality is to be made of motor cycle overhauls, and modern machinery has been installed.

Sun Successes.

Some very creditable performances stand to the credit of Sun lightweights fitted with the Vitesse engine. We have already chronicled the results of the Cork Twenty Hours Trial, in which these machines won gold and silver medals and the special lightweight prize. The Sun machines were the smallest in the trial, viz., 269 c.c., and the route very trying. In addition to this, the same riders, J. J. White and J. F. A. Day, gained first and second places by a substantial margin in the Six Mile Speed Trials at Portmarnock on May 15th.

War Publications.

Among the minor results of the war of interest to motor cyclists are the booklets that many of the firms engaged in Government work are producing. The most attractive of this kind we have yet seen is the B.S.A. "War Service," which, as may be surmised, is published with the intention of calling attention to the extensive use of B.S.A. motor cycles and pedal cycles by the various branches of the Army.

Sidecar Outfits in Australian Trial.

We are informed that in the Victorian M.C.C. Easter reliability trial first and second places in the sidecar class were secured by a Peerless fitted with a 4 h.p. twin-cylinder Precision engine and a Precision "Big Four" respectively. The first-mentioned is a locally-built machine, and it was the only sidecar outfit which kept on time right through the run. The trial extended over four days, the distance covered being six hundred miles. This may certainly be considered a strenuous test.

Rudge Overseas Successes.

As far apart as Denmark and New Zealand, Rudge machines are doing well in trials. In the former country the Rudge team won a twenty-four hours team trial. There were eleven teams, each consisting of three riders. In New Zealand a Rudge rider, R. Jones, was successful in winning, at Napier, on Easter Monday, the ten miles race, time 10m. 46s. A fortnight after, Jones won two other races at the Marton sports, *i.e.*, the ten miles race and the flying mile.

MOTOR CYCLES FOR SALE.

Auto-Wheels.

AUTO-WHEEL, Juno trader tricycle carrier, with all latest improvements; price £26/3/6 net, or 47/6 monthly.—Seen at 248, Bishopsgate, London, E.C. [7713

AUTO-WHEELS.—Must sell. Two 1913 models, exceptional order, bargains at £6/10 each; also late 1914, many 1915 improvements, £9.—Apply, Nyo, c/o Purcell's, Ltd., Charlotte St., Tottenham Court Rd., London. [7807

Bat.

BAT, 4h.p., low, only slight adjustment to put in order; 80/-, offers.—81, Loughurst Rd., Lewisham. [7915

BAT, 1912, 6h.p., T.T. model, in excellent condition, Lucas lamp set, horn, etc.; £30.—The Morris Garages, Oxford. [X9819

BAT-J.A.P., 1913, 7-8h.p. twin, and coach sidecar; £55; exchanges, deferred payments.—Lamb's, 151, High St., Walthamstow. [7826

BAT, 2-speed, 8h.p. J.A.P. engine, spring frame, all in splendid order; £34/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X8263

BAT-J.A.P., 7h.p., new tyres, tubes, and belts, perfect; £25, or lower power and cash; sidecar, £2, wheel buckled.—314, Leytonstone Rd., E. [7869

BAT-J.A.P., 1912, 3½h.p., single gear, in excellent condition; £21/10.—The Exeter Motor Cycle Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0569

BAT-J.A.P., 1915 new models for delivery from stock, chain-cum-belt drive, counter-shaft 3-speed gear, extra strong tyre back wheel; £77/3; exchange or gradual payments.—Wauchope's, 9, Shoe Lane, London. [X9806

1913 Racing Bat-Jap, 8-10h.p., overhead valves, also torpedo cane sidecar, cost £12, very fast and powerful; £45, or exchange lower power and cash; seen any time.—C. Pritchett, 141, Merton Rd., Wimbledon. [7961

Blumfield.

BLUMFIELD 1914 6h.p. Twin, 3-speed gear, kick start, coachbuilt side entrance sidecar; £40; solo part payment.—Young, Draper, 64, Tilton Rd., Small Heath, Birmingham. [X9715

Bradbury.

2¾h.p. Bradbury, Bosch, good running order; £7.—Long, Newton, Grange-over-Sands. [X9893

3½h.p. Bradbury, good running order; would exchange or sell £9.—16, Gap Rd., Wimbledon. [X9647

1914 4h.p. Bradbury and Sidecar, splendid condition, all accessories.—Ward, North Bank, Ipswich. [X9779

4h.p. Bradbury, Gondola sidecar, new 1913, 2-speed, equal to new; best offer over £36.—96, Vavasour St., Rochdale. [X9888

1914 6h.p. Bradbury Combination, new August; cost £110; splendid bargain, £70.—King, Bridge St., High Wycombe. [7742

BRADBURY, 3½h.p., 1912½, Bowden gear, Model de Luxe sidecar, tyres almost new, lamp, etc.; £38.—Ardern, Chemist, Ashton-under-Lyne. [X9894

BRADBURY 4 h.p. model, with Sturmey-Archer 3-speed hub gear, brand new, just delivered; £50.—Eagles and Co., High St., Acton, London. [X9864

3½h.p. Bradbury, mag., B.B., spring forks, new tyres and belt, drop tube frame, lately overhauled; £18.—C/o Hutchinson, Hythe, Southampton. [7733

BRADBURY, 1912 (late), 3½h.p., good condition, N.S.U. gear, with coachbuilt sidecar, all accessories; £30; seen by appointment.—Marlow Cottage, Marsham Lane, Gerrard's Cross. [X9946

3½h.p. Bradbury, with art cane sidecar, N.S.U. 2-speed gear, new cover on rear, new Dunlop belt, recently overhauled, enamelled and plated; bargain, £30.—Earl's, 5, Heath St., Hampstead. [X9970

BRADBURY, 3½h.p., horizontal 1915 twin opposed engine, counter-shaft 3-speed gear, and chain drive; £64; delivery from stock; exchange or extended payments.—Wauchope's, 9, Shoe Lane, London. [X9807

3½h.p. Bradbury, 1912, N.S.U. 2-speed, good throughout, complete with cane sidecar, side door, nice appearance; seen any time; trial; bargain, £28/10; N.S.U. 2-speed gear, suit twin, 45/-.—Cox, 85, Church Rd., Willesden. [X9915

Brown.

3½h.p. Brown, free engine, Premier sidecar, 1910, perfect; £22; accessories.—Hadley, Walton-on-Trent. [X9419

BROWN, 3½h.p., Bosch, mag., splendid going order; owner in France; £15/10.—18, Chatsworth Rd., Clapton, N.E. [7738

BROWN Combination, 1911-12, 3½-4h.p., mag., Sturmey, 3 speeds; sacrifice £23/10.—Wandsworth Motor Exchange, Ebner St., Wandsworth, London. [X9934

BROWN Combination, 6-8h.p., powerful twin, 2 speeds, F.E., 1911-12 model, fully equipped, perfect order throughout; £28.—Speechley, 45, Church Rd., Acton. [8035

B.S.A.

B.S.A.'s, 1915 models, in stock.—Parker and Son, St. Ives, Hunts. [8015

B.S.A., 1915, Model K, 4½h.p.; in stock; £59/15.—Butler's Garage, Baldock. [X9834

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B.S.A. 1915 Model K, with B.S.A. sidecar, in stock; immediate delivery; £76/10.—Geo. Sharman, Brackley. [X9879

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B.S.A., Models H. and K. delivered promptly; special terms for large deposits.—Lamb's, 151, High St., Walthamstow. [7827

B.S.A., 4½h.p., mode 1K., one month old, ridden twice, fully equipped; £58.—Cooper, 14, Oakland Rd., Dovercourt. [7781

B.S.A., 4h.p., 1914 model, speedometer, and all accessories, in first-class condition; £48.—Philpot's Garage, Canterbury. [X9780

1914 B.S.A., model K, 3-speed, chain and belt, specification as list, ridden 3,500 miles, perfect condition; £47.—Robinson's, Green St., Cambridge. [6867

B.S.A., 3½h.p. Minerva engine, 26in. wheels, low frame, any trial, real bargain, £15; also Bosch magneto, D2, single-cyl., 60/-.—31, Avenue Rd., Hammersmith. [8006

1915 B.S.A., 4½h.p., 3-speed, counter-shaft gear, clutch, kick starter, chain-cum-belt, lamp, horn, speedometer, etc., perfect condition, only 400 miles; £56.—Lloyd Williams, Hydro, Llandudno. [X9754

B.S.A., Model E, 557 c.c., 2-speed, free engine hub, fitted with a torpedo coachbuilt sidecar; the whole is quite new, only run about 100 miles; price £50, no offers.—W., 32, Sunny Bank, South Norwood. [7916

B.S.A., 1914, 4h.p., chain drive, 3-speed, kick starter, coachbuilt sidecar, done under 2,000; £60; will entertain good lightweight in part exchange.—Atkinson, c/o Hill, Turner Bridge, Bolton, Lancs. [X9892

1915 4½h.p. B.S.A., 3-speed model, kick starter, completely fitted with accessories, ready for the road, brand new and unused, in stock for immediate delivery.—On view, London Motor Exchange, 24, Baker St., W. [8051

Calthorpe.

CALTHORPES, all models actually in stock.—Lamb's, 151, High St., Walthamstow. [7828

CALTHORPE, 1915, latest 2-speed lightweight models in stock; cash or extended terms.—Eagles and Co., High St., Acton. [X9865

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CALTHORPE-J.A.P., 2-speed, and Calthorpe 2-stroke, actually in stock; free tuition.—Hucklebridge, 133, Sloane St., London. Tel.: 451 Victoria. [X9639

CALTHORPE-J.A.P., latest model, 2¾h.p., Enfield 2-speed gear, actually in stock; £34/13.—Prestwich's Motor Exchange, 26, St. John's Rd., Hove, Brighton. [7764

1915 Calthorpe-J.A.P., 2-speed and clutch, £34/15; also 2½h.p. 2-stroke, 2-speed, £31/8/6; delivery from stock; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6409

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CHATER-LEA, 4h.p., late 1914, 2-speed, new condition; £37.—177, Canterbury Rd., West Kilburn. [X9766

1912 3½h.p. Chater-Lea, in very good condition; £22/10.—Newnham, 223, Hammersmith Rd., W. [7819

8h.p. Chater-Lea Combination, 3 speeds, many refinements; trial run; 50 gns.—Butler, 29, Pierrepoint Rd., Acton. [X9878

CHATER-LEA, 1912¾, coachbuilt sidecar, mechanical and general condition perfect; £55.—Gill, Tramway Depot, Wood Green, N. [7933

8h.p. Chater-Lea, 3-speed model, and free engine, complete with sidecar; £50, splendid bargain.—At Wauchope's, 9, Shoe Lane, London. [X9811

Clyde

2¾h.p. Clyde, Amac, Hellesen, low, fast; £5.—152, Meeting House Lane, Peckham [7730

Clyno.

CLYNO 1914 Combination, almost new, perfect; £60.—Percy, 337, Euston Rd., London. [8027

CLYNO Combination, 1912, free engine, 2-speed, kick start; £34; evenings.—Hole, 129, Park Lane, Carshalton. [X9880

1912 5-6h.p. Clyno and Turner coachbuilt sidecar, excellent condition; accept £43.—Parker and Son, St. Ives, Hunts. [8020

1913 Clyno and Sidecar, perfect condition, and fully equipped; bargain, £50.—Stretton and Smith, 23, Woodstock St., Bond St., W. [7743

CLYNO, 5-6h.p., 1914, coachbuilt, 3-speed, clutch, kick-start, lamps, accessories, perfect condition; £63.—U., 45, Lyndhurst Rd., Peckham. [8001

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Clyno.

CLYNO 1912 Combination, Lucas set, Pillion seat, splendid order; £36; appointment.—Particulars, Billingsley, 18, Kimberley Rd., Upper Edmonton. [7769

CLYNO, 1914, 2-stroke, 2-speed, lightweight, hand controlled clutch, splendid order; £32.—Coleford, 153, Clapton Common. N. 'Phone: Dalston 2057. [7963

1913¼ Clyno Combination, with spare wheel, and Palmer cord tyres, 26×3, lamps, horn, speedometer, spares, in new condition; £50. — Dowson, 3, Houghton Grove, Beeston Rd., Leeds. [7352

6h.p. 1912 Clyno, 2-speed, F.E., just overhauled, new chains, 2 lamps, and horn, large white cane sidecar, with side entrance; £37/10, or near offer, cash/—Viewed at 161, King's Rd., Camden Town. [7447

1913 Clyno, 3-speed gear, chain drive, good tyres, detachable wheels, separate oil tank, engine, gear box, and general condition perfect, with No. 6 Clyno sidecar; £55.—Robinson's, Green St., Cambridge. [0612

Dayton.

DAYTON 2-stroke, De Luxe model, perfect; £18/10.—Mansfield, Kibworth. [X9886

Douglas.

DOUGLAS, 1913½, just overhanled; £38.—Grice, 43, Woodville Gardens, Ealing. [7986

1913 Douglas, 2 speeds, clutch, complete; £35.—Cross, Effingham, Sq., Rotherham. [X9800

DOUGLAS, 1912, 2¾h.p., 2 speeds; what offers?—103, Lovely Lane, Warrington, Lancashire. [7737

DOUGLAS, 2¾h.p. to 10h.p. models.—Gourlay, the great Douglas agent, Fullowfield. Manchester. [4241

DOUGLAS, 2-speed, clutch, 2¾h.p., perfect, running order; £23.—88, Whitegate Drive, Blackpool. [X9720

1912½ Douglas (1915 engine), perfect condition; nearest £30.—Bland, Devonshire Hall, Morecambe. [X9731

DOUGLAS, 1911, single speed, good order; £16/10; exchange considered.—Neighbour, c/o Gardam's, Staines. [7920

DOUGLAS, late 1914, model W, new condition, all accessories, spare tyre; £43.—19, Roseleigh Av., Highbury. [7924

DOUGLAS, 2¾h.p., 1911 (late), engine just overhauled, good tyres; trial; bargain, £15.—Eldridge, Fordingbridge. [7927

1914 Douglas, 2-speed, condition as new, all accessories; £36.—A. Marsh, 35, Benton Rd., Sparkhill, Birmingham. [X9644

DOUGLAS, 3½h.p., model B, with new Millford sidecar, cycle complete in every detail, excellent condition; £70.—Phillippi, Bloxham, Oxon. [X9722

DOUGLAS, model W, 1914, smashed back wheel, damaged frame, engine and front untouched; what offers?—Wortham Blake, Waltham Cross. [7731

DOUGLAS, 1913, perfect running order, new tyres; any trial; accessories; £34, or exchange sidecar machine.—Day, 31, Bicester Rd., Aylesbury. [7948

DOUGLAS, 1915, 2¾h.p., T.T. model, had little use, excellent condition, lamp, horn, etc.; £45; first cheque secures.—The Morris Garages, Oxford. [X9820

DOUGLAS U, 1914, almost new, £39/10; two Douglas, 1912, £29/10 each; Douglas, 1911, 2-speed, £26.—Edwards, Motors, Tannton. 'Phone: 191X2. [7805

1914 2-speed Gear Douglas, model V, new studded tyres, Pedley belt, B130 saddle, F.R.S. lamp set, horn, etc.; £40.—Robinson's, Green St., Cambridge. [0613

1911 Douglas, 2¾h.p., 2-speed, free engine, just overhauled, in good condition; bargain, £18.—L. Wood, 8, Railway Terrace, Penistone, near Sheffield. [X9887

DOUGLAS, 1914, model V, 2¾h.p., T.T., 2-speed, nearly new condition, 3 gn. lamp, special fittings; £50.—Linden, Christian Malford, Chippenham, Wilts. [7995

DOUGLAS, 2¾h.p., 1912, plating and enamel splendid, lovely engine, Bosch mag., easy starter, drip and pump lubrication, very fast; only wants seeing; £28.—Shackell, 42, Mill Hill Rd., Acton, W. [X9728

DOUGLAS, 1913 or 1914, 2-speed model, or similar machine, for cash; must be cheap. Full particulars. Telephone, and will call and see machine immediately.—Mehes, 156, Gt. Portland St., W. Tel.: 3426 Mayfair. [8012

DOUGLAS, 2¾h.p. (1913½), with Ralli coachbuilt lightweight sidecar, perfect condition; £42, or would exchange with cash adjustment for higher power combination; Indian or James preferred.—Reply, 28, College Rd., Harrow. [7871

Eagle.

COVENTRY Eagle, 1915, 2½h.p., 2-stroke, Dunlop studded tyres Senspray mag., condition as new, not done 100 miles, used for demonstration only; £28; exchange entertained.—Ideal Cycle Co., Thundersley, Essex. [7973

Elf.

4¼h.p. 3-speed Elf-Precision, with Cancelet sidecar, wind screen, spares, as new; £45; exchange twin or cycle car.—22, London Rd., Tunbridge Wells. [7841

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RUDGE 1914 3½ h.p. Multi, T.T. bars	£45
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ENFIELD 6h.p. Combination, late 1913, lamps, horn, etc.; 45 gns.—103, St. Stephens Rd., Bow, E. [X9718

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1914 Enfield, 3h.p., 2-speed, kick start, accessories, Jones, overhauled; going Front; £36.—Venning, Barracks, Ipswich. [X9917

6h.p. Enfield Combination, new September, 1913, all spares, and speedometer, very little used; £52.—169a, Lower Clapton Rd., N.E. [8004

ENFIELDS, 80 gn. and £100 De Luxe invariably from stock; exchanges.—Lamb's, Enfield Specialists, 151, High St., Walthamstow. [7829

ENFIELD 6h.p. Combination, 1915, new in April, 3 lamps, accessories; £78, or nearest offer; owner buying car.—Dyson, Lythers, Hersham. [7791

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Fafnir.

FAFNIR and Sidecar, 1912, 4½h.p., clutch model, any trial; 20 gns.—69, Greenside Rd., West Croydon. [7970

F.N.

F.N., 2½h.p., 2-speed; 12 gns.—Winifred Gowdey, 895, Fulham Rd., S.W. [7951

4-CYL. F.N., mag., in running order; £7.—20, Alphington St., Exeter. [7857

F.N., 6h.p., 2-speed, clutch, drip, central intake; £16/10.—Pearse, Staplehurst. [7723

5h.p. 4-cyl. F.N., 2-speed gear, free engine, good order; cheap.—F. Sewell, Long Melford. [7865

F.N., 1911, 5-6h.p., spare tube, horn; £17; seen by appointment.—Gill, 52, Derwentwater Rd., Acton. [X9912

F.N. Combination, 4-cyl.; 25 gns., or exchange for lightweight.—Winifred Gowdey, 895, Fulham Rd., S.W. [7952

F.N. Lightweight, 1914, shaft drive, clutch, 2-speed, perfect condition; £35.—27, Lammas Park Rd., Ealing. [7894

F.N., 1912, clutch, 5-6h.p., 1914, 2-speed, and sidecar, all accessories, splendid condition; £35.—67, Burntash Rd., Lee, S.E. [8002

2¾h.p. F.N., spring forks, B. and B., new Dunlop tyre, and accumulator, powerful; first 65/- bargain.—Webb, Station, Oundle. [X9411

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3½h.p. Minerva, B.B. carburetter, Bosch mag., spring forks, variable pulley, good condition.—Reynard, Whittle, near Chorley. [X9870

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MOTOSACOCHE, 2½h.p., mag., spring forks, in splendid running order, 1912; bargain, £12/10, no offers.—Simpson, High St., Walton-on-Thames. [7718

MOTOSACOCHE, 1¾h.p., mag., Whittle belt, S.A. 3-speed gear, in perfect order, and very little used; £9/10.—Gordon, Kneesworth St., Royston, Herts. [X9830

3½h.p. 1915 Motosacoche, 3-speed counter-shaft gear, chain drive, M.A.G. engine, in stock; best terms for cash, easy terms, or exchange.—Wauchope's, 9, Shoe Lane, London. [X9808

1914 3½h.p. Twin Motosacoche, M.A.G., De Lissa valves, 2-speed countershaft, Lucas lamp set, horn, etc., practically new; £40; offers.—Empson, Merton Grange, Gamlingay. [7912

MOTOSACOCHE, 1915, 4h.p. twin, just delivered, fitted with the famous M.A.G. engine, De Lissa valves, countershaft gear, chain drive, phenomenal acceleration; £62; best exchange terms.—Eagles and Co., High St., Acton. [X9366

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NEW Hudson Combination, 6h.p., counter-shaft, 1914¾, 1,500 miles only, all accessories, perfect; £65, no offers.—S., 213, Hanworth Rd., Hounslow. [7892

NEW Hudson, 1913, 2½h.p., 3-speed gear; £25/10.—The Exeter Motor Cycle Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0570

1913½ 4h.p. 3-speed New Hudson and Canoelet sidecar, in thorough running order, has been very carefully used, many spares; £45.—Loudon, 24, Harcourt St., Marylebone Rd., London. [7735

New Imperial.

1915 New Imperial Lightweight, 2-speed, in stock.—Blackburn, Albert Hall Buildings, Brighouse. [X9943

IMPERIAL-J.A.P., 2½h.p., 2-speed gear, T.T. bars, and accessories, as new; £32.—McKinnon, Wallington, Surrey. [X9907

NEW IMPERIAL-J.A.P., 2½h.p.; £34/3/6 cash, or fifth down, 2½% on balance.—Referee Cycle Co., 332, High Holborn, W.C. [2774

1915 2¾h.p. New Imperial-J.A.P., 2-speed, actually in stock; price £34/3/6; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6408

NEW Imperial-Jap, the most reliable medium weight on the market, fitted with counter-shaft 2-speed gear; price £34/3/6.—The Colmore Depot, 31, Renshaw St., Liverpool. [7413

New Ryder.

NEW Ryder 2-stroke, immediate delivery; £28; exchange entertained.—Ideal Cycle Co., Thundersley, Essex. [7974

Norton.

1915 T.T. Norton, new May, mileage 300; too fast for owner; £42.—F. Sowter, Brigg. [7787

1915 Norton, 3-speed, lamp and horn, good as new; £50.—Parker and Son, St. Ives, Hunts. [8016

NORTON, 3½h.p., T.T., 1915, 6 weeks old, just thoroughly overhauled; buying car.—Bethell, Brompton Barracks, Chatham. [X9742

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N.S.U., 3h.p., free engine, nice condition; £10.—1 King St., Acton. [7957

N.S.U. 2-speed Gear, nearly new, suit Triumph; 95/-.—Cross, Agent, Rotherham. [X9793

N.S.U., 3-3½h.p., Bosch, mechanical valves, low built, perfect order; £10/10.—45, Church Rd., Acton. [8034

N.S.U., 3¾h.p. twin, brand new, unridden, 2-speed gear, h.b.c.; £45, cost £57/10.—68, High St., Kingsland, N.E. [7839

3h.p. N.S.U., h.t. mag., B. and B., footboards, good condition, new tyre; ride 40 miles to likely buyer; £11, or offers—Merrall, Barnoldswick, Colne, Lancs. [7788

N.U.T.

1914 6-8h.p. N.U.T., complete combination, with speedometer, lamp, and horn, almost new; £60.—West End Garage, Blackburn. [0677

O.K.

O.K. Juniors, immediate delivery; the perfected 4-stroke motor cyclette.—Meeteo, Motors, Dorking. [7736

P. and M.

3½h.p. P. and M. and Sidecar, 2 speeds, etc.; £36.—Cross, Jeweller, Rotherham. [X9798

NEW 1915 P. and M.; immediate delivery; offers.—Box 7,928. *The Motor Cycle* Offices, Coventry. [X9836

PHELON-MOORE, late 1912 combination, kick starter; £37.—Shone, 70, Watergate St., Chester. [7891

P. AND M. Combination, 1913, Lucas lamp set, luggage grid and wind screen to sidecar, spare tube case; £46.—Somerset Villa, 7, Granville Rd., Wandsworth, S.W. [7967

PHELON and Moore, Ltd., 4, Percy St., W., have several good second-hand P. and M. machines for sale, which have been overhauled, and are in perfect order.—Can be seen at above address. [0131

Peco.

PECO, 2¼h.p., 2-speed, brand new; usual price £33, accept £28/10.—45, Smallbrook St., Birmingham. [X9900

SIDECARETTE, Peco, 2¾h.p., 2-speed, Fitsu sidecar, go anywhere with two up, only done 200; £43.—45, Smallbrook St., Birmingham. [X9899

Perry-Vale.

PERRY-VALE Lightweight, 2h.p., tyres, belt, nearly new, Bosch, Amac, footboards, excellent condition; first P.O. £9 secures.—Thorogood, Icknield Way, Letchworth. [7744

Peugeot.

3½h.p. Peugeot and art cane sidecar, in splendid condition; £25.—55, Palmerston Rd., Walthamstow. [7877

7h.p. Peugeot, 2-speed gear, lamp, horn, speedometer, warranted condition; bargain, £20.—Bunting, Harrow. [7940

PEUGEOT 6h.p. Combination, Mabon clutch, B. mag., Whittle belt, good order; bargain, £20; exchange 2-speed lightweight.—72, Penton St., N. [X9715

Pope.

1914 Pope, 4h.p., 2 speeds, free engine, shop-soiled, £30; wicker sidecar for above, £3/5.—S.R., 61, Dover St., S.E. [7797

Precision.

PRECISION, 2h.p., 2 speeds, brand new; £25.—Percy, 337, Euston Rd., London. [8024

FOR Sale, 2¾h.p. Precision-Torpedo, 1914½, condition as new; £30.—R. R. King, Graham House, Boxford, Colchester. [7785

4½h.p. Precision and Millford sidecar, 2 speeds, free engine, 3 lamps, tools; £27/10.—Seen Mylam, Station Approach, Streatham. [7874

1914 4½h.p. Precision, all accessories, recently overhauled, new Kempshall, perfect condition; £35.—Peace, 49, Muswell Av., Muswell Hill. [7930

PRECISION-ENGINED Motor Cycle, 3¾h.p., 1914, coachbuilt sidecar, 2-speed, kick start, excellent condition; £32.—Medhurst, 16, Sheet St., Windsor. [X9837

Premier.

PREMIER, 1913¾, countershaft, 2-speed, as new; £38.—47, Cambridge Rd., E. [7888

PREMIER Lightweight, 1913, 3-speed, almost new; £25.—Percy, 337, Euston Rd., London. [8028

PREMIER, 3½h.p., 2-speed gear, the bargain of the week, £16/10; in good order.—Colmore Depot, 31, Colmore Row, Birmingham. [X8264

PREMIER, 1911-12, 3½h.p. twin, in good order; owner with Expeditionary Force; £25, or nearest offer.—Pierce, Boro' Green, Sevenoaks. [7753

PREMIER, 1914, 3½h.p., counter-shaft gear model, had little and careful use, perfect condition, P. and H. lamp set, horn; £42.—The Morris Garages, Oxford. [X9823

PREMIER, 1912¾, 3-speed, free, 2½h.p. lightweight, new piston, tyre, tube, all accessories, carefully used; £19; offers and exchanges considered.—Lieut. Morris, Grange, Lydd. [7789

MOTOR CYCLES FOR SALE.

P.V.

P.V. Spring Frame 3½h.p. Twin, re-plated and enamelled as new by makers, £33; P.V. spring frame combination, 4½h.p. twin, 3-speed, splendid order, £35; both privately owned.—Seen at P.V. Garage, Forest Hill. [7802

Quadrant.

NEW 4½h.p. Quadrants, 3-speed gear models, new, £47/5, plus 5%; Quadrant Canoelet sidecars, 11 gns. extra; the whole combination, new, £61/3.—Delivered from stock at Wauchope's, 9, Shoe Lane, London. [X9815

Radco.

RADCO, with accessories; cost £30; soiled only; £23. —Downs, Downs Rd., Coulsdon. [X9747

1915 Radco, 2-stroke; £25; liberal exchanges.—Newnham, 223, Hammersmith Rd., W. [7821

1914¾ Radco, just overhauled, in perfect condition; 18 gns., big bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X9326

Rex.

REX, 5-6h.p., clutch, sidecar, £18; wanted, 8h.p. combination.—Pearse, Staplehurst. [7388

5h.p. T.T. Rex, B. and B., mag., powerful; £12.—Leversedge, 2a, Mint St., Lincoln. [X9922

6h.p. Rex and Sidecar, Bosch mag., Druids, Pedley tyres; trial; £18.—125, Canal Rd., Mile End. [7928

REX de Luxe, 6h.p., 2-speed, coachbuilt sidecar, perfect; £50; trial.—26, North Gate, Harborne. [X9861

5-6h.p. Rex, Bosch, B.B., drip feed, very fast, good condition; £16.—Holmes, Hoyle House, Linthwaite. [X9929

REX, 3½h.p., 1908, mag., 1913 free engine, Dunlop heavy tyres; offers.—Wadey, Five Oaks, Billingshurst. [7859

1910 3½h.p. Rex, variable gear, good tyres, perfect condition; £16/10.—Williams, Jeweller, Church End, Finchley. [7783

REX, 5-6h.p., and sidecar, B. and B., re-bushed, powerful and reliable; £12/10.—Southwell, 6, Norfolk Rd., Merton. [X9858

REX, 1913, 6h.p., speed model, with Millford Cruiser sidecar, fast machine; £30.—The Premier Motor Co., Aston Rd., Birmingham. [7816

REX 1910 Combination, 5-6h.p. twin, mag., 2 speeds; any trial; £23/10.—Wandsworth Motor Exchange, Ebner St., Wandsworth. [X9935

REX 5-6h.p. Twin, Bosch, mag., B. and B., dropped frame, coachbuilt sidecar, reliable, powerful; £15.—Toms, Catherine St., Leicester. [X9886

1914 Rex Combination, 6h.p., 3-speed counter-shaft gear, h.b.c., cork inset clutch, enclosed chain drive, Enots auto-lubricator, all refinements, Lucas head lamp, side and rear lights, smart outfit; £57.—90, Upton Lane, Forest Gate. [7949

Roc.

4h.p. 2-speed Roc, overhauled, tyres and belt good condition; accept £12/10.—F. Arthars, Astwood Bank, Redditch. [X9717

Rover.

ROVER 1915 Sidecar Combination in stock; £80. —Butler's Garage, Baldock. [X9786

ROVER, 3½h.p., worth £10, sacrifice for £7/15.—Winifred Gowdey, 895, Fulham Rd., S.W. [7955

3½h.p. 3-speed Rover, Binks carburetter, excellent condition; £25.—Parker and Son, St. Ives, Hunts. [8019

ROVER 1915 Combination, 3½h.p., counter-shaft, just arrived; special E.P., exchanges.—Lamb's, 151, High St., Walthamstow. [7856

ROVER, 1914, 3½h.p., 3-speed gear, Lucas lamp and horn, Cowey speedometer, with sidecar; £48. —McKinnon, Wallington, Surrey. [X9908

ROVER 1912 3½-4h.p. Coach Combination, F.E. clutch; any trial; £32/10.—Wandsworth Motor Exchange, Ebner St., Wandsworth. [X9933

ROVER, 1915, 3-speed, delivered 1914, condition and appearance as new, not used since August, fully equipped; £39.—Syd. Pearson, 66, St. Patrick's Rd., Coventry. [X9972

ROVER, 3½h.p., late 1913, done 3,800 miles, coach-built sidecar, 3 lamps, horn, Watford speedometer, all tools, new Kempshall back; cost £80, what offers? —H. F. Bingham, Electric Theatre, Horsham, Sussex. [7863

ROVER, 1914, coach sidecar, 3-speed, free engine, Cowey speedometer, large P. and H. lamp, electric rear light, spare handle-bars for solo riding, accessories, and spares, all in first-class condition; sacrifice £54, no offers.—Reee, 152, Mile End Rd., E. [7741

Royal Ruby.

ROYAL Ruby, 1915, 2-stroke, almost new; £25.—Percy, 337, Euston Rd., London. [8025

ROYAL Ruby Lightweight, 1915, not done 300 miles; cost £28/14/6, accept £25.—47, Hastings Rd., Bolton. [X9715

2½h.p. 2-stroke 2-speed Royal Ruby, done about 500 miles; £28/10; part exchange cycle car.—20, Alphington St., Exeter. [7858

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Rudge.

RUDGE Multi, 3½h.p., new, unused, early 1914; 50 gns.—Payne, Victoria St., Morecambe. [X9791

RUDGE 1914-15 Multi, 3½-4h.p., mag., almost new; 38 gns.—1, Ebner St., Wandsworth. [X9936

1913 Rudge Multi for sale; accept £36; perfect condition; first cheque secures.—2, Belmont Rd., Luton. [7969

RUDGE T.T., 1915, 3½h.p., £30, fast machine, extra good condition.—Apply after 7 o'clock, 1, Haverlock St., Forest Hill, S.E. [7812

RUDGE Multi, 5h.p., 1914, with combination, sidecar, speedometer, 3 sets Lucas lamps, spare tyre, £50.—Kennington Stables, Clifton Place, Margate. [X9826

3½h.p. Rudge Multi, 1912-1913, perfect condition, complete with one new tyre, powerful head light, and spare belt; £35, or nearest offer; any trial.—Bartlett, The Elms, Watford. [X9752

RUDGE Multi, 1915, 3½h.p., Isle of Man T.T., done 1,000 miles, condition as new, hand-controlled clutch; bargain, £52.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0551

1912 Rudge, 3½h.p., fitted with 1914 engine, 2-speed gear, kick starter, good tyres, head lamp, and wicker sidecar; bargain, £27.—Bedford, 174, Upper Richmond Rd., East Sheen, S.W. [X9422

3½h.p. Rudge Multi and Bradbury sidecar, 1912¼, only run 6,500 miles, new heavy Bates back cover, Cowey speedometer, F.R.S. lamp, pan seat, horn, tools; £37/10 or near offer, cost £79.—The Croft, 43, Somers Rd., Reigate. [7909

RUDGE Multi, 1915, 3½h.p., T.T., Isle of Man, Multi gear, with hand-controlled clutch, 6 gn. speedometer, torpedo sidecar, 3 lamps, all accessories, as new, very smart; what offer over £50?—Box L802, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7978

Scott.

SCOTT-JOWETT, 2½h.p., 2-speed, mag., water-cooled, kick starter, splendid condition; £18.—Fairbourn, Wellcroft, Shipley, Yorks. [7913

1915 Scott, delivered too late for owner; 60 gns. accepted; offers ignored; Scotts very scarce.—Young and Old, Ltd., Garage, Folkestone. [8048

SCOTT, late 1912, 2-speed, free engine, kick-starter, lamp set, Palmer cord, tyres, speedometer; £26/10.—185, Shernhall St., Walthamstow. [7896

SCOTT, late 1913, with 1914 improvements, Scott coachbuilt sidecar, speedometer, new Palmer tyre, spare tube, perfect running order, like new; £60.—45, Charlton Rd., Blackheath, London. [X9776

SCOTT, 1913, 3¾h.p., with handsome 18 gn. coach-built sidecar, fitted wind screen, and all accessories, good running condition; must sell; £35, exceptional bargain; well worth £50.—J. Graham, 168, The Moor, Sheffield. [7786

S.I.A.M.T.

S.I.A.M.T., 2½h.p., in splendid running order, tyres good, and complete with lamps; £14.—Newnham, 223, Hammersmith Rd., W. [7820

Singer.

SINGER Lightweight, 3-speed gear, smart little mount; 25 gns.—Bunting, Harrow. [7941

3½h.p. Singer, 3-speed, 1912; £27.—Pike's Garage, Alphington St., Exeter. [7919

1913½ Singer, 2½h.p., new back tyre, in real good condition, fast; £20.—Lyon, Emberton, Newport Pagnell. [X9646

SINGER, 1913, 2½h.p., overhauled at works, new belt and tyres like new; £18.—Hartwell, Chipping Norton. [7801

1912 Singer Lightweight, 2¼h.p., fully equipped, splendid condition; £13/10 cash.—54, Seymour Rd., Leyton. [7756

SINGER and Co., Ltd., 17, Holborn Viaduct, have only a limited supply of 3½h.p. 3-speed models; prices to clear, £58; 4½h.p. countershaft 2-speed, ideal model for sidecar work, £65.—Write, call, or 'phone 13173 Central [0667

Sun.

SUN-VITESSE, 2½h.p., 1915, 2-speed, in stock; £32/10; cheque secures.—Knight, Oundle. [X9941

SUN-VILLIERS, 2½h.p., 2-stroke, new last October, all accessories, new back tyre, perfect; £21.—Maitland, May Cottage, Harold Wood, Essex. [7938

1915 Sun, V.T.S. engine, absolutely new, 2-stroke, 2-speed countershaft; in stock, immediate delivery; £55/15.—Robinson's, Green St., Cambridge. [6864

Sunbeam.

1914 6h.p. Sunbeam and Gloria sidecar, in beautiful condition, special fittings; cost with accessories over £120; price £80.—Davenport, Capesthorne, Chelford, Cheshire. [X9969

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SALE, 2h.p. Humber, £11; Scott, 2-speed clutch, kick start, 1910, £15; wanted, good combination, Zenith 6h.p. solo, fast.—Troward, 174, New Bond St. [7935

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1908 Triumph, many improvements, perfect, any trial, £15; 1910 Rex, F.E., clutch, splendid tyres, approval, £16; 1909 N.S.U., extra tyres, pull sidecar, a gift, £10; several frames, speed gears, tanks, tyres, etc., for sale cheap. Just watch this firm for bargains. Send your requirements.—X'all Motor Exchange, Seller St., Chester. [7964

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MONTGOMERY Cane Canoe Sidecar, apron, foot bell; £4/5.—47, Cambridge Rd., E. [7889

SIDECAR, cane canoe shape, Hutchinson tyre; £4. —Walton, 77, Tantallon Rd., Balham. [7930

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GREEN Coachbuilt Sidecar, 1914, off Triumph, very light; £4/10, bargain.—Barnard, Brackuell, Berks. [7903

GLORIA Projectile Sidecar, 1914; cost £30; done under 1,500; bargain, £16.—S. Chapple, Torrington. [X9965

DOUGLAS Sidecar for a 1915 4h.p. Douglas, in stock; what offers? quite new.—Moffat, Yeovil. Tel.: 50. [1479

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JAMES Canoelet Sidecar, 1914, lamp, apron, 2½in. tyre, splendid condition; sacrifice £6/15.—162, Hagley Rd., Birmingham. [X9855

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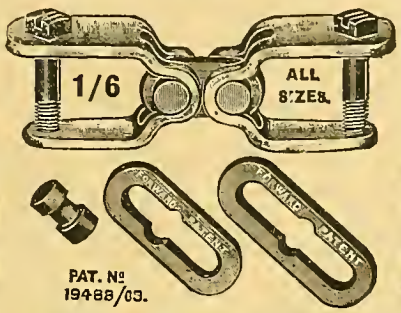

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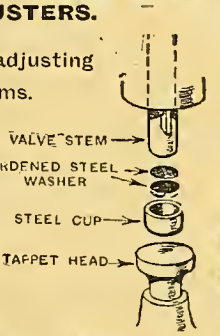

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SIDECARS AND FORECARS.

WATSONIAN Wicker Sidecar, lightweight, quite new, with side door, cushion, and lamp; cost £7/13, take £6, no offers.—Cooper, Pier Plain, Gorleston-on-Sea. [X9753

JUNO Sidecar, coachbuilt, side entrance, 2¼ Bates tyre, finish various colours, quick detachable joints; £8/8; 15/5 monthly.—Seen at 248, Bishopsgate, London, E.C. [1707

CANOELET, Swan, and Middleton record breaking sidecar; trade supplied.—Sole Wholesale Agent Loadou, Rey, 378-384, Euston Rd., and 173, Great Portland Street. [5381

SIDECARS are our speciality.—We make throughout thirty different designs. If we cannot give value, who can? Hoods, screens, and every sidecar requirement.—Melville Sidecars, Halifax. 'Phone: 999. [X1034

PHŒNIX Sidecars, highest grade, from £4/15 complete with tyres; immediate delivery. Send for illustrated list of different design chassis and bodies. Sidecars on hire. Second-hand sidecars always in stock. —Phœnix Motors, Ltd. (Motor Cycle Depot), 736, Holloway Rd., London, N. Tel.: Hornsey 449. [0135

IT'S Impossible To, they say, but call and see.—£23 Gloria sidecars, 10 gns., or offers, spring wheels, and lock-up trunks; Montgomery and P.M.C. Phœnix sidecars from £6/10, usual prices £16; also beautiful Aero underslung coachbuilts, any colour, £7/10. All new sidecars, second-hand prices; photos, 2 stamps.—Aero, 31, Queen's Mews, Porchester Gardens, Bayswater (side of Whiteley's). [7994

BODIES.

COACH Bodies, £3/10, made to order.—Bright and Hayles, Church St. Camberwell. [7842

TANDEM Coach Bodies to order; £6/10.—Bright and Hayles, Church St., Camberwell. [7843

CIGAR-SHAPE Bodies, £3/12/6; lists free.—Bright and Hayles, Church St., Camberwell. [7844

COACH Sidecar Bodies made to suit any chassis from £3.—Grey Friars Bodies Co., Croft Rd., Coventry. [X5983

REPAIRS and Repainting Coach Bodies; estimates free.—Bright and Hayles, 73, Church St., Camberwell. [7845

COACHBUILT Bodies, 70/-; Cape hoods, wind screens, repairs, and carrier boxes.—963, Romford Rd., Manor Park, E. [7849

COACHBUILT Body, luggage or child's seat at rear, 25/-, new; 26×2¼ Wood-Milne heavy cover, 20/-.—230, Archway Rd., N. [7757

NEW Coachbuilt Body, 75/-; shop-soiled Millford Herald wicker, 20/-; second-hand coachbuilt Clyno, 55/-.—Seen at 248, Bishopsgate, London, E.C. [1710

2-SEATER Body, latest, 9ft. long, requires trimming, side entrance door, scuttle dash; sell cheap, or exchange anything for motor cycles. See Wanted advt. —Hole, 129, Park Lane, Carshalton. [X9882

CYCLE CARS.

A.C. Sociable, screen, hood, new tyres; £40.—Bond. 245-247, Euston Rd., N.W. [X9827

MORGAN, 1914, fully equipped, in very nice order; £85.—Percy, 337, Euston Rd., London. [8021

A.C. Sociable, all accessories, etc.; expert examination invited; £45.—Morris, Entertainer, Bourne. [7122

6h.p. 2-speed Tricar, would make useful delivery car.—Write for particulars, Fred Morgan, Talgarth. [X9896

A.C. Sociable, 1913, hood, screen, speedometer, lamps; £46.—Tudor House, 49, High St., Kingston, Surrey. [7959

5-6h.p. Forecar, twin-cyl., 2 speeds, chain drive, handle starter, running order; £10, or offer.—Lean, Townshend, Hayle. [X9968

1913 L.M.-J.A.P. Cycle Car, thoroughly overhauled, re-painted; £50; exchange; photo.—224, Belgrave Gate, Leicester. [X9883

MORGAN Pattern Cycle Car, 8h.p., Binks, mag., 3 speeds, reverse screen, etc., as new; trial; £35, bargain.—Ben-Hur, Greenside Rd., Croydon. [7969

MORGAN, 1914, sporting model, Palmer tyres, hood, screen, speedometer, Binks carburetter, drip lubrication, 4 lamps, tools, and spares; £70.—C., 130, Brixton Rd., S.W. [X9711

1913 (October) Morgan, hood, screen, speedometer, watch, electric horn, and spares, good order, tyres excellent; £70, or nearest offer.—Harper, 145, Sharp St., Hull. [X9801

CARDEN Monocar, 5-6h.p., 2-speed Jardine gear box, handle starting, very fast car, painted white, black wheels, not run 300 miles; £65, or near offer.—42, Radcliffe Rd., Nottingham. [X8849

HUMBERETTE, late 1914, water-cooled, Stepney wheel, speedometer, in good condition, in use 6 months; a bargain, £100, or nearest offer.—G. Tweed, 7, Victoria Terrace, Gillingham, Kent. [7746

SUPER 8-10h.p. Anzani, water-cooled, 1913 model, tandem seater, driven in front, chain and belt, variable pulleys, fast, comfortable, perfect order throughout, original belts still on; free trial; good reason for selling; accept £40.—R. Vernon, Bohun Lodge, East Barnet. [X9417

CARS FOR SALE.

PALMER'S Garage, Tooting.—10-12h.p. Swift torpedo 2-seat., gate change; £80.

PALMER'S Garage, Tooting. — 24-30h.p. Dennis double landaulet, gate change, worm drive; £175.

PALMER'S Garage, Tooting.—14-16h.p. Darracq light limousine, seats 4 inside; bargain, £95.

PALMER'S Garage, Tooting.—12-14h.p. F.I.A.T. chassis, suitable for 2-seat., 4-seat., delivery van, etc.; £125.

PALMER'S Garage, Tooting.—12-14h.p. F.I.A.T. landaulets, three immediately available; prices £175, £200, £225.

PALMER'S Garage, Tooting.—20h.p. Delaunay-Belleville full ¾ landaulet, superb carriage; £175.

PALMER'S Garage, Tooting.—Four 12-14h.p. F.I.A.T. modern 15 cwt. delivery vans, immediately available; £150, £175 each.

PALMER'S Garage, Tooting.—10-12h.p. Berliet cab-landaulet, 4 cyls., gate; £100.

PALMER'S Garage, Tooting.—10h.p. Darracq 1913 2-seat., 4 cyls., enclosed valves, 5 Rudge wheels, fully equipped; £135.

PALMER'S Garage, Tooting.—9-11h.p. Jackson sporting 2-seat., fitted with hood, mag. ignition, fast, reliable; £60.

PALMER'S Garage, Tooting.—14-16h.p. Singer touring car, 4 cyls., gate change; £85.

PALMER'S Garage, Tooting.—14-16h.p. Gladiator cab-landaulet, 4 cyls., gate change; £65.

PALMER'S Garage, Tooting.—24-36h.p. S.P.A. chassis, gate change, powerful lot; £85.

PALMER'S Garage, Tooting.—Write for catalogue containing illustrations of over 50 automobiles.—Sole address, Palmer's Garage and Motor Auction Rooms, Tooting. Exchanges made. [8042

CHENARD, 4-cyl., touring, fast; £65; exchange combination.—41, Elm Rd., New Malden. [7864

1914 Twin J.A.P. Midget, 8-10h.p., 2-seater, as new; £65.—Beardshaw, Auctioneer, Wood Green. [7745

FORD 5-seat. Touring Cars, delivery from stock.—D. J. Shepherd and Co., Enfield Highway, N. [8005

PHŒNIX 10-12h.p. 2-seater, dickey seat, in good order; £35.—Percy, 337, Euston Rd., London. [8023

FORD, 1914, 5-seater, in exceptional nice order, as new; 90 gns.—Percy, 337, Euston Rd., London. [8022

SMART Little Car, single-cyl., 3-speed, mag., Stepney, excellent order; £22.—210, Bury New Rd., Manchester. [X9925

1913 Ford, 4-seater, Stepney, electric lamps, good condition; £75; Douglas part payment.—789, High Rd., Leytonstone. [7847

SAXON 100 gn. and Ritz £120 cars, 11h.p. 2-seaters; motor cycle exchanges entertained; trials by appointment.—Lamb's, 151, High St., Walthamstow. [7834

9h.p. Riley Car, wire wheels, 2-seater, tyres perfect, body wants renovating; £20, or exchange good motor bike.—Ellis, 205, Spring Hall Lane, Halifax. [X9844

DE DION Bouton, smart 2-seat., 8h.p., new tyres, tubes, hood, screen, high side doors, beautiful condition; any trial; £28/10; exchange motor cycle. —1, Ebner St., Wandsworth. [X9940

SAXON and Ritz Light Cars at motor cycle prices. 4-cyl., water-cooled, 2 speeds, reverse, hood, screen, all on, 100 gns. and £120 respectively; motor cycles in part exchange; deferred payments; promptest delivery. —Lamb's, 151, High St., Walthamstow. [0533

EXTENDED PAYMENTS.

EXTENDED Payments.—All makes supplied; lowest terms.—Service Co., 292, High Holborn, London [0618

ENGINES.

2h.p. Humber Engine, fitted whistle; 28/6.—F., 16, East Ter., Gravesend. [X9904

PRECISION Spares.—Sole London stockists, Grandex, 83, Gray's Inn Rd., W.C. [3235

3½h.p. Ariel, powerful, adjustable pulley; £3/10.—Chapman, 55, Camp, Tweseldown, Farnham. [7755

2h.p. Minerva, m.o.i.v., perfect, £2/5; 6h.p. twin Antoine, good condition, £3/15.—Syd. Pearson (see Miscellaneous). [X9974

IGNITION APPLIANCES.

MAGNETO, new; £2/12/6. — Ashton's, Thornhill Edge, Dewsbury. [X9891

PARKER and Rice, Magneto Specialists.—Experts on all magnetos, Bosch, Eisemann, etc.

PARKER and Rice.—Re-winding, re-magnetising, overhauling, etc.; repairs executed with expedition and unapproachable workmanship; low quotations.

IMPORTANT.—Parker and Rice give 12 months' written guarantee with each repair.

PARKER and Rice, John's Place, King St., Acton, London.—State your trouble. Let us quote you. [4292

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ABINGDON, 3½ h.p., 3-speed	£63	0
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SUN-VILLIERS	£26	5*
SUN-VITESSE, 2-speed	£34	0*
ROYAL RUBY	£26	5*
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HARLEY-DAVIDSON, Model F	£68	5
Ditto, with lighting set, Model J	£76	13
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HUMBER, 3½ h.p., 3-speed	£57	10
ZENITH, 6 h.p., clutch model	£75	12*
PREMIER, 3½ h.p., 3-speed	£58	0
MOTOSACOCHE, 3½ h.p., twin, 2-speed.	£62	0
BROUGH, 3½h.p., twin, 3-sp. c/sha t gear	£60	0*

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Stock No. **UNDER £20.**

779. Old Motor Cycle, De Dion engine, tank, wheels incomplete £2 10
834. 1¼ h.p. 1914 **ELF**, new condition, magneto, spring forks, an ideal lightweight £17 0
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255. 3h.p. **WANDERER**, twin-cylinder, magneto, spring frame and forks £17 0

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99. 6 h.p. 1910 twin-cylinder **REX**, magneto, 2-speed gear, handle starting, nice order £25 0
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222. 3½-4 h.p. **ZENITH-J.A.P.**, with Gradua gear, lamp, and horn.. £22 10
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2½h.p. lady's **HOBART**, 1913, 2-sp. and clutch £25 0

£30 to £40.

906. 6 h.p. **CLYNO**, 2-speed, and cane side-entrance Sidecar £35 0
155. 4 h.p. 1914 **CHATER-J.A.P.**, with Mark VII. 3-speed hub, spare petrol tank, etc. £31 10
260. 6 h.p. 1913 **REX** de Luxe, coach-built Sidecar, 2-speed, and clutch £37 10
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OVER £40.

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14. 5 h.p. **HAZLEWOOD-J.A.P.**, with Bramble Sidecar £55 0
108. 6 h.p. 1914 **CLYNO** and No. 6 Sidecar, just re-enamelled £63 0
273. 8 h.p. 1914 **MATCHLESS**, J.A.P. engine, 2 speeds, c/shaft gear, chain drive, and kick starter .. £50 0
292. 6 h.p. **CLYNO**, 1914, 3 speeds, with No. 1 Sidecar, lamp, horn, and spare wheel with tyre ... £70 0
306. 7 h.p. **INDIAN** (Oct., 1913), 2-sp and kick starter, with Millfor Indian Sidecar, lamps, whist and speedometer, only dc 2,000 miles £52 10

Most of the above can be sup on EXTENDED PAYMENT.

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LONDON

289-293, HIGH HOLBORN, LONDON, W.C.

Wires: "Admittedly." 'Phone: 260 Central.
Garage and Repairs: 1 and 2, Harpur Mews, Theobold's Road, W.C.

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RUNBAKEN.—Efficient magneto repairs by specialists. Moderate prices. Return within 24 hours.

RUNBAKEN.—Spare parts for Bosch, Eisemann, U.H., etc., in stock. Several good second-hand magnetos. Send for illustrated booklet.

REMEMBER that the magneto is the very life of your motor, and when damaged requires special attention by thoroughly skilled workmen. It will, therefore, pay you to send it to us, otherwise irreparable harm may be done through careless handling.

TYLE Runbaken Magneto Co., Ltd., Camp Street Works, Deansgate, Manchester. Tel.: 6111 City (3 lines). [0404

BASTONE'S for Magnetos, singles and V type; cyls., and right prices.—228, Pentonville Rd., King's Cross, London. [8041

JEBRON, registered 291298, greatly superior to platinum, unequalled for blades, screws, etc. cures misfiring; 2/6 each rivet; Jebron screws, fit Bosch magnetos, 5/6 pair; old screws Jebronised, 2/6 each.

JEBRON Contacts, used by Messrs. Collier Bros., Colver, Martin, making world's records.—Jebron, 38, Herbert Rd., Woolwich, London, S.E. [X4331

MAGNETO Repairs of every description by Bosch specialists; expedition and moderate charges. Magnetos bought and sold. 1 and 2-cyl. in stock.—The Magneto Mart and Repairing Co., 142, Wardour St., W. [7992

BIRMINGHAM.—Magneto Repairs.—Re-winding, re magnetising, and overhauling promptly executed; moderate charges.—The Electrical Trades Supply Ltd., 41, Gt. Charles St., Birmingham. T.A.: Motors, Birmingham. [5610

MAGNETO Repairs of every description, armature winding a speciality. We are late from the Bosch works, and entirely British, and give same guarantee at half their prices.—The Magneto Repairing and Winding Co., 158, Seymour St., Euston Rd., London. 'Phone: Museum 1158. [8013

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BASTONE'S.—Lyso rubber belting, ⅞in., 8ft. (two pieces), lengths 6/6; 1in. ditto, 9/6.

BASTONE'S.—Best English make rubber and canvas belting ⅞ 1/-, 1in. 1/3 per foot.

BASTONE'S.—Leather and chrome belting, ¾ 1/-, ⅞ 1/2, 1in. 1/4, 1¼in. 1/6 per foot.—228, Pentonville Rd., King's Cross, London, N. [8040

BELTS.—New clearance Dunlop rubber belts, any standard size, 10/6 each.—Palmer's Garage, Tooting. [8049

BALATA-CHROME Belts, highly satisfactory all weathers; ¾in. 9d., ⅞in. 10d., 1in. 1/-, 1¼in. 1/3 per foot, post free.—Pollin, Shepherdswell, Dover. [5998

500 Perfectly New Rubber Motor Cycle Belts, all sizes, fasteners free; satisfaction guaranteed; 6/6 each; dozens of testimonials.—Dancer Motor, 69, Gower St., Lozells, Birmingham. [X9746

LAYTON'S.—Will motor cyclists please note that our price for best English rubber and canvas belting, 7ft. 6in.×⅞in., is 6/6, quality as exactly advertised by other dealers at a much higher figure.—Layton's Garage, Bicester, Oxon. [X9947

TYRES.

LEGGATE, Edinburgh, for 1915 Tyres.

LEGGATE, Edinburgh.—For great reductions and genuine value in brand new clearance 1915 Clincher tyres. Manufactured in this city by the largest india-rubber manufacturers in the British Empire, and famous the world over for quality, resiliency, durability, and non-skidding properties.—See below for approval terms. Prompt despatch guaranteed.

LEGGATE, Edinburgh.—Clearance.—1915 new pattern Clincher Dreadnought, extra heavy, rubber studded, beaded covers. 26×2¼ 31/-, list £2 7/3; 26×2½, to fit 2¼ rims, 31/6, list £2/7/3; 26×2⅝ 32/6, list £2/10/10.

LEGGATE, Edinburgh.—Clearance.—1915 new pattern Clincher De Luxe, heavy rubber studded, beaded covers, 26×2¼, 21/-; 26×2⅝, to fit 2¼ rims, 23/6, list £2/1; 26×2½ 25/6, list £2/2/9.

LEGGATE, Edinburgh.—Clearance.—1915 new pattern Clincher De Luxe, 4-ply fabric, extra heavy, rubber studded, beaded covers, 26×2½, for 2¼ rims, 27/6, worth double.

LEGGATE, Edinburgh.—Clearance.—Extra heavy tubes, brand new, 26×2 6/-, 26×2¼ 6/6, 26×2⅝ 6/6, 26×2½ 7/-.

LEGGATE, Edinburgh. — Clearance. — 1915 Dunlop extra heavy rubber studded beaded covers, 26×2½, 29/6, list 39/-; 26×2½, for 2¼ rims, 30/-, list 40/-; 26×2⅝, for 2¼ rims, 28/6, list 37/9; 28×3, for Indians, 33/-, list 44/-; 28×2½, for Indians, 31/-, list 41/3; heavy 26×2⅝, for 2¼ rims, 23/6, list 30/6.

LEGGATE, Edinburgh.—These goods are all perfect, and sent anywhere on 7 days' approval against remittance; cash refunded in full if goods not approved of.

LEGGATE and Co., Motor Cycle Specialists, 18, Slateford Rd., Edinburgh. [X9916

TUBES (3), new condition, 650×65, 700×80: 12/6 appro.—Ben-Hur, Greenside Rd., Croydon. [7971

JULY 8TH, 1915.

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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SOUTH AFRICA.—Central News Agency, Ltd. PARIS.—Smith's English Library, 248, Rue Rivoli.

The Magneto Supply.

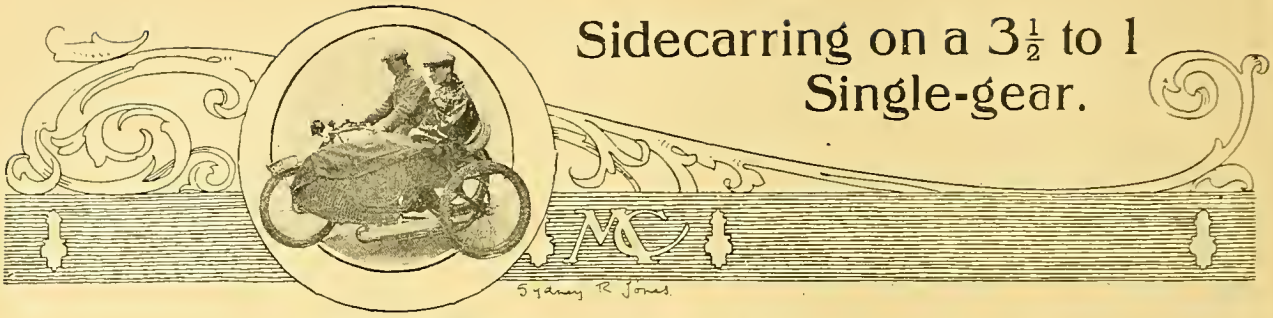
IT will be within the knowledge of most of our readers that this journal has done its utmost to encourage the British manufacturer to devote attention to the subject of home-made magnetos by persistent references to the matter. We claim no special credit for what we have done, though it is a fact that two years ago, when we had the audacity to point out that the motor industry of this country was to all intents and purposes entirely dependent upon the German-made magneto, and that, in the event of any strike, lockout, or sudden cessation of supplies, it was conceivable that the British motor industry would be seriously deranged, we, in conjunction with our sister journal *The Autocar*, were subjected to considerable criticism. Later events showed that our warning was not an untimely one, for it is a well-known fact that supplies of motor vehicles of all sorts (including those for the Army) in this country have been greatly delayed owing to the shortage of magnetos. Had it not been for American intervention, the shortage would have been a good deal more serious.

At the beginning of this year, we outlined the magneto position, as far as British makers were concerned, and published a list of firms engaged in the production of magnetos. We further urged the British motor cycle manufacturer to support the magneto maker in his endeavours to fill the breach. At that time the British magneto industry showed much promise, so much so indeed that it was felt that within a few months practically every make of motor cycle would be fitted with a British-made magneto, or, at any rate, that it would be possible to have the option of a British magneto if the maker's patriotism were not sufficiently pronounced to standardise the home product. But the promise does not seem to have been entirely fulfilled, as it is still a fact that the British-made magneto fitted as standard to the leading makes is in the minority. Readers have gone out of their way to draw our attention to this fact and remark upon it with some regret. With a view to clearing the air, and with the further object of focussing attention upon the British magneto and the desirability that the motor industry of this country shall be a self-supporting one, we addressed a circular letter to the different magneto manufacturers, and in the last issue the different replies were published; these form interesting and instructive reading. Some of the remarks cannot be considered anything but uncomplimentary to the patriotism of the British manufacturer, but we know that these are exceptions and need not be taken too seriously. It does, however, appear from the replies that, where manufacturers are now in a position to give or promise definitely deliveries, there is still a lamentable lack of support from the motor manufacturer.

Magneto *v.* Dynamo

The remarks just made with reference to the magneto apply very strongly at the present time, and are likely to do so in the immediate future, and in the case of light machines for many years to come. But on the heavier and more luxurious types of motor cycle, and more especially on powerful sidecar combinations, there are indications that the magneto may be forced from its pre-eminent position as a spark producer in favour of the dynamo, which, combined with an efficient accumulator, is becoming increasingly popular owing to the powerful and steady light produced by these means. There is no need to discuss here the failings of accumulators—they are well known to all old motor cyclists—but accumulators have been immensely improved in recent years until they are capable of withstanding a heavy discharge, and, used in the manner indicated, they are kept always at concert pitch by the dynamo, and should give no trouble. It really should not be necessary to carry two electrical machines on the same mount.

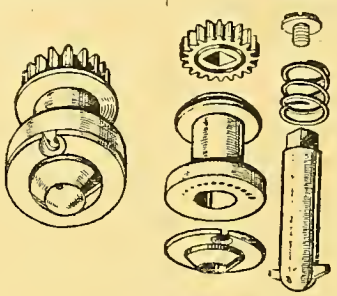
An index to the advertisements in this issue will be found on the page facing the back cover.



Sidecarring on a 3½ to 1 Single-gear.

How a Racing Machine has been "Tamed" by its Owner.

LAST week we received a visit from Mr. J. H. Wilkinson, the patentee of the Wilkinson twelve-jet carburetter. Mr. Wilkinson called at our Coventry offices at 11 a.m., having ridden from Doncaster *via* Newark and the Fosse-way (a distance of ninety-eight miles) that morning. The object of his call was to demonstrate to us the controllability provided by his new pattern carburetter, and for the purpose he brought a machine which one can well realise would require a carburetter of the most controllable type. It was, in fact, an overhead valve 6 h.p. T.T. Matchless-Jap, and was fitted with a sidecar (in which Mr. E. Goult, the hon. secretary of the Doncaster and District Motor Cycle Club, accompanied Mr. Wilkinson), the machine having a single-gear of 3½ to 1. Those who have had experience of the overhead valve racing Jap will know that this engine is not one of the "tick over" variety. With this high-compression mount, it is usually a case of running at twenty miles an hour and taking a flying leap into the saddle as the engine goes off with a rush, and then hanging on for dear life for fear of slipping over the back end of the mudguard, for of power there never was any doubt. We believe that Mr. Prestwich himself will admit that it is an achievement for any carburetter maker to provide the means whereby one of these wonderfully efficient engines can be rendered as docile as, or even more docile than, an engine of the ordinary type.



Component parts of the latest Wilkinson twelve-jet carburetter.

The Engine "Tamed."

Taking a seat in Mr. Wilkinson's sidecar, our driver calmly pushed off with the first jet in operation, and the engine at once commenced its "tick-a-tick" in a most impressive fashion. It would respond to the different jet openings readily and gather speed on hills in fine style. It should here be mentioned that the difference between the old and new type Wilkinson carburetter is the fact that only one jet is in operation at a time on the later model, whereas last year the series of jets were gradually uncovered and used collectively on full throttle opening.

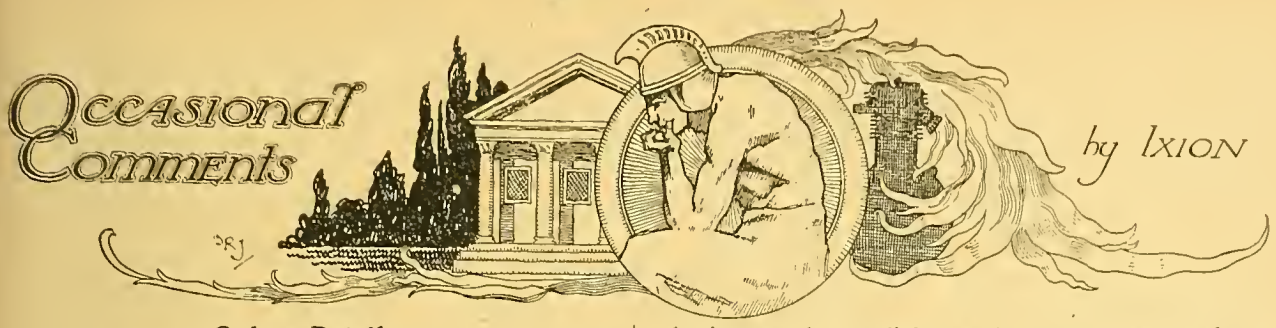
So remarkable were the performances of the machine that we escorted Mr. Wilkinson to our private miniature Sutton Bank. This rise, which is only a gradual one, leads to the local golf links and is approached by rounding one of the most acute hairpin bends imaginable. Mr. Wilkinson, of course, did not know the road, and, after ticking round the corner with both cylinders firing regularly at walking pace, at once swept open the throttle. But we had asked too much, and, although the engine stuck gamely to its task for sixty or seventy yards, it was unable to gather speed, but with a slightly lower gear the feat would have been possible. After that, we indulged in a short speed burst, and, unless the Cowey speedometer told untruths we touched a speed of fifty-four miles an hour on the flat.

Mr. J. H. Wilkinson (driving) and Mr. E. Goult (hon. sec. Doncaster M.C.C.) on the former's 6 h.p. Matchless-Jap.

30,000 Miles in Five Years.

This particular Matchless-Jap of which we speak has been a wonderful machine. Mr. Wilkinson has ridden it constantly since 1910, and estimates that he has covered at least thirty thousand miles on it in the intervening period. It is as reliable as ever, and, in its old age, is now regularly pulling a sidecar. Besides a method of preventing the possibility of broken valve heads falling on to the piston, the owner has fitted a very neat foot-operated valve lifter, a desirable arrangement with such strong springs as are used on this particular T.T. mount.

Mr. Wilkinson had other business to transact in Coventry that afternoon, and in the evening returned to Doncaster. This is something like a run—two hundred miles in one day, including five or six hours spent on business calls! And this on a five year old machine, which should convince those who have any misgivings respecting the life of a motor cycle.



Only a Detail.

Practically every factory employs tube spanners in the erecting shop. A tube spanner is the only spanner which can satisfactorily approach the wee nuts which lock the front brake shoes to their holes in the brake stirrup, for the tube and girder of the forks completely prevent an open-ended or screw wrench from approaching them. I am always detaching these nuts during the job of fitting a speedometer to new machines for press tests, and as I always notice that machines lose condition marks in Six Day Trials for shedding these front brake shoes, I make it a rule to test the tightness of the bolts every week on all machines which I keep in regular use. But I have never yet struck a machine which had the necessary tube spanner—cost about 2d.—in its regulation kit.

Dynamo Sets—a Real Demerit.

It should be quite clearly understood alike by the public and the trade that at present all motor bicycle electric sets suffer from one serious shortcoming. By dint of limited storage accommodation, they are necessarily supplied with accumulators designed for ignition work. Such small and light accumulators are really only fitted to very slow rates of discharge. Avoiding technicalities, one may put it by saying that these cells are adequate for ignition work, where their stored charge will not be used up in less than a month, or in a thousand miles. When they are used for lighting purposes, the rate of discharge is so rapid that they would be completely exhausted in from ten to twenty hours, according to the number and voltage of the lamps they serve. They are, of course, kept constantly replenished by the dynamo, and the wastage is made good as it occurs; but it is the *rate* of discharge which matters, and which determines the longevity of the cells, and is responsible for the amount of trouble they give. No responsible electrician would dream of using such small cheap cells for such swift discharging if the conditions allowed him to use the proper type, which is far more expensive and far more cumbrous and weighty. But the factors of cost, weight and storage apparently tie down the motor cycle illuminating set at present to a type of cell which is technically unsuitable. [See "Accumulators Ancient and Modern," April 29th, page 412.—Ed.] Even the light car, with its higher storage facilities and greater price range, is usually confined to these tiny cells; and it is notoriously true that during 1914 the accumulators on light cars gave more trouble than the whole of the rest of their lighting sets added together. It is, therefore, high praise to assert that our motor cycle electrical sets are already extremely desirable and pleasant possessions; and that when human ingenuity has conquered the task of perfecting a cheap, light, and compact accumulator, thoroughly adapted to a heavy discharging speed, acetylene will be very hard pressed to find a survival niche. By the way, I took out my Low generator the other day after two months of disuse; and a roaring flame leapt from the burner the instant I applied a match, which I did within two seconds of opening the stop cock. This gas had lain in the generator for eight solid weeks!

The 4 h.p. Douglas.

1914 rumour asserted that the big Douglas was not yet wholly worthy of its trim little 2¾ h.p. sister, but rumour is a lying jade, and my own sample is "some Douglas." As I have often written venomously of delivery tune, let me remark that it fired with a healthy bang on the first depression of its kick starter, and that its paces are so far uniformly delightful. Its carburetter was beautifully tuned, and it ticks over quite countably in free engine, when the throttle is shut back. Its sump lubrication is delightful; the W.D. and the Velocette quite cured me of any admiration I ever felt for hand pumps and drip feeds. Apart from the strains they entail on the memory, and the alert attention to engine beat which they demand, I detest buying small quantities of oil on tour. I normally purchase my oil in bulk at a flat rate about half that charged by garages for isolated pints and quarts. So my thrifty soul rejoices when I face a trip running into hundreds of miles, and know that if I have peered beneath a large crank case plug, and seen the green viscid mass close up to the lip of the orifice, I need not bother further about engine oiling or engine oil until my return home. The 4 h.p. Douglas is the first machine with a large output to adopt this ideal mode of lubrication; may others soon copy it.

A Good Transmission.

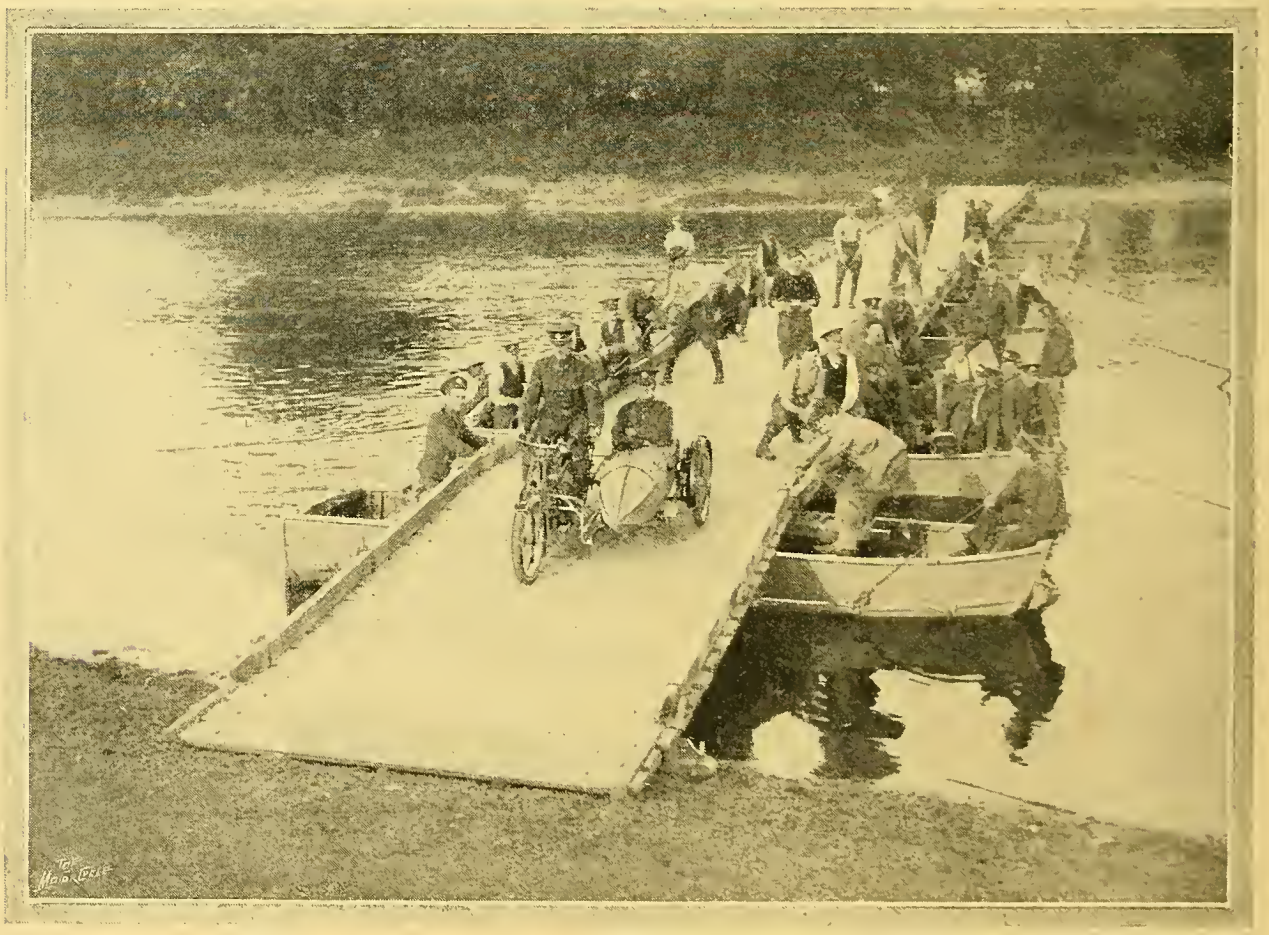
I am now driving a light twin-cylinder of 500 c.c. fitted with all chain drive, spring engine sprocket mounting, and cush hub. In reference to this drive one has to retract all one has said in the past about the harshness of chain drive. As a rule, spring engine sprocket mountings are something of a fraud. If you adjust them to slip when taking up the shocks of a start or a pick-up, they are apt to slip all the time; if, on the contrary, you tighten them sufficiently to prevent them from slipping under full load, they don't ease the preliminaries. I understand my particular combination is of Enfield construction and design, and it is certainly the goods. The pace which the machine can attain proves conclusively that the softening devices lock up solid under full load, but there is no snatch or jar when the engine is manhandled, and one makes it pick up from a crawl on a

Occasional Comments.—

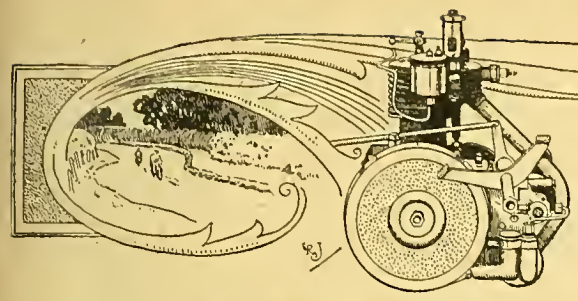
gradient, or jumps it off in a hurry. More than that; the spring sprocket mounting can be heard to slip whenever one changes gear—I do not mean that it squeaks, but the momentary racing of the engine is perceptible for a second or so before the drive locks up. I am not certain that the most fastidious expert dare assert his ability to distinguish this drive from a perfectly adjusted belt in respect of smoothness; if he could, it would be that vibration is a shade more pronounced with the chain transmission when the engine is absolutely all out, and on that point certainty could only be obtained by driving the same engine all out on the belt drive. In any case, the Enfield transmission is a revelation of what can be done in the way of mollifying the quondam acerbity of the chain.

A New Mode of Attaching Sidecars.

All sidecar men are aware that the lighter and more rigid three-wheelers suffer considerably from vibration on really bad roads, and that it is not an unknown thing for the connections or the cycle frame itself to break in a strenuous week of speed work and mountaineering as is represented by a six day trial. A Scottish reader informs me that he is rather pleased with a new method of attachment which he has made and is using on his own machine (a 3½ h.p.) As my readers know, I am no engineer, and do not pretend to be more than a babe in such matters; but the idea strikes my untutored judgment as containing possibilities. What he describes as the "two bottom stays" (presumably those to the front down tube of the bicycle and to its chain stays) are substantial hinged joints, the pivot of the hinge being horizontal in each case. The saddle pin joint is sprung; the long angular stay from the sidecar is a rigid tube, terminating in the usual eye, and the bolt to which it is coupled is free to slide in a bearing, having a coiled spring threaded over it on each side of the bearing. In other words, this is a variation of the flexible sidecar, formerly popularised by Mr. Montgomery, the sidecar being free to swing within limits round a horizontal axis. The inventor describes the comfort as a vast improvement on the rigid attachments, and finds no counterbalancing disadvantages in his road work. I remember that I gave up the original flexible sidecar partly because it was a terrible skidder, partly because the strain on the joints was such that the clips used to shift on the bicycle tubing; and so I dare not pronounce on the merits of this new flexible pattern without a road trial. I have often thought that there should be room for a flexible sidecar, given really substantial joints, affixed to lugs permanently brazed on to the cycle frame.



Pontoon bridge over the Trent built by the 2/1st Northumbrian R.E. The sidecar outfit, which is shown crossing the pontoon immediately after completion, is used for carrying despatches to and from the camp.



AROUND THE SCRAP HEAP.

By a Despatch Rider on Active Service.

At the Scrap Heap.

HAVE you ever experienced that sensation of grief, pity, and desolation as you gaze on your motor cycle after a too sudden familiarity with a steam roller? £60 worth of metal that had once conveyed you now a contortioned nightmare at your feet! A similar, but magnified sentiment comes upon one when roving round the scrap heap at —— base. These wounded warriors that formerly played such an heroic life at the Front are now but components of a scrap heap.

The Life of a Motor Cycle.

It is an open secret that motor cycles have only a short career out here, rarely, if ever, lasting longer than three months. Those machines that come to an end by being struck by shells or which run into Jack Johnson holes at 40 m.p.h. by night we can understand and forgive for breaking up; but then, the majority of machines are ridden behind the lines, to and from the base, and elsewhere, and for this ridiculously short life the reason must be found.

Their Final Condition.

The scrap heap is composed of all makes, including a sprinkling of nearly every well-known machine. Here is a —— minus belt and magneto, with a buckled wheel; here a ——, the tank splashed with blood, and a broken steering head. The tell-tale hand on the broken speedometer that happened to be fitted indicated 37 m.p.h. A —— had been ridden in *under its own power* in such a condition that it was marvellous that it went. The four engine bolt nuts were so loose that the carburetter could be seized in the hand, and it, with the cylinder head, moved bodily to and fro half an inch in either direction. In another case one piston ring only was left on the piston, also there was a cracked valve seating, a broken ball race in the magneto, and several other minor derangements. Further, another machine that looked brand new and in perfect order, on close inspection revealed the off front fork cracked at the lower end and the three-speed hub gear out of action. On another the piston rings were broken and cylinder badly scored through lack of lubrication. There they lie on the ground, one supported by the other, a spectacle of abject misery!

How they get Worn Out.

After a comparative inspection of the various machines the writer considers that the reason why the motor cycles do not stand up to their work is (1) continual fast riding over exceedingly bad roads and *pavé*. (2.) Individual machines passing through the hands of too many riders. (3.) The use of unsuitable lubricating oil. (4.) Lack of attention and adjustment. (5.) Bad handling and joy-riding.

Government Methods.

Something might be said about the Government methods employed out here, and a fair percentage of the blame hangs on their shoulders, so the less said on this score the better, although, after all, the responsibility in each small department depends on the organisation and initiative of an N.C.O. (usually a regular army man), the minor, yet important, details never reaching the officer in charge, especially as the men are not encouraged to criticise just now. What is wanted out here, and very badly too, is a "W.D." model, and there is plenty of time before the conclusion of this war to act in this matter. The following suggestions put forward should, however, be of use to those who design the machine.

Comparative Inspection.

A close inspection shows us that nearly all machines have been running with excessive play in the wheel bearings, due to wear, neglect, and lack of lubrication. The hubs are never cleaned. This calls for a dirt and waterproof hub made oiltight by internal packing and caps. Also a redesigned and larger hub oiler.

Engines.

With one or two exceptions where they were run without oil on urgent business, the engines as a whole are distinctly over-oiled. They show signs of having been flooded, for the oil oozes out everywhere, and the consequent carbonisation of head, heavier pistons, dirty sparking plug points, reduced exhaust pipe diameter, ports, choked silencer, etc., all help to reduce the efficiency of the power unit, and, formerly, where a hill could be climbed on top, low gear has to go in, and consequently the engine is raced unnecessarily. Drip feed is not giving satisfaction, for it depends too much on the idiosyncrasies of the rider, to say nothing of the glass being invisible at night.

An important fact that should not be overlooked is that the oil supplied for motor cycle use out here is, for the most part, water-cooled engine oil.

The Gears.

Of the many principles of multi-speed drives all are satisfactory, and usually only go wrong through lack of attention; especially is this the case with the three-speed hub. The way of fitting the gear box on a well-known machine is not happy, for when the threads on the holding-down bolts wear at the sides, the box when carelessly fitted may be bolted slightly diagonally to the frame, throwing the chain sprocket and belt pulley out of alignment. Elsewhere the speed lever handle is placed in an awkward position, throwing the centre of gravity of rider when changing gear into the wrong place at the critical moment where judgment in riding

is necessary, or possibly the handle may catch on his knee, or the actual gear change take too long.

The Ignition.

The wiring is not yet fitted in a businesslike fashion; the passing of a wire under the oil tank or pump should be avoided, as oil finds its way down the wire and on to the plug terminal.

The Carburetter.

In town the carburetter control levers are in continual use, and the sleeves or pistons in throttle and air barrels soon wear out, so, consequently, the engine can never be run slowly. The gauze filter over the air intake when screwed on should have some locking device. It is invariably missing.

Spring Forks.

Certain spring forks, while being ideal for comfort on good roads, are terrors on slippery places, and in many cases are not strong enough to withstand a hard bump.

Brakes.

Brakes are for the most part decidedly in the wrong place. Nearly all machines out here have had their front brake blocks removed because, directly the wheel is slightly buckled, the brake is useless, besides giving trouble in centring the wheel or when extracting it. With a slack bearing, the brake block, when applied, has been known to catch against a spoke and cause a nasty accident. The brake on rear wheel belt pulley places too much strain on the spokes. Why not fit special V brake drums on each wheel? They may be unsightly, but they are most certainly reliable in action.

Accessories.

Accessories have often been dealt with in these columns, but they are not sufficiently emancipated yet. They are too clumsy. The finish on small parts is invariably poor and soon rusts, whilst the fastenings are not up to the work. The serrated surface and nut principle is good in practice, but why omit the spring washer to hold the nut to its work? Put washers and split pins everywhere, especially on the carrier bolts, brake connections, mudguard fittings, and spring forks.

General Lubrication.

I should like to see the various small oilers on the machine redesigned and enlarged. At the present time the microscopic holes drilled in the frame, sometimes in inaccessible positions, devoid of any spring oil retaining device, are in no way suitable for their purpose. The oil hole is also too small or not adapted to take the nozzle of an oil gun, and the engine oil which is used will not pass the orifice. Further, no idea may be formed of how much oil, if any, has entered. One sees a small compression cock on a gear box for lubrication purposes. Why not a screw cap two inches in diameter through which one could see exactly what was in the gear box?

Oily External Flywheels.

As regards external flywheels, a leg guard would prevent oil leaking from a worn engine bearing being transmitted from flywheel to rider. The suggested form of guard to be a neat ¾in. flat leather-covered band of iron secured close across the flywheel parallel to the cross-bar of frame.

Handle-bar Grips.

When rough riding or on long journeys the handle-bar grips are found to be too small in diameter for comfort, and, also, accidents are frequently occurring through a grip pulling right off; especially the right-hand one when mounting quickly. Why not make these a permanent fixture?

The Right Machine in the Right Place.

At a base where three motor cycle orderlies are attached at least four machines, instead of three, should be provided. Say three lightweights for town work and a higher powered machine for long runs. It is asking too much of a lightweight machine to perform long journeys. A powerful machine is most unsuitable for town use.

Waste of Spares.

It is neither in the power nor in the interests of manufacturers either to curtail or economise in the matter of spares. This point lies entirely with the organisation out here. It is only fair to add that many things are scrapped when only a minor part is required to utilise them further, but this not being to hand a complete article is immediately requisitioned. Then, again, it is easy to obtain an expensive thing such as a tyre and tube (for the mere asking), or a front wheel—and in scrapping the old wheel, of course, the old cover and tube go with it—but little things like a magneto spanner, big end bearings, crocus powder, nuts, bolts, horn tongues, washers, etc., are practically unobtainable. Thus good material reaches the scrap heap. A generator is perhaps scrapped because a rubber joint had perished, a wheel because six spokes were broken, a horn and bulb because the tongue squeaked, etc. Although cycle parts are fairly plentiful a certain cycle frame for a time was not, and as there is neither time nor means of straightening up a slightly distorted frame, the new parts fitted in it are somewhat handicapped. This point should be borne in mind when judging what passes for a new machine.

On the future W.D. model adjustable handle-bars should be a standard feature; and be it noted that several machines have been scrapped solely because their ground clearance was too small.

Careless Fatigues.

Attention should be brought to the occasional gross carelessness of fatigue men. Motor cycles and side-cars in crates have been left upside down, one on top of another, or in positions imposing a strain on the machine, simply because the "drop tools hooter" went a minute too soon.

"Joy Riding."

Also in the repair shops work is sometimes hurried so that the afternoon may be spent in "testing," the machine being finally delivered in a "reckless" condition, maybe with the back tyre flat, and half the detail work that was to have been attended to totally ignored. Joy-riding is not confined to the workshop either! N.C.O.'s with no mechanical knowledge are often to blame. If the truth of truths were known the mileage of these poor machines might not prove so bad, but their actual duty to the W.D. is decidedly a short one, and it is surprising that manufacturers do not send out representatives to enquire into the rapid depreciation of their goods. The writer assures them that they would make some remarkable discoveries.

Tips in Selecting a Lighting Dynamo Outfit.

By ROAD RIDER.

SOME of the electricians who are hastily turning out electric lighting sets for motor cycles show a marked lack of practical genius in superficial details which the ordinary rider is well qualified to criticise, and a statement of the defects in the less perfect sets may save purchasers from blunders.

To commence with, every outfit should be sold complete with spare bulbs for all lamps, and the bulbs should be packed in substantial carrying cases because of their fragility. Household electric installations remind us how suddenly the filament of a bulb may collapse; on a motor cycle the bulb is subject to greater stresses, and as the bulb holders are by no means standardised as yet, it is not always possible to procure a spare even in large towns, whilst the machine must obviously be pushed to the nearest town if a bulb fails when there is no spare in the bag. The bulbs require very careful fitting into the carrying cases, because the glass tip is extraordinarily fragile.

Then it is absolutely essential that a detachable safety plug should form part of the switch block. Otherwise, whenever the machine is left standing in any public place from the kerb side to a garage, whether by day or night, some meddlesome loafer is sure to toy with the tumbler switches; and unless an interrupter plug is lying safely in the owner's vest pocket, a lot of current will be wasted in this way.

It is further desirable that one connection, either across the terminals of the safety plug, or elsewhere, should consist of a fuse wire, as this will prevent the accumulator from being rapidly exhausted by any accidental short circuit. Such short circuits are particularly probable on a motor cycle, composed so largely of metal, and so hopelessly exposed to moisture in wet weather.

All terminals should be thoroughly tightened up and inspected at frequent intervals, as a detached wire may mean the instantaneous failure of the light without so much as a flicker of warning, and if the machine is travelling fast in traffic or on a twisty road, an ugly smash may result. The connections should, therefore, be substantial—no finger-twisting of naked wire will suffice. Every wire-end should be firmly secured to a proper brass terminal ring, and soldered home, whilst the wiring itself should be strong. The terminal screws should be a good fit on their threads, and should be tightened up gently with pliers; if possible, packing material should be stuffed between them and the lid of the battery box, so that there is no room for them to jump off if they work loose. If the terminals are exposed, *e.g.*, on a top tube switch block, it is wise to paint the outside of the connection with a thick ropy paint, lest a terminal should fall off. In course of time, spring-locking terminals will probably be applied to such fittings; the plain screw terminal is literally dangerous. The vent plugs of the accumulator deserve special scrutiny. The vibration renders the acid specially liable to spray out, and if the plugs are slovenly in design or workmanship, the whole top of the accumulator will presently be covered with filthy corrosions, and the acid in the cells will cease to cover the tops of the plates. It can, of course, be replaced, but it is tiresome to be continually pouring in a little more acid.

E. J. Jack (3½ h.p. Rover), one of the eight competitors in the Irish twenty-four hours trial to make a clean ascent of Glengesh Hill. He is shown just past the first corner, and the dust cloud further back indicates the approach of another rider.

The Corbin-Brown Speedometer.

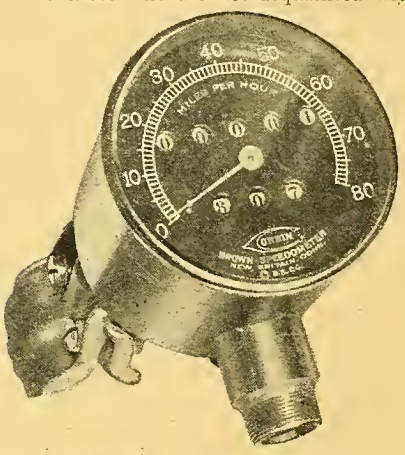
A SPEEDOMETER of American origin which is obtaining a considerable degree of popularity in this country at the present time is the Corbin-Brown, the agency for which has lately been taken over by Messrs. Brown Bros., Newman Street, Oxford Street, London, W.

Flexible shaft of the Corbin-Brown speedometer.

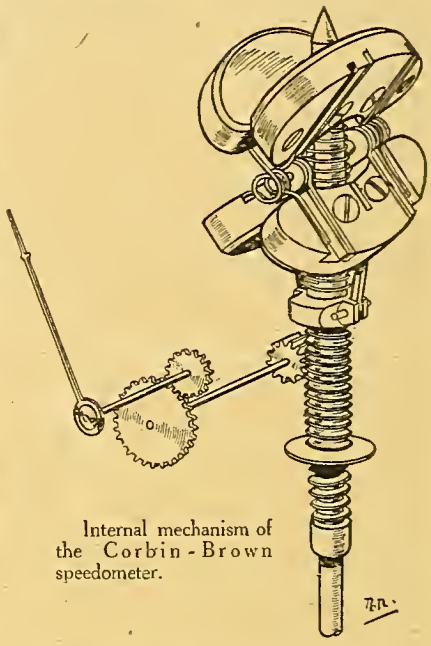
The instrument works on the centrifugal principle, and through the internal mechanism itself presents nothing startling in design, the accompanying sketch shows a slight departure from standard practice. This variation consists of the adoption of a governor working on the scissors principle. As the speed increases, the two balance weights tend to approach one another, and in so doing control the indicator hand, forcing it farther up the dial by raising the screw sliding on the main spindle. The mileage recorder and trip mechanism follow the principles which have been in vogue among speedometer manufacturers for some time.

An interesting point in the design of the driving sprocket, which in this particular case is attached to the back wheel, is the fact that this is made in two halves, bolted together by means of two short plates and screws. In the centre of the plate there is a projecting pin, the object of which is to ensure perfect alignment of both halves of the driving sprocket. It is therefore clear that it is not necessary to take down the driving wheel on the motor cycle to fit the driving mechanism of the speedometer—a point which will be much appreciated by those amateurs who desire to fit the speedometer themselves as it means a considerable saving of trouble.

To those who are not acquainted with American machines, it may be pointed out that the usual position for the Corbin is on the top tube. The Corbin-Brown speedometer has a black dial with white letters, which are easily discernible. The instrument is well made, and can be driven from either front or back wheel.



The Corbin-Brown speedometer, which has a black dial.



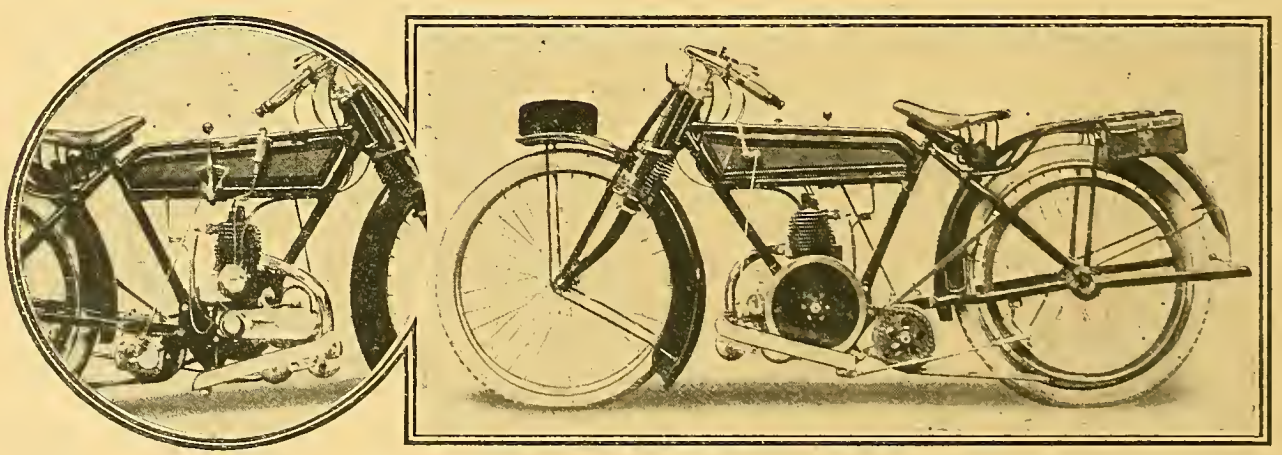
Internal mechanism of the Corbin-Brown speedometer.

A New Two-stroke Lightweight.

THE latest addition to the ranks of the small two-stroke is known as the Sheffield Minor, and is handled by the Colmore Depot in Birmingham. The machine has a striking appearance, owing partly to the sloping top tube, which is also slightly dropped at the rear end. The power is supplied by a Villiers two-stroke unit, and the transmission is either direct by belt or by chain and belt through the medium of an Albion two-speed countershaft gear.

Lubrication is by sight feed drip to the inlet pipe, whence the oil is distributed in the form of vapour. 26in. × 2in. tyres are fitted, the mudguarding is well carried out, and the machine is finished in black and green.

The fittings are noticeably good and include aluminium footboards, armoured pannier tool bags, heavy type Druid forks, and large pan seat. The saddle is unusually luxurious for a moderately-priced machine.



The Sheffield Minor, the latest recruit to the list of two-stroke lightweights. The model illustrated is fitted with chain-cum-belt drive and two-speed Albion countershaft gear.

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Belgian Soldiers with B.S.A. Motor Bicycle used for Despatch Riding with the Belgian Headquarters Staff.

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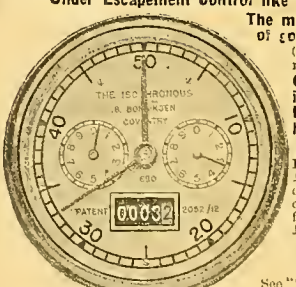

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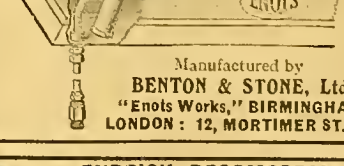
See "The Motor Cycle," September 26th, 1912.
Trip 10/- extra.
Recommended and stocked by—
Messrs. Rotherham and Sons, Limited,
" Rudge-Whitworth, Limited,
" The Triumph Cycle Co., Limited,
and Branches, and by all other high-class Firms.
Manufactured by the inventor of the Karrusel Watch.
B. BONNIKSEN, 16, Norfolk Street, COVENTRY.
Apply for copy of National Physical Laboratory's Report. Send direct unless your Agent can supply.

GRAVES
The Graves 2¾ h.p. J.A.P. Light Touring Motor Cycle, 70 by 76 bore and stroke; Amac Carburetter; Dunlop Rubber Studded Tyres; Druid Spring Forks; Hans Renold Chain; Two-speed Countershaft Gear. Delivered carriage paid to approved orders for £5 now, balance £2 monthly if satisfied. Write for Catalogue of 'Speed King' Models from £35 up, on Easy Terms. Also Side Cars, Clincher Tyres, Wall Auto-Wheel, Motor Clothing, etc., on Easy Terms. J. G. GRAVES Ltd. SHEFFIELD.

OVERALLS MADE BY A PRACTICAL RIDER

Are the most satisfactory, because the man who rides knows what is wanted.
I have been experimenting for over ten years with materials and styles of cut, and I have tested them out on the road. This means satisfaction to you as it did to the writer of the following unsolicited testimonial:
Sept. 28th, 1914.
I am more than pleased with overalls. They are better in every way than I expected, and I am glad I struck your advert. I shall be glad to recommend your firm. It's a treat to get such satisfaction. You may use this as a testimonial. Yours truly—W. G. Adams, Estate Agent, Swindon, Wilts.
My Booklet will interest you—send for it to-day.—Irvine Smith.
MOSLEY & SMITH
Buttershaw, Bradford.

14, North Street, Bishop's Stortford, Herts. April 18th, 1914
Dear Sirs,
On Feb. 5th last you were good enough to send me a non-return release valve for crank case for my motor cycle on which I had fitted an "Enots Drip Feed. I should like to express my appreciation of the working of the "Enots." It has made an enormous increase in the power, ensuring at the same time correct lubrication.
I remain, Yours truly,
S. A. Milbank.



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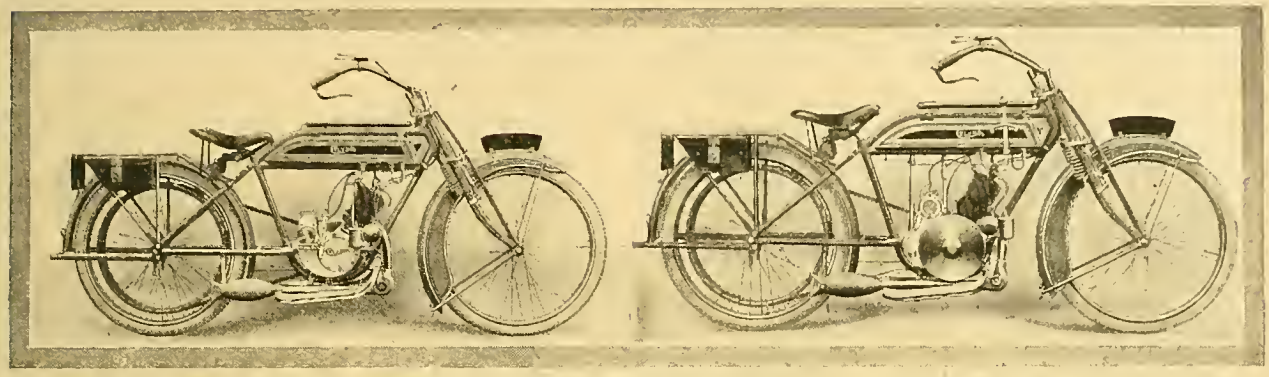
For all four-stroke engines. Well made. Heavily plated. GUARANTEED. GIVES EASY STARTING & SLOW RUNNING. Used by despatch riders in H.M. and Allied Armies. No. 1 suits Triumph, Premier, J.A.P., Precision, and other engines with recessed valve caps. No. 2 suits flush top valve caps, or in lieu of compression tap. No. 1 S (for 2¾ h.p.—*Boring and Screwing Faire Cap, 1s. each. Returned in two hours.*
8/6 each, of all Agents, or direct.
Endrick Eng. Co., Warwick Rd., Ollon, B'ham.

Mechanical Features of the Two-stroke Clyno.

A MACHINE WITH SEVERAL EXCLUSIVE FEATURES.

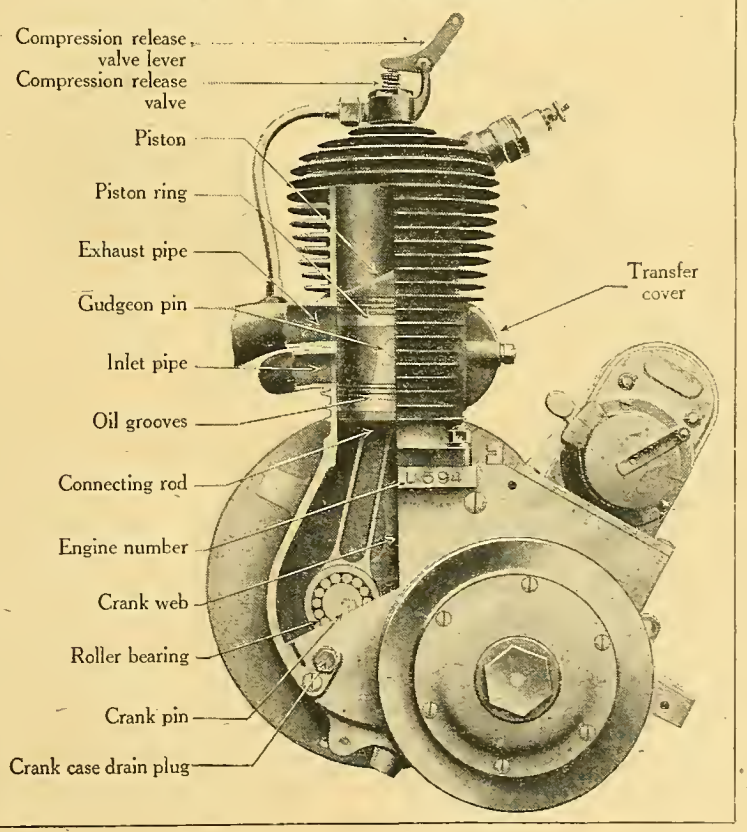


Two editions of the two-stroke Clyno—single-geared model (left) and two-speed model (right) The main outward difference is the location of the flywheel on opposite sides.

READERS will remember that we have already published details of the alterations in the 1915 Clyno two-stroke models. At the time, however, we were unable to give an illustration of the complete machine, and, as the Clyno Engineering Co. have embodied so many unusual features in their design, it may be of general interest to recapitulate the main items in construction. In addition to an open frame ladies' model, the Clyno is marketed as a single-geared or two-speed mount with a cylinder bore of either 70 mm. or 76 mm., the stroke being 70 mm. in either case. We propose to deal with the 70 × 70 mm. two-speed mount as being typical of the firm's production. Incidentally, it is a mount with which we have had a year's most satisfactory riding experience.

The Clyno two-stroke has the distinction of being one of the very few two-stroke machines which is designed and built throughout (with the exception of electrical fittings, tyres, etc.) by one firm, and the result is obvious in the neatness, practical layout, and detail work of the whole machine. One would, of course, expect such a result.

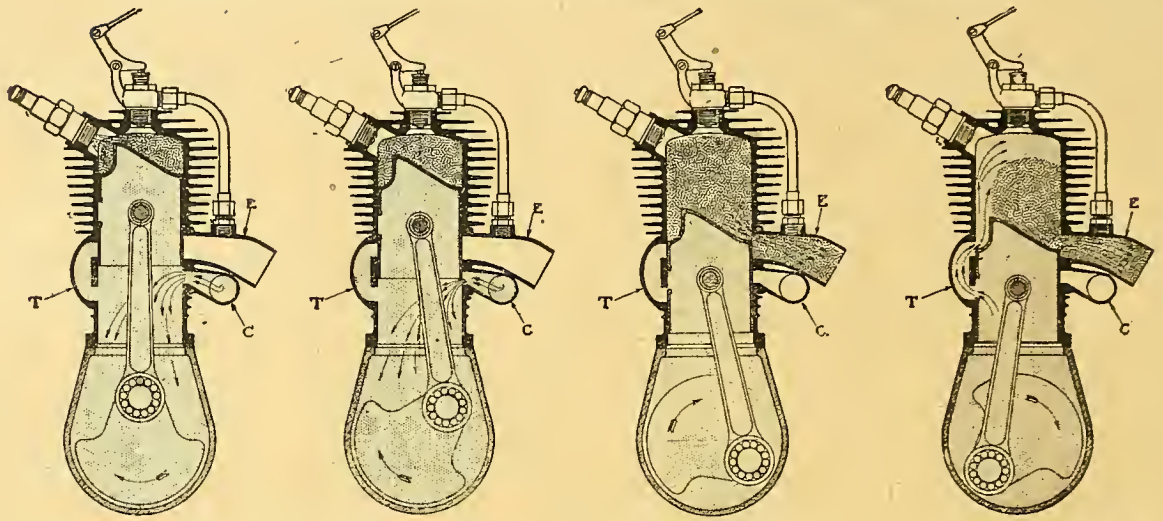
PART SECTION OF CLYNO TWO-STROKE ENGINE.



The Power Unit.

Naturally the engine and gear unit is the most interesting item from a motor cyclist's point of view. Here we find many unique features, such as the totally enclosed flywheel, the absence of a chain from engine to gears, and the protected multi-plate clutch. It is not generally realised that the engine of the two-speed Clyno runs backwards, though this apparently unimportant detail has more than one good result. The cylinder slopes forward to a considerable degree, and, as the engine runs in the reversed direction to the usual practice, the balance is improved to a slight degree. In front of the cylinder are mounted the exhaust and inlet pipes, the former directly above the latter, and at the back of the cylinder lies the detachable transfer port cover, which is instantly removable after loosening two set pins. Thus it is quite possible to clean the piston head without removing the cylinder. The latest model is fitted with a pipe from the release valve in the cylinder head to the exhaust pipe, which does away with the noise and oily vapour emitted by the unenclosed release valve.

CYCLE OF OPERATIONS ON THE TWO-STROKE CLYNO.



(1) Compressed charge on point of firing; exhaust and transfer ports closed; inlet port open, showing gas filling crank case and lower part of cylinder.

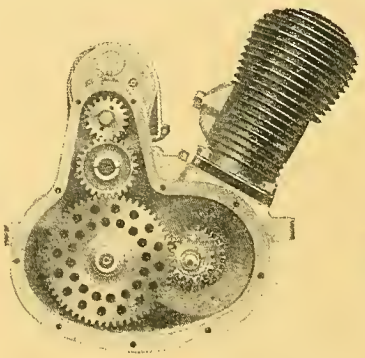
(2) Commencement of explosion stroke; inlet port partly open; transfer port and exhaust port closed.

(3) End of explosion stroke; exhaust gases commencing to pass out; inlet port and transfer port closed: gas in crank case almost fully compressed.

(4) Piston rising; exhaust and transfer ports open; inlet port closed; fresh charge passing into cylinder *via* transfer port and deflector plate; exhaust gases (darker shading) passing out.

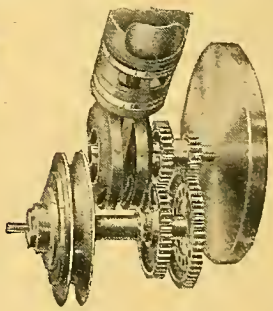
C, inlet pipe E, exhaust port. T, transfer port.

The gear box is unusual, though particularly simple. Two gear wheels are mounted direct on one side of the crankshaft and lie between a plain bearing in the crank case and a roller bearing which takes the weight of the flywheel, a second roller bearing is mounted on the other side of the crankshaft, and the whole shaft is held up to the face of the plain bearing already mentioned by a light spring and ball thrust, and thus prevents compression leakage. These two gear wheels mesh with a pair of large gears mounted on the gearshaft. One of these is loosely mounted, but the other is capable of a sliding motion only, being mounted on keys. The sliding wheel is fitted with a series of pegs in one face arranged so as to correspond with a series of holes formed in the loose wheel. When both pairs of gears are in mesh the loose wheel revolves independently of the gearshaft, and the high gear is obtained through the sliding wheel, thence through the clutch, which is mounted on the gearshaft and carries a 6in. belt pulley. If, however, the sliding wheel is moved across it first of all comes out of mesh with the wheel on the crankshaft, and then the pegs engage in the holes in the loose wheel, thus locking the loose wheel to the gearshaft and clutch so that the low gear comes into action. There is a slight knack in changing up, but once this is acquired the change can be made in silence with the greatest certainty; changing down is simple to an extraordinary degree.



(Left) Magneto drive.

The frame is of the loop type, and the engine and gear box rest on flat lugs, being held thereto by long screws and nuts, consequently the power unit can be removed, if necessary, with the greatest ease. The magnéto is gear-driven from the gearshaft, only six gear wheels being employed in the whole unit. Frame details and fittings are unusually complete and excellent, and the long curved-up aluminium footplates protect the rider's feet and legs, besides providing a comfortable riding position. An additional silencer on the end of the exhaust pipe of the 1915 models has considerably reduced the noise, and a new system of crankshaft building wherein the crankshaft is divided into two parts only forms perhaps the most important alteration since last year.



(Right) Change speed gear incorporated with crankshaft.

Engine Details.

The new crankshaft simplifies construction and ensures a true crankshaft, which it is difficult to obtain in the three-piece type. The big end bearing is of the roller type, and the gudgeon pin is fixed to the connecting rod, the ends of the pin being free to oscillate in bearings in the piston boss. This is an important point, as it relieves the piston of the strains imposed by a "drive in" gudgeon pin and reduces the liability to warping. The Clyno claim to have got over the difficulty of sticking top piston rings by replacing the top ring by a series of narrow grooves. The second ring remains as before, but a ring is now

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A·M·C
HORN

FOUND AT LAST!

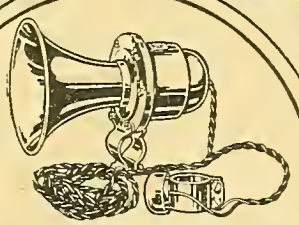
An effective, reliable, durable, and economical Warning Signal for motor cycles and sidecars. The new "A.M.C." Electric Horn clears the road, gives no trouble, and will last for years, rendering it ideal for use on motor cycles and sidecar machines.

The current consumption does not exceed ½ amp. at 4 volts. A dry battery will give one to two years' service with intermittent use; the extra load on a lighting set is practically nil.

The instrument is British made throughout, an ornament to any machine, and is provided with means for adjusting the pitch of the note.

Please send Postcard to-day for latest illustrated booklet.

APOLLO Manufacturing Co.,
MOSELEY ST., BIRMINGHAM.



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27/- Black.

Complete with 2½ yards black braided flexible copper cable, and "All-weather" switch, ready for immediate use.

TRACING TROUBLES

Second Edition

THIS handy little volume deals with all the faults to which motor cycles are liable, explains how they can be easily diagnosed, and shows how they can be rectified. Every conceivable cause of trouble is dealt with, and the remedy for it carefully explained. It is written in simple language by a practical motor cyclist of long experience, and fully indexed for ease of reference.

Price 1/- Net. By Post, 1/2.

THIS edition has been brought up to date by the author and new material added, including

— a section on — two-stroke engines.

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50 MILE CHAMPIONSHIP OF IRELAND

Won by
J. W. SHAW,
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3½ h.p. Norton.
Time—58 minutes 2 seconds.

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Being further proof of Norton Speed & Reliability.

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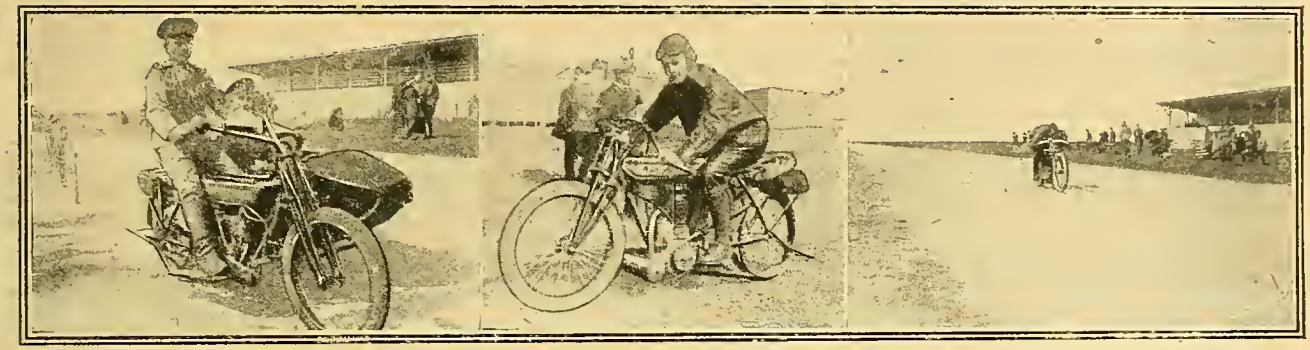
Mechanical Features of the Two-stroke Clyno.—fitted in the skirt of the piston. Lubrication remains on the "petroil" system, oil being pumped direct from the oil tank into the petrol. Much has been said both against this system and in favour of it, and we must confess to having found it absolutely satisfactory provided the right quantity and quality of oil were used. The magneto control has now been moved to the handle-bar, and the compression has been slightly lowered. We cannot say more in favour of the little Clyno than that practically every detail which appeared to us, after many thousands of miles of use on an early 1914 model, to be open to criticism has been improved in a most satisfactory manner.

All Russian Motor Cycle Speed Trials.

New Records made by a British Machine.

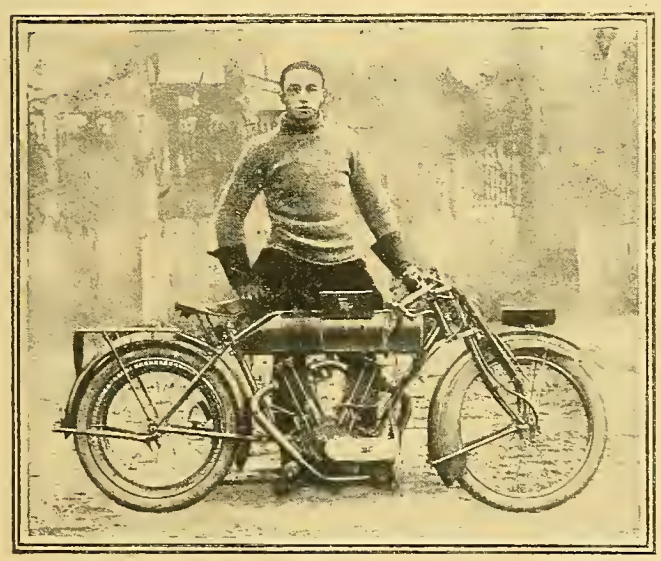


SPEED TRIALS AT PETROGRAD.

Reading from left to right: Enfield passenger outfit, the driver of which made fastest time in the sidecar class. The rider of the Rudge who lowered the Russian record for the 500 c.c. flying verst (1,116⅔ yards), speed 62.5 m.p.h. A T.T. Triumph at speed.

THE annual Russian speed trials were held on Volkonskoe Road, Petrograd, on the 13th ult. There were some forty entries, and the weather was warm and pleasant, a great contrast to what was experienced in the Winter Trial (an exclusive account of which was given in this journal), when so much trouble occurred from over-heating, slipping belts, and difficult starting.

Unfortunately, a bad accident to a Russian Army despatch rider, resulting in a broken leg, caused the commanding officer to order the retirement of the military section, who were for the most part mounted on American machines. This naturally caused some loss of interest and damped the spirits of those present not a little; however, some excellent performances were witnessed, and the previous Russian record in the 500 c.c. class went by the board, being beaten by the rider of a Rudge, who covered the verst at a speed of over 62 m.p.h., while the fastest time of the day was made by a Matchless fitted with an overhead valve J.A.P. engine, which almost reached a pace of 65 m.p.h.



Fastest time of the day, *i.e.*, 64.9 m.p.h., was made by the rider of this 8 h.p. twin-cylinder Matchless at the Petrograd speed trials.

The verst, which is rather more than a kilometre, was covered first with a flying, then with a standing start, and the times were taken electrically; thus any possible source of error in the timing was eliminated.

There were three classes as follow:

CLASS A, 500 c.c., OPEN, FLYING START.

1.	Rudge	38⅖s. = 62.5 m.p.h.*
2.	Rudge	39⅗s.
3.	Triumph T.T.	41⅘s.
4.	Triumph T.T.	43⅘s.
5.	Triumph	46⅕s.

*Russian record.

CLASS B, 500 c.c., HANDICAP ON PREVIOUS TIME, STANDING START.

1.	Rudge	54⅗s.
2.	Rudge	56⅘s.
3.	Triumph T.T.	57⅕s.
4.	Triumph T.T.	58⅖s.
5.	Rudge	62⅖s.

CLASS C, 1,000 c.c., OPEN.

1.	Matchless	37s. = 64.9 m.p.h.*

*Fastest time of the day.

CLASS D, SIDECARS.

1.	Enfield	66⅖s.
2.	Premier	67⅕s.
3.	Sunbeam	68⅕s.

CURRENT CHAT

TIMES TO LIGHT LAMPS.

July	8	9.16 p.m.
,,	10	9.14 ,,
,,	12	9.13 ,,
,,	14	9.12 ,,

The Dunlop Rubber Co. and the War Loan.

We hear that in order to encourage investors to assist the country in the present emergency, by investing in the new War Loan, the Dunlop Rubber Co. have made an offer to the debenture holders of the Parent Tyre to redeem outstanding debentures upon favourable terms for cash a year before the due date. This offer is being largely accepted.

Sidecars for Service in Russia.

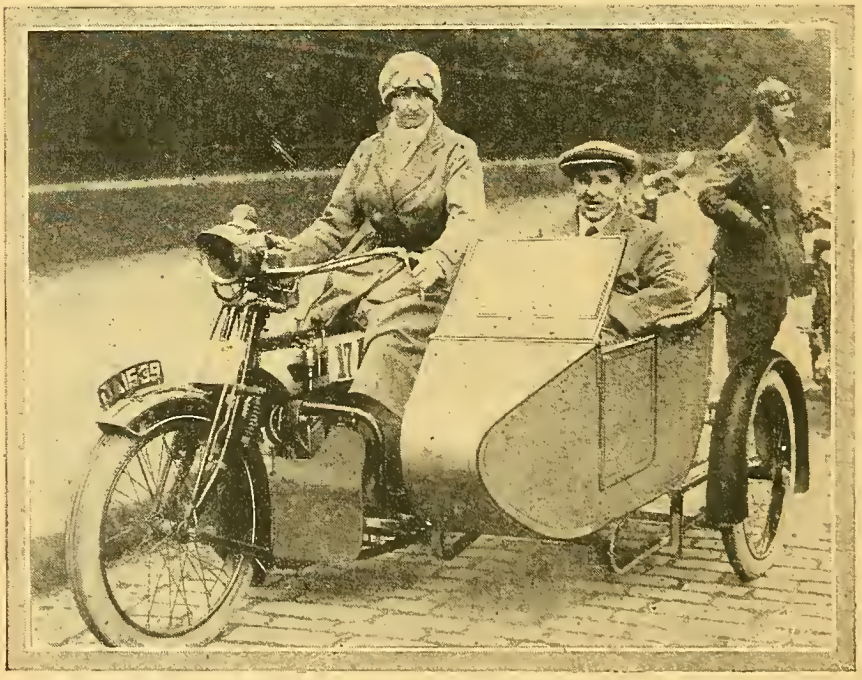
Our Russian correspondent asks us to draw British manufacturers' attention to the fact that, owing to the new police regulations and the rule of the road to keep to the right, sidecars shipped to Russia should be fitted on the right-hand side of the motor cycle. There are quite a number of British sidecar machines in the Petrograd district, including Sunbeams, Enfields, and Premiers. The Indian is the most popular of the American makes at present.

Junior T.T. Winners as Despatch Riders.

Last week Corporal Eric Williams, D.C.M., was home for a few days' leave, when we had the pleasure of a few minutes' chat with him. Williams hails from Hereford. A Wolverhampton paper refers to Cyril Williams—second to Eric Williams in the 1914 Junior T.T.—as sergeant, but this is premature.

Reliability Trial in the Transvaal.

Maritzburg, Transvaal, motor cyclists held the reliability trial for the Barns trophy on Union Day, May 31st. A circular route was adopted, giving a total distance of 144½ miles. There was one official stopping place, and the time allowed for this was only half an hour. The trial was run off successfully, but there was a good deal of tyre trouble, which put many competitors out of the running. Provisional results gave a tie for first place between C. Weeden (3½ h.p. P. and M.) and V. E. Williams (3½ h.p. Rudge). Second and third places go to W. E. Charlwood (7-9 h.p. Indian) and R. G. Goodwin (3½ h.p. Triumph) respectively. Marks were awarded on non-stop run, times at secret and open checks, and condition of machine at finish.



The only lady competitor in the Glasgow M.C.C. twelve hours trial, Miss Runciman, who drove an A.J.S. passenger outfit. The event is described on page 43.

SPECIAL FEATURES.

TIPS IN SELECTING A LIGHTING OUTFIT.
AROUND THE SCRAP HEAP.
TRIALS IN RUSSIA, SCOTLAND AND IRELAND.

A.C.U. Membership.

The subscriptions of members joining as from July 1st will carry them right through to January, 1917. Prospective members, therefore, gain nothing by waiting to join next year.

An Appeal for Army Motor Cyclists.

Recruiting for the Motor Machine Gun Service is now re-opened. Motor cyclists who wish to join the Army—and every able-bodied rider should respond to the call—will find all details in the Recruiting Section on page 42 of this issue.

Second-hand Prices.

We give below the average prices of the various second-hand models offered for sale in the last issue of *The Motor Cycle*, and also the average prices for the last eight weeks. The prices quoted may be regarded as their standard value.

Make.	Year.	H.P.	Last week's average.	Average for past 8 weeks.
A.J.S.	1914	2¾ 3-speed	£40	£43
,,	1913	6 2-sp. sidecar	£52	£57
Ariel	1913	3½ 3-speed	£35	£35
Auto-Wheel	1914	1	£10	£10
Bat	1913	8 2-sp. sidecar	£55	£55
Bradbury	1914	6 3-sp. sidecar	£70	£67
B.S.A.	1914	4 3-sp. sidecar	£60	£54
,,	1914	4 3-speed	£47	£48
Chater-Lea	1914	8 3-sp. sidecar	£50	£66
Clyno	1914	6 3-sp. sidecar	£63	£67
,,	1913	6 3-sp. sidecar	£50	£54
,,	1913	2½ 2-speed	£32	£32
Douglas	1914	2¾ 2-sp. kick start	£43	£42
,,	1913	2¾ 2-speed	£35	£36
Enfield	1914	6 2-sp. sidecar	£63	£65
,,	1914	3 2-speed	£42	£41
,,	1913	6 2-sp. sidecar	£52	£52
Humber	1914	2¾ 3-sp. T.T.	£30	£31
,,	1913	3½ 3-sp. sidecar	£40	£40
,,	1913	3½ 3-speed	£32	£34
Indian	1914	7 2-sp. sidecar	£63	£63
,,	1914	7 T.T.	£42	£42
,,	1913	7 2-sp. sidecar	£55	£53
James	1914	4½ 3-sp. sidecar	£55	£52
,,	1914	3½ 3-sp. sidecar	£55	£52
Matchless	1914	7 3-sp. sidecar	£75	£75
,,	1913	7 3-sp. sidecar	£55	£55
Motosacoche	1914	3½ 2-speed	£40	£40
New Hudson	1914	6 3-sp. sidecar	£65	£60
,,	1913	4 3-sp. sidecar	£45	£40
N.U.T.	1914	6 3-sp. sidecar	£60	£64
P. & M.	1913	3½ 2-sp. sidecar	£46	£50
Premier	1914	3½ 3-speed	£42	£43
Rex	1914	6 3-sp. sidecar	£57	£58
Rover	1914	3½ 3-sp. sidecar	£54	£50
,,	1914	3½ 3-speed	£48	£47
Rudge	1914	5 multi sidecar	£50	£57
,,	1914	3½ multi	£40	£42
Scott	1913	3½ 2-sp. sidecar	£50	£48
Sunbeam	1914	6 3-sp. sidecar	£80	£74
,,	1914	3½ 3-speed	£59	£58
Triumph	1914	4 3-sp. sidecar	£60	£56
,,	1914	4 3-speed	£45	£44
,,	1914	2¼ 2-speed	£36	£35
,,	1913	3½ 3-sp. sidecar	£46	£46
Zenith	1914	8 Gradua sidecar	£70	£62
,,	1913	6 Gradua sidecar	£45	£43

Brave Motor Cyclist's Death from Wounds.

There have been comparatively few casualties in the Motor Machine Gun Service, though it is not to be expected that the brave motor cyclists who compose the ranks are at any time free from danger in view of their presence in the firing line. Another member of the No. 5 Battery (the Coventry Battery) to give his life for his country is Sydney Reginald Stebbing, son of the handmaster of the 1st Batt. Royal Warwickshire Regiment. Stebbing was one of the first to answer the call, enlisting last November, and died from wounds received in action at Zonnebeke, Flanders, and is buried in Hazebrouck Cemetery. He was one of the three battery scouts, and is seen in the accompanying photograph mounted on a Douglas.

Sydney R. Stebbing, killed in action in Flanders.

Clubs and the War Loan

It is interesting to note that the A.C.U. has invested £1,000 in the War Loan. The Cyclecar Club also proposes to invest its funds in the loan. In last week's issue of this journal, Mr. N. T. Downs made the suggestion that clubs should invest their funds in the loan, and we appended editorial support to the suggestion.

The Late Captain Anthony Wilding.

A correspondent in last Saturday's *Daily Mail* writes:

"Beside a lonely, rubbish-strewn path which not very long ago had been a country road, I saw yesterday the grave of Anthony Wilding, the lawn tennis champion, who met his death by the chance of a stray shell. He was riding a motor cycle along this road when a German shell burst just in front of him. It is, I think, a sound rule in these cases to go straight on, for the Germans generally drop one or two shells about the same place.

"A dug-out was close by, and Captain Wilding took cover in it to wait till the shelling ceased. In the dug-out were an officer and some men of the Suffolk Regiment. The very next shell fell into the dug-out and killed the inmates. Wilding lies buried close to the road with the Suffolk officer and his men. A plain wooden cross, with his name and the date of his death inscribed in indelible pencil, marks his resting place."

Army Pay Again.

We notice that a Scottish contemporary protests against 6s. a day being paid to unskilled motor drivers and only 1s. 2d. a day to men (including many motor cyclists) who are regularly risking their lives in the trenches. It will be remembered that *The Motor Cycle* has had more than one growl on this same topic, and as a result a question was asked in Parliament, but the authorities still remain steadfast.

New American Track Record.

The American 100 miles dirt track record was lowered on June 13th on the Detroit course (an oval mile), when an Indian rider, Jim Davis, covered the distance in 88m. 6⅘s. (68.1 m.p.h.) There were eighteen starters, and altogether it appears to have been an exciting race. Second and third places were secured by riders of Harley-Davidsons. Previous record time for the 100 miles was 92m., made by an Excelsior in 1913.

The War Funds.

That the principal war funds continue to receive strong support is borne out by the following figures, taken on Tuesday last:

The Queen's Work for Women Fund	£160,754
The Times Fund	£1,520,970
The Daily Telegraph Belgian Fund	£148,763

The Lord Roberts Memorial Fund is approximately £50,000.

A.A. and M.U. Notes.

COLOURED FRONT LIGHTS ON MOTOR VEHICLES.—Although the new Order in Council (under the Defence of the Realm Act) prohibiting the use of colours in reducing the intensity of light shown by lamps on motor vehicles has been in force since June 10th, it is noticeable that numerous motorists, apparently ignorant of the new regulations, continue to use coloured "dimmers" or coloured glasses in their front lamps. Obviously a red light shown in front would be the source of considerable risk.

Sidecar Runs for Wounded Soldiers.

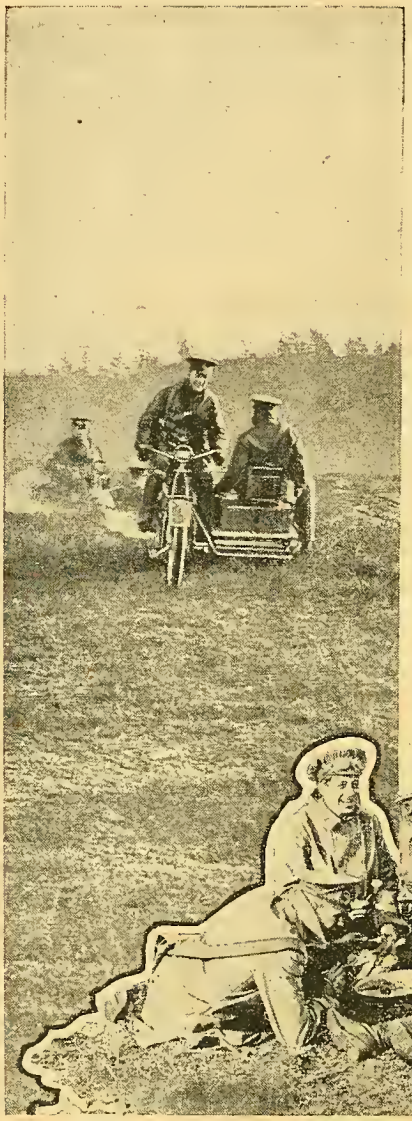
Motor cyclists of Torquay have set a splendid example to others throughout the country by the system of regular sidecar outings for wounded soldiers that they have organised. Since last October runs have been arranged for every Wednesday and Saturday afternoon, and now that settled weather has arrived picnics are being held. The joint organisers, Messrs. A. E. Williams and P. J. Gilley, tell us that the trips are most appreciated, and eagerly looked forward to by both wounded British and Belgians in the local hospitals.

Another Spanish Road Race.

Since publishing in our last issue particulars of an 130 miles road race organised by the Motor Club of Madrid, news has come to hand of another long-distance race—this time over a distance of 210 miles—held in Spain. The course was over twisty and mountainous roads, and the last sixty miles were made very trying owing to a heavy downpour of rain. First and second places were taken by riders of 3½ h.p. twin-cylinder Indians, they being the identical machines used in the 1914 T.T.

THE WEEK-END FLOODS.

A flooded road near Castle Bromwich, Birmingham. The photograph, which was taken on Monday last after the heavy thunderstorms of the week end, shows a Harley-Davidson passenger outfit that came through the water without a hitch.



THE FINE LOT OF MEN FOR
MACHINE GU

(The Editor of *The Motor Cycle* is now open to acce
The smaller views show motor cyclists o

THE MILITARY M

NO section of the community is rendering more valuable work for King and Country than the motor cyclist. Promptly answering the call at the outbreak of war, there has been a steady stream of recruits ever since, and at the present time thousands of our readers are in H.M. Forces, many of them having specially distinguished themselves on the various battlefields.

THE No. 11 MOTOR
TTERY.

its for the new batteries being formed.)
I.M.G.S. going into action.

OR CYCLIST.

ne British-made motor cycle, too,
roving its worth in this great
gle. Perfected in peace time
pleasure mount, it is proving
uable in war. Each type, too,
its special uses. The motor
cle is the ideal despatch rider's
nt, and the sidecar is adapted
he Motor Machine Gun Service
new branch of the Army which
ndering yeoman service.

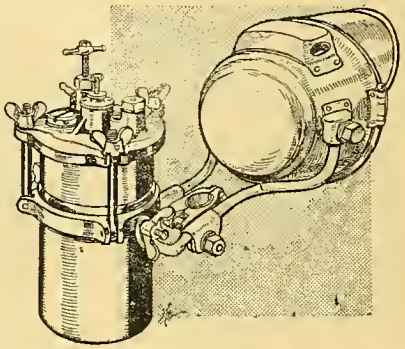
THE DESPATCH RIDER'S SECTION OF THE 20TH Co. ROYAL ENGINEERS, SIGNAL SECTION.
ALL ARE MOUNTED ON DOUGLAS MOTOR CYCLES.

A New Low Motor Cycle Generator.

IT was in the issue of *The Motor Cycle* of October 8th, 1914, that we described the first pattern Low generator. This was suitable for light motor cars. Since that time several members of our staff have tried the generator, and have found it to be most satisfactory, "Ixion" especially having commented on it in most favourable terms.

The motor cycle pattern has been some time in being put on the market, chiefly owing to shortage of labour and material, caused by the war. Now, however, the Low Generator and Engineering Co., 19, Craven House, Kingsway, W.C., have the first batch of these generators ready for delivery.

The motor cycle generator embodies the principles of the light car pattern, but has been altered to suit the conditions prevailing on a motor cycle. The pressed steel body has a ring in the centre, round which the clamp goes, enabling the latter to secure the top firmly against the top of the body. On the clamp ring are the screws which attach the generator to the bracket, and the wing nuts on these cannot be lost, as there are small rings at the ends of the screw bolts which prevent the nuts from coming adrift. An important but small improvement is the provision of a large filler cap on the top of the generator, by means of which water can be introduced into the water tank. This is provided with a large slot running across it, so that it may be opened with a coin.



New Low motor cycle generator attached to lamp.

The water vent is incorporated wit the safety valve, the object being prevent the water from splashing ab owing to the vibration on the handle-b

The water and gas outlets are q separate in this, the latest Low generat The top is provided with three proj tions like fork ends, into which the b and wing nuts of the clamp fit, and e one of these fork ends has the extremi projecting slightly, so that, even if o of the wing nuts is not tightly screwe there is little chance of it coming adrif

The whole device is well made an well finished, and we prophesy a ver good future for this interesting fitment which is the only pressure type o generator which can be charged at hom by the motor cyclist himself. Naturally, in the case of a motor cycle generator the container for carbide is a good dea smaller than that used in the light c pattern, but a spare can be easily carr on the machine or in the rider's pock

In conclusion, we may add that t generator works better with a sm burner than with a large one, and nearly every case a smaller burner th standard should be employed.

Results of the Irish Open Trial.

B.S.A. and Indian Machines Tie for Premier Award.

THE awards in connection with the twenty-four hours open trial of the Dublin and District M.C.C. from Dublin to Donegal and back, reported in the last issue of *The Motor Cycle*, have been announced. It will be remembered that of the thirty-five competitors in the trial thirty completed the course, and as none of them was more than thirty minutes behind scheduled time at the finish, all of them qualified for some form of award. The conditions necessary for the winning of a gold medal were that a clean ascent of Glengesh should be made at the first attempt, and not more than ten marks should be lost otherwise.

Nine of the competitors climbed Glengesh, but one of them, G. Hartigan (3¾ h.p. Scott), lost the total number of marks, 200, owing to his being four hours late at the second control at Belfast. J. C. Cunningham (4 h.p. Bradbury) and D. Doolin (10 h.p. A.C.) lost two marks each for a tyre repair in a non-stop section. This left six riders with the maximum number of marks, 200, and their placings were determined by taking into consideration the total variation from schedule time at the three secret checks taken on the last stage of the trial.

W. H. Freeman (7-9 h.p. Indian) and T. Toole (4 h.p. B.S.A.) were found to have least variation, viz., 59s., and were therefore declared joint holders for the year of the Rudge-Whitworth Cup, each receiving a miniature of the cup and a gold medal. J. Doleman (3½ h.p. Rover), 79s. variation, and R. Walshe (4 h.p. B.S.A.), 107s. variation, were placed third and fourth respectively, for which they also received gold medals.

The cup presented by Mr. S. H. Manthorpe for the best performance on a passenger machine was won by D. Doolin (10 h.p. A.C. cycle car), whose mount was the only passenger machine to make a clean ascent of Glengesh.

There was no award of the prize for the best performance on a 500 c.c. sidecar machine, as the only two machines of that type which completed the trial—C. Taylor's 3½ h.p. P. and M. and W. H. Allen's 3½ h.p. Sunbeam—did not secure the qualifying number marks, viz., 180.

The prize for the best performa on a single-geared machine was also awarded, as the only rider of a sing geared machine in the trial, D. S. D (2¼ h.p. New Hudson), did not compl the course.

The lightweight prize for the b performance on a machine of unc 275 c.c. was won by J. F. A. D (2¼ h.p. Sun), who secured the high marks of the three riders on simi machines that completed the trial.

The inter-city contest between Dub and Cork was won by the Dub quartette, made up of Franklin (Indi sc.), Freeman (Indian), Browne (Rove and Roche (Rover), whose total mar amounted to 770, as against 722 scor by Jack (Rover), Swanton (India Dooly (B.S.A. sc.), and Engli (Douglas).

The team prize for the best perfor ance of a team of three riders was w by the trio consisting of Freem Franklin, and Mooney, who, by t way, also secured the team prize in t Cork "20."

MOVABLE LAMPS.

IN view of the recent stringent regulations relative to the use of movable head lamps with the usual type of brackets, an invention of the Austol Co., 7, Adolphus Road, N., which we have recently had brought to our notice, is of interest.

Lamp regulations under the Defence of the Realm Act prohibit the use of bead lamps which swivel on their brackets, the aim being to prevent the use of such lamps for signalling purposes. The swivelling lamp being more extensively used than the fixed pattern, and in view of the fact that several heavy fines have been inflicted and lamps confiscated, the knowledge that such lamps can now be adjusted to conform, by means of the invention referred to, with the new regulations at a small cost, should prove welcome to many riders.

Owing to the patent arrangements n yet being quite complete, a descripti of the fitment at the present time withheld, but we may say that it c be attached to any existing lamp, a renders any attempt to swivel the lar impossible. The method of attachi or detaching can be carried out exactly the same manner as befo either by the thumbscrews attached the usual nuts.

LEVIS INNOVATIONS.

A Test Gradient of 1 in 3. The New Two-stroke Horizontal Twin Model.

WE have already mentioned the new test track which has been constructed at the works of Butterfields, Ltd. (makers of the Levis), adjoining Stechford Station, near Birmingham, and last week we had demonstrated to us the lightweight Levis making easy work of an actual gradient of 1 in 3 on the hill in question. Before examining the test hill, we were taken through the new extensions of the works, and while inspecting one of the stock rooms on the top storey heard a roar overhead reminiscent of thunder, but which proved to be none other than machines being put through their tests. The length of the test gradient is twenty-seven yards, and we were told that the record time for the ascent was 3½s. Twenty-seven yards does not seem a very extensive test for a new mount, but when it is remembered that there is no room for a flying start, eight yards being the limit of flat, it will be seen that a lightweight must be in really good tune to maintain a speed sufficient to carry it over a 1 in 3 grade.

Single-geared and with a Passenger on the Carrier.

After seeing a two-speed 198 c.c. Levis reach the roof like a rocket, we were treated to the spectacle of a 2¾ h.p. single-geared machine going through a similar performance. The gear ratio of the latter, when measured, was found to be 8½ to 1, but the performance was later eclipsed by the rider (who weighed 138 lb.) taking a passenger on the carrier who weighed 140 lb.

As a matter of fact, the ascents were really hair-raising, as the rise ceases suddenly as the lead topped covering of the flat roof is reached, and it is ten yards ahead to a low parapet marking the front of the works! A ride up the Levis test hill is not to be recommended to anyone with a dislike for thrills, nor should a machine be taken up or down without the most powerful brakes.

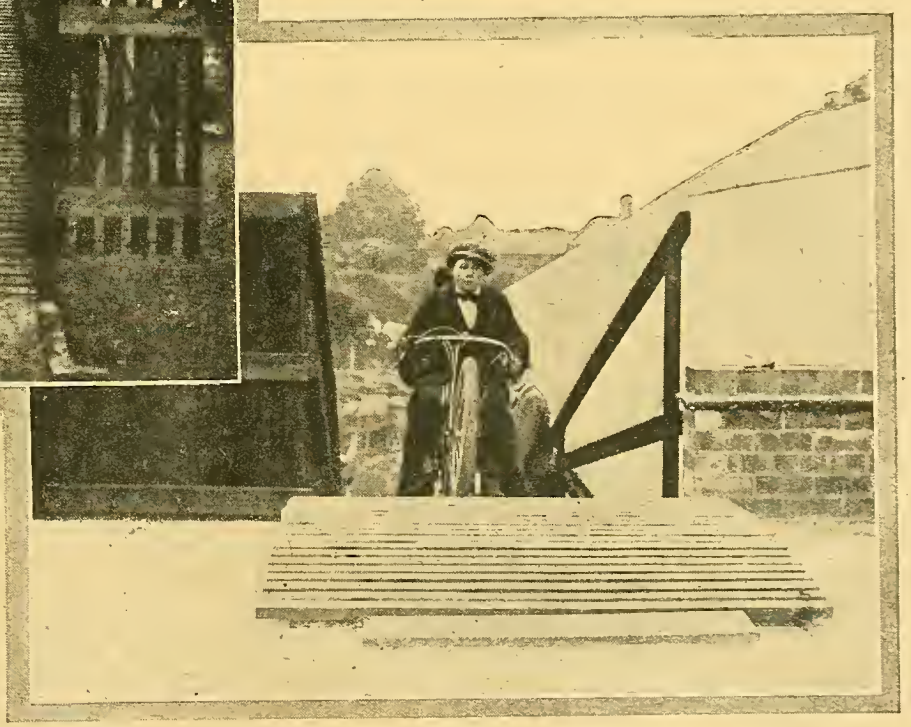
Messrs. Butterfields have not yet finished their extensions. They propose to construct a track around the works which will give them ten laps to the mile, and on each of the four corners will be erected a 4ft. 6in. banking.

While at the Levis works we were treated to a trip on a new horizontally opposed two-stroke twin, the engine of which was described in detail in our issue of May 6th, p. 432. This machine had been built up in an experimental frame, which was admittedly not particularly pleasing to the eye, but as the engine was originally built up as an experiment it has served its purpose. The performances of this new Levis twin, as related to us by the makers, were such that we expected something good, but the vim and kick of this latest two-stroke were a revelation. With chain and belt transmission it had a single gear of 5 to 1.

A Run on the Twin Two-stroke Levis.

A separate carburetter had just been fitted for each cylinder, and, starting off with one cylinder firing, the other was soon brought into operation, and we had the experience of being bowled along at nearly a mile a minute in a frail sidecar devoid of cushions or upholstery of any sort. We must confess to being startled at this unexpected turn of events, but, at any rate, Mr. Newey had convinced us that there is more in the horizontal twin Levis than we at first realised as we gazed upon it reposing innocently in a corner of the works; it is a speed machine of the first order.

When the Levis Co. have time to settle down to complete this new engine, it will have water-cooled cylinders, the jackets being made of aluminium and screwed on to the cylinder casting. With a chain drive and an Enfield two-speed gear, this machine should be capable of anything required of it in the way of either solo or sidecar use.



Views of the Levis 1 in 3 test hill from above and below. Although only twenty-seven yards in length, the hill is a good test by reason of the short start on the flat allowed.

"The Motor Cycle" Recruiting Section.

Motor Cyclists now Wanted in the Motor Machine Gun Service.

THE Editor's appeal in the last issue for fifty first-class motor cyclists for immediate service in the Motor Machine Gun Batteries met with a splendid response. On Friday there were seventy-five, on Saturday forty-two, and on Monday seventy-seven applications.

The undermentioned were inspected and attested at Coventry last week, and are now at the training centre, whilst a further batch of recruits were to be interviewed by Mr. Geoffrey Smith, Editor *The Motor Cycle*, at the Recruiting Office, Masonic Buildings, Little Park Street, Coventry, yesterday (Wednesday) :

L. A. Bees	A. J. Clarke
W. T. Harrington	R. Peberdy
A. H. Lines	R. Allen
W. J. S. Bewley	W. H. Ash
J. Chambers	T. B. Maloney
S. Lightfoot	W. Thacker
R. Tomlinson	H. Clayton
E. G. Whitehead	

Since the last announcement Mr. Smith has received instructions from the Commanding Officer to re-open recruiting, and now invites applications from motor cyclists of good physique. The particulars are as under : Age, 19 to 38. Sidecar experience desirable, though not compulsory. Pay, 1s. 2½d. per day all found. Mr. Smith, who is inspecting officer in the South Midland Divisional Area, will attend at the Recruiting Office, Masonic Hall, Coventry, every Wednesday afternoon until further notice for the purpose of examining candidates, all accepted proceeding forthwith to the training centre.

Readers living at a distance should first obtain a Medical History Sheet from their nearest Recruiting Office, and post it to the Editor, when, if satisfactory, a free railway warrant will be issued to attend the next inspection.

A limited number of expert cyclists, well developed men, with a slight knowledge of motor cycles, will be accepted for the Motor Machine Gun Service. At our suggestion, batches of friends may enlist together, and will as far as possible be allotted to the same battery. Should any man on the waiting list not have heard from Mr. Geoffrey Smith, he should at once apply again.

A.S.C. Mechanics and Car Drivers.

There are still a few openings for qualified mechanics with motor cycle workshop experience. Candidates must be able to perform any repair or adjustment to an engine, gear box, or other part. Applications, stating briefly age and experience, should be accompanied by two testimonials.

There are also a few openings for car drivers with at least three years' driving experience.

The pay for mechanics and car drivers is 6s. per day, the usual separation allowance.

Royal Flying Corps.

A paragraph in the last issue appealing for motor cyclists for the R.F.C. brought a large batch of letters—so many, indeed, that recruiting for this branch of the Service was soon closed.

Royal Engineers.

The waiting list of despatch riders in this section is now a fairly lengthy one, it being some time since the R.E. called up men.

Volunteers and the Birmingham Charity Sports.

THE Midland Motor Cycle Volunteer Corps sent a troop to give three displays at the Charity Sports held at Birmingham on Saturday. The weather, fortunately, kept fine.

The troop's first item was a course of formation drill on machines, demonstrating that men can move at speed in formations suitable to the ground over which they are travelling. The men wheeled well in line, the dressing was kept, and all the movements accurately carried out. Favourable comments were passed by the military. The drill used by the corps is the same as laid down for cavalry.

Event No. 2.—Placed at intervals in the field were three posts; on two were heads, on the third a ring. The men had to cut off the first two heads and point the ring off the third post with a cavalry sword. The cuts and points were those used by the cavalry in the pursuing practice.

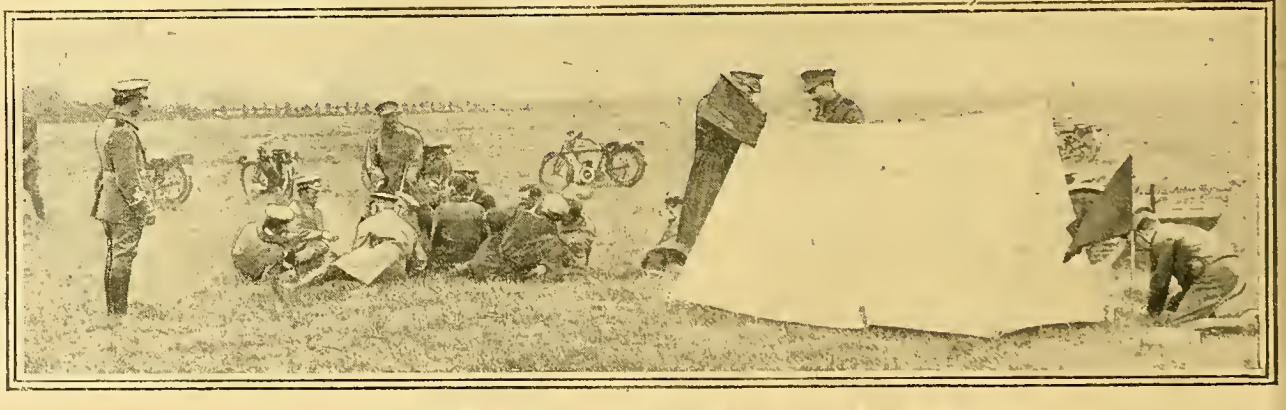
The third event was practically the corps weekly work—attack and defence. The patrols of the corps came in and searched for a suitable camping ground. This found, tents were pitched, camp fires lighted, and vedettes posted. The men are seated round the camp fire singing when the Commandant calls for despatch riders. The men come up smartly and receive despatches. These they promptly conceal, and depart on their journey. Suddenly they are attacked, two fall wounded, one of the others returns to camp and gives the alarm, the other stands by the wounded and defends them with his revolver.

The alarm is sounded; two men go out and pick up the men and bring them in under protection of a patrol, who beat off the enemy.

Again the camp is attacked, this time in force. The tents and fires are knocked over, the alarm given, and the men are seen advancing to attack. The enemy are driven off; first aid is given on the field by the corps ambulance.

The men returned to the paddock, and the final of a cycle race was in progress when four of the riders collided and some of the men hurt. The corps sidecar ambulance instantly proceeded across the field, this time to render services urgently required.

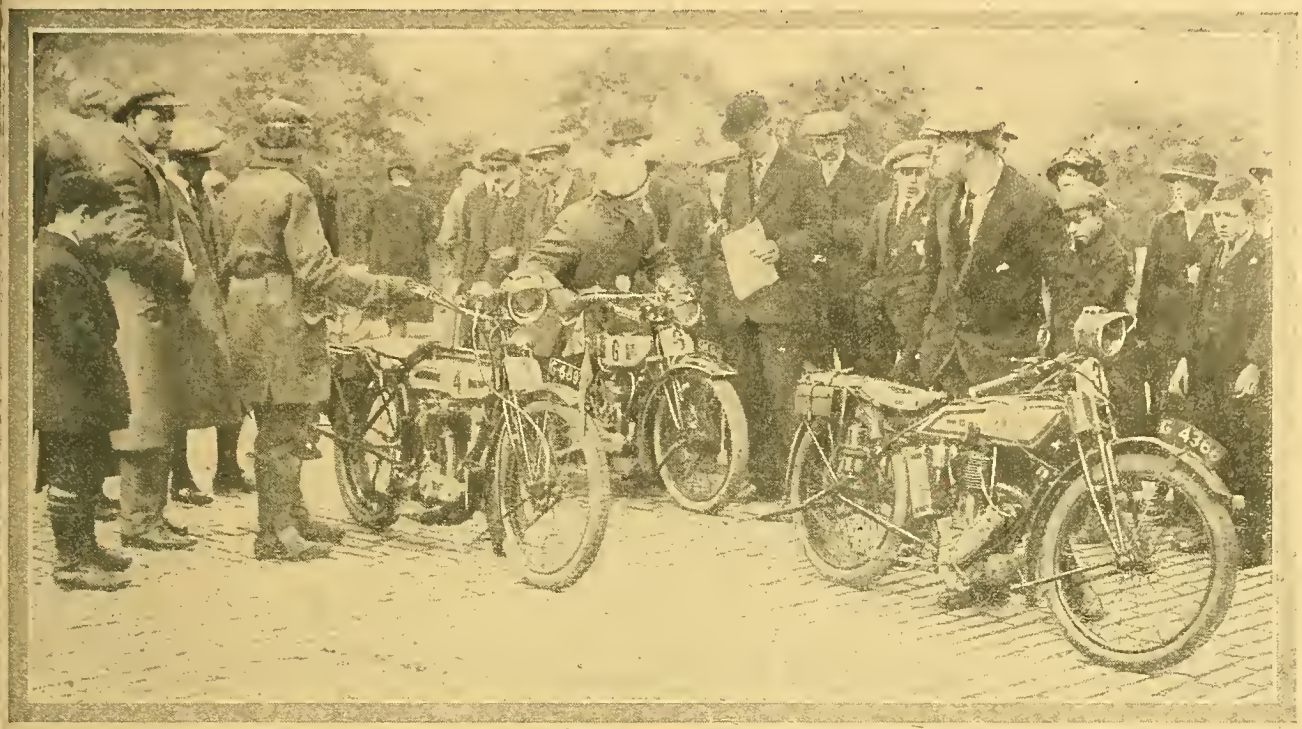
The worst case was taken up, first aid given, placed on the stretcher and sidecar and brought in.



Members of the Midland M.C.V Corps on the Castle Bromwich flying ground.

Twenty-one Starters in Glasgow Open Trial.

Nine Riders Qualify for Gold Medals after Twelve Hours' Run.



Scene at the start of the Glasgow M.C.C. twelve hours open trial on Saturday last. There were twenty-one starters.

ON account of the unrest and uncertainty created by the present abnormal circumstances, the fate of the Glasgow M.C.C. open twelve hours' trial hung in the balance for some time, and even when the entry forms were issued it was far from certain that the event would be held. Intending entrants were requested to return the forms fully a week before the date fixed for the trial itself, so that the committee might have time, if sufficient entrants offered, to make the necessary arrangements.

The riders were sent off in pairs at one-minute intervals from 8 a.m., the route being by Duntocher, Loch Lomondside, Arrochar, Rest and Be Thankful, Hell's Glen, St. Catherine's, Strachur, Whistlefield, Ardentinny, and Blairmore to Dunoon, where there was a stoppage of an hour and a half for lunch. The distance outwards was eighty-eight miles, while on the return, by varying the route to include Ballachandrain Hill, ninety-eight and a quarter miles were covered. Favourable weather prevailed, and the roads were, generally speaking, in good order, though loose in places. Several of the competitors experienced mechanical troubles, one finishing the course with both brakes out of commission—something in the nature of an accomplishment on such a trying journey. H. W. Ballardie was unfortunate enough to fall while taking a bend in the road on Lochfyneside, breaking his leg. Douglas Alexander sportingly abandoned his chance of an award to take Ballardie along in his sidecar until a motor car could be requisitioned to convey him home to Glasgow.

Four observed hills were included in the course, two on the outward journey and two on the return. Successful ascents of all four, together with the completion of the course within the scheduled time, earned a gold medal, while silver medals were offered to those who completed the course within the specified time and had three clean ascents. Subject to this qualification, the following nine riders, none of whom made an error of more than one minute in arrival time, are eligible for gold medals :

	Due. h. m.	Arrived. h. m.
T. A. M'Creadie (3½ Sunbeam) ..	6 57	6 57
W. G. B. Scott (4½ Excelsior) ..	6 58	6 58
E. Marzella (3½ B.S.A.)	6 58	6 58
T. Tennent (3½ Rudge-Multi) ..	6 59	7 0
A. J. C. Lindsay (3½ Rover) ..	7 0	7 0½
R. Holmes (5-6 Clyno sc.)	7 0	7 1
D. B. Stirling (5-6 Clyno sc.) ..	7 2	7 2
D. M. Brash (7 Harley-Davidson sc.)	7 2	7 2½
J. R. Alexander, jun. (7 Indian sc.)	7 4	7 4½

Final touches before the test. Snapped at the start of the Glasgow M.C.C. trial.

AN IRISH HILL-CLIMB.

ON Saturday, the 3rd inst., the Ulster Centre of the Motor Cycle Union of Ireland, held an open hill-climb at Red Brae, Carrickfergus, near Belfast. The weather was very unfavourable, but as the hill is almost perfectly straight, and eleven of the competitors having come to the start, it was thought advisable in the circumstances to go on with the principal event. Only one of the men entered for the novice class turned up, and this event was cancelled. There were twenty-one entrants in the open event.

This was the first hill-climb held on this hill, and it is by far the best venue for such an event that has been found in the North of Ireland; the surface is good, the gradient a thoroughly stiff test, and no corner to give the slightest trouble. The result was as follows :

	H'cap.	m. s.
1. E. Thompson (Rudge)	7 ..	1 26⅖
2. J. Ewart (Rudge)	7 ..	1 26⅗
3. J. W. Shaw (Norton)	3 ..	1 28
4. S. Corry (Norton)	scr. ..	1 33

Shaw made fastest time of the day, doing 1m. 31s. for the full distance.

LETTERS TO THE EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Clubs and the War Loan.

Sir,—The Cyclecar Club has decided to place as much as possible of its available funds in the War Loan, and would suggest that if all other motor clubs did the same a very large amount would be subscribed thereby.

A. C. ARMSTRONG, Honorary Secretary.

[We are glad to see that the Cyclecar Club has adopted the suggestion in our last issue. The A.C.U. has invested £1,000 in the fund.—ED.]

Lady Motor Cyclists.

Sir,—The picture in *The Motor Cycle* of June 24th of the lady driver of the Regal sidecar outfit takes my fancy. Surely I dare do what other ladies dare. Up to last year I was always a passenger in a sidecar attached to a Rudge-Multi, driven by my husband, and I enjoyed it very much. My husband's death has left me very lonely, and I am seriously thinking of buying a motor cycle, but am frightened of breakdowns on the road. I should be glad if some lady driver would give me her experience of road troubles. Also, I should like to know which is the easier for a learner to drive, solo or combination. S.E.M.

A Good Samaritan.

Sir,—I think perhaps it may interest your readers to know that every policeman is not "dead nuts" on the motorist. I was returning from Arnside to Lytham on the night of June 30th when I was stopped at Preston owing to my rear light having failed in some unaccountable way. I tried all the ways I could think of to get it to work, but it was no good. It had evidently made up its mind to strike—and strike it did. The result was I found myself without a rear light fifteen miles from home, and four miles of a busy town between me and the nearest garage then open. I had just made up my mind to walk to that garage when a policeman rode up on a bicycle. Seeing me stopped there and enquiring the reason he, without hesitation, took off his rear red light and fixed it on my machine, telling me to send it back the following day. I thanked him, and set off home rejoicing. He was indeed a good Samaritan. GRATEFUL.

British Firms and Advertising.

Sir,—I wonder if English manufacturers have lost faith in advertising, or do they still think that because a thing is English-make that is sufficient to convince anybody that it is the best?

Since March 1st I have noticed various advertisements in your paper. The one I am most interested in is concerning speedometers. I venture to say that not more than twice during the last three months has an English-made speedometer been advertised. I begin to wonder if speedometers are manufactured in Britain. The two makes advertised, viz., the Jones and Stewart, are both of American manufacture, and very good; but, as a Colonial, I have a leaning towards British goods.

However, if the Britisher does not see fit to push his wares he will be the one to suffer, and all credit will be due to other competitors if they have the market.

Ottawa, Canada. COLONIAL.

A Motor Cyclist's Duties.

Sir,—Knowing how much you have at heart the interests of motor cyclists, I venture to think you will find room for this short letter in your paper.

My son, who is a despatch rider attached to a Signal Company along with fifteen other motor cyclists, has just informed me that as their division is moving to a country which is unsuitable for the use of motor cycles they are to ride push cycles. They have, of course, been specially trained as motor cyclists, and on the eve of departure to compel them to ride push cycles seems most unjust.

My son enlisted under the distinct impression that a motor cyclist enlistment was a special one, and that he could only be used as a motor cyclist, but apparently this is not so. JOHN HIBBERD.

Motor Cycling and Rifle Shooting.

Sir,—The following may be an item of interest to readers:

On June 24th I rode from Thetford to Richmond (Surrey)—100 miles—on a motor cycle to compete in the S.U.R.C. rifle meeting at Ham and Petersham ranges. I did the ride before breakfast, and was shooting by 10.30. The first target I shot was at twenty-five yards, and was a good highest possible score—100. Later in the day I won the Bell Trophy and gold medal with a score of 295. I also took a good position in the *Telegraph* and *Express* competitions, and shot for England in the International match, which we won against teams from Scotland, Ireland, and Wales. I took prizes in two unlimited competitions as well.

Considering that I am past middle age, I think this proves that motor cycling is rather more a nerve stayer than a nerve shatterer, as many suppose. I have done similarly at other local meetings; but the above is far more convincing, as the competitors were more numerous, and open to all.

My machine is a local make, Chater-Lea fittings, 5-6 h.p. Peugeot engine, and has 50,000 miles to its credit, and is even now the most reliable machine I know: in fact, it could not be more so. J. G. BROWN.

J. G. Brown, crack rifle shot and keen motor cyclist, a letter from whom appears on this page.

Demand exceeds supply,
but price remains the same

4/-

(packed in sealed red metal box).

THE PLUG

THE ARMY

is using to-day

THE LODGE

THE ONE OIL FOR "TWO STROKES"

WAKEFIELD CASTROL

"C"

The Oil that Circulates Everywhere
ANY GARAGE CAN SUPPLY

C.C. WAKEFIELD & CO. - WAKEFIELD HOUSE CHEAPSIDE, E.C.

AUSTRALIAN

GRAND PRIX

100 MILES
OVER HILLY ROADS

WON

ON JUNE 28TH BY JAMES MILLAR
- - ON A MATCHLESS - -

WITH

PEDLEY

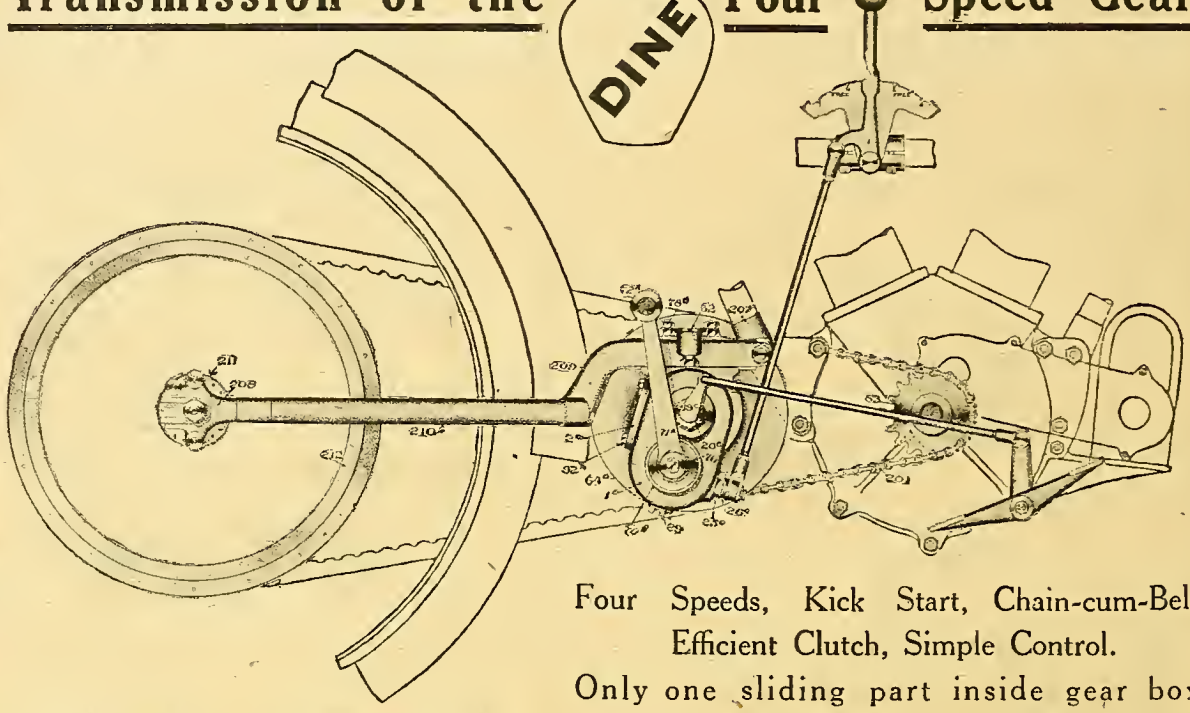
BELT

SECOND YEAR IN SUCCESSION.

The Melbourne-Sydney Reliability Trial in December-January last was won by Douglas Team with Pedley Belts against all comers.

J. PEDLEY & SON, LTD.,
Great Charles Street, BIRMINGHAM.
LONDON - - - - - - 30, Holywell Lane, E.C.

Transmission of the DINE Four Speed Gear.



Four Speeds, Kick Start, Chain-cum-Belt,
Efficient Clutch, Simple Control.
Only one sliding part inside gear box.
All gear wheels constantly in mesh.

JARDINE - - NOTTINGHAM.

Overheard At the Front

Stories of the War in Comedy and in Deadly Earnest.

By Chas. G. Harper.

¶ Among the many books that have been written on the war this collection of stories, reprinted from "The Autocar," stands out by reason of the originality, force and humour displayed.

¶ The stories deal with the sayings and doings of the men at the front, and are largely in dialogue. That they are true to life is vouched for by soldiers themselves (see appended letters).

PRICE 1/- net. By post 1/3.

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ILIFFE & SONS LIMITED, 20, TUDOR STREET, LONDON, E.C.

SPECIMEN ILLUSTRATION.

OPINIONS from the FRONT

"The book ('Overheard at the Front') is very interesting and perfectly true to life; since the fellows have heard I have got it they all want to borrow it."

Corporal W. Jane, 5th Battery R.F.A., British Expeditionary Force.

"I duly received book 'Overheard at the Front,' which is a splendid collection of short tales, and I may say that I can never find the book again if I lay it down, for it is immediately snatched by one of the other fellows who is soon deeply engrossed in one of the tales and quite oblivious to his surroundings."

Sergt. E. Schofield, 2nd London Div. T.F., British Expeditionary Force.

Tyre Covers.

Sir,—With reference to Mr. Quintin Miller's letter on "Tyre Covers," pure Para with the necessary ingredients for vulcanising is, when vulcanised, a mottled grey colour, and will after a short period gradually turn a whitish grey; this is due to the sulphur blooming up. If the piece of rubber is cut through the centre in this state, immediately you get under the surface, the rubber will be the same colour as when first vulcanised. The method usually adopted with the best grades of rubber, after vulcanising, is to desulphurise them. This usually gives the rubber a blackish appearance, and the colour will be practically permanent. The soft red rubber Mr. Quintin Miller speaks of would not do in the making of tyres, and more so with a good thick tread, as this would cause rolling, which was felt in the early days of motor cycling with some makes of tyres; also the tyre would be full of cuts after the first run. The more compressed the tread is, the better the wear.

The Bates tyre is of a dark grey colour when cut through, and will give a mileage (without guarantee from the maker of the tyre) of 3,000 on back and 5,000 on front; at least this is what it will do on my machine with sidecar (Triumph 4 h.p.) I have a Bates tyre on the front wheel that has done upwards of 6,000 miles, including over 3,000 on the back wheel. G. E. SCATTERGOOD.

The Boycotting of German Motor Cycles.

Sir,—The correspondence which has appeared in your columns under this heading seems to be directed to the end of hitting the Germans after the war is over. I think that most of us may more profitably devote our energies to hitting the enemy now. That should be our present, truly noble aim. Gentlemen who discuss what they are going to do after the declaration of peace presuppose a knowledge (1) of what the terms of peace will be, (2) of which side will win, (3) that some of us will still be alive. Respecting (2) and (3), we all hope for and, I think, believe in a good result, but you remember "the man who once did sell the lion's skin while the beast lived was killed in hunting him." As regards (1). I wish to say that, not knowing the terms of peace, I cannot decide what I should do under circumstances which are hypothetical. But this, as a general principle, does seem clear—that, if the beast's teeth and claws can be drawn and he be rendered tame and harmless, it would be entirely un-British for us, after the change, to go on hitting him.

Perhaps I shall offend the sense of the ideal in your correspondents if I refer to the economic side of the matter. Such action as they advocate would not only result in no German machines being sold to us; it would also penalise British manufacturers by preventing them from exporting their machines to Germany. Because, if we do not buy we cannot sell. If we are to find a market in Germany for woollen goods or cotton, or anything else you like to name, why should not Germany give us motor cycles in exchange if she can make them good enough and cheap enough to be worth having? Someone may suggest that Germany should pay in butter and eggs and sausages. But why should I be obliged to buy German butter and eggs, let alone sausages, so that you may wave a flag and swank about with an all-British bicycle? And why not carry out the proposal logically and advocate that, not only we, but our Allies and all properly disposed neutrals should boycott *all* German goods? Why stick at motor cycles? You mean, of course, that, after beating the German and knocking him down so that he can never get up again, and making peace-after-Armageddon, you are going to re-open hostilities on the part of most of the world with the object of starving such Germans as are left. Surely it would be less trouble to shoot them all! I am sure it would be cheaper and safer for our children and grandchildren.

But are we not in danger of losing the fine purpose and high aim with which we began to fight? Do we not, in advocating reprisals, import a German product far more deadly than gas or N.S.U. machines? I do not know to what extent the blame for this war is shared by the German people with their rulers. Nor do I think that we should concern ourselves with the question of punishment, but with making a repetition of the evil impossible—and that will not be done by reprisals. But of this I am convinced, that Germany has stepped backwards towards nationalism, and our aim should be altogether to avoid imitating her and ever to insist on pressing forward towards the closer union and fuller understanding of all nations. The progress of this ideal seemed at first to have been rudely disturbed by heathen pan-Germanism. But already we find ourselves more in sympathy with Russia and India. If not we, at least our children may learn to find in a humbled, chastened Germany a sane people with whom they may be friends. I, for one, have no wish to sow dragon's teeth for the next generation.

May I suggest that motorists may show true patriotism by economising in petrol? At a time when we are endeavouring to concentrate all our efforts to supplying our forces, people, and Allies with food, clothing, and munitions of war, there is no justification for using some of our products to pay to import petrol except for necessary use. What is necessary each man must decide for himself.

HUGH LEADER.

New Zealand Experiences

Sir,—A writer from Taranaki in a recent issue asks, "Why have 6-7 h.p. machines?" He seems to have derived satisfaction from a 2¾ h.p. lightweight, and appears to think that high-powered machines are put on the market to benefit the oil vendors. My experience has been that the high-powered machine is by far the safer proposition, even though fuel consumption is slightly greater, for the engine need never be run "right out," so engine wear should not manifest itself to the same degree as in a lightweight machine when good roads tempt one to "put on the juice."

I hardly think that 2s. 2d. is an average price for benzine. The highest price I have paid is 15s. 10d. per case of eight gallons, and that has included the extra war risk. A refill at a garage, however, costs 2s. 6d.

Toll-gates are undoubtedly antiquated ideas of securing revenue, but they have been forced upon local bodies by the tremendous growth of motor traffic, which has destroyed the roads faster than the authorities have been prepared for, so under the circumstances they regard the toll as a justifiable levy on the motorist. And we motorists do not mind when the local bodies give us improved roads with our money. There is one county in Taranaki (which is, by the way, the butter and cheese province of New Zealand, and provided the prizewinners at your last Dairy Show at Islington) where the council has provided several miles of tarred macadam road, and I am sure the 6d. or 9d. is not begrudged by the motor cyclist for his ride over these particular roads. Most of the roads in this fertile province are good, but it is of little use providing a machine built for good roads alone, for there are many places where one may desire to go where a lightweight would be out of place.

I rode a lightweight for some time, and its limitations were frequently impressed upon me. I have a highly satisfactory mount now—an 8 h.p. Sparkbrook and sidecar. Should I want a more up-to-date model machine in a few years' time, I think I will still be on the look-out for the latest Sparkbrook. The chain-cum-belt system has proved wonderfully effective. My machine has done somewhere in the region of 6,000 or 7,000 miles, and the only trouble I have had on the road with the transmission was a broken connecting link, and that was because of undue strain.

Regarding prices of machines, there is no doubt need for reform, and, so long as a machine passes from manufacturer to distributer, to wholesaler, to provincial agent, to local agent, the price must remain high, for each handling adds to the retail price. If the manufacturer could reach the prospective rider in a less roundabout way, the price need be little more than the retail price in England, for trade discounts surely amount to as much as does freightage, etc. Why is the British manufacturer so self-satisfied, so content to allow his goods to speak for themselves? The Americans like this attitude, I daresay, for one particular firm from the land of Stars and Stripes is able to put its machines on the market here at from 10% to 15% less than the Britishers, merely by the cutting down of some of the middlemen But we want British goods. We are Britishers through and through in New Zealand, and are prepared to make sacrifices for our homeland; but we would appreciate British manufacturers endeavouring to get in closer touch with us. That 10% or 15% saved on the British machine would probably mean a greater number of motor cyclists in New Zealand, large though the number is at present. GEORGE LIST.

New Plymouth, Taranaki, New Zealand.

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Lubrication.

I would like your advice in regard to the satisfactory regulating of a Best and Lloyd drip feed, *i.e.*, number of drops per minute for average touring.—F.W.C.

About thirty drops per minute is usual up to twenty miles an hour. The drops should be increased according to speed, and if you are travelling all out for any distance, you may even let the oil run in a continuous thin stream.

Easy Starting.

I have bought a 2¾ h.p. motor cycle fitted with a Dixie magneto, two-speed gear, and free engine. I have passed middle age, and health will not permit too much exertion? Will you inform me how the starting of such a motor cycle can be improved? The machine is quite a normal starter.—J.F.

If you insert the low gear and give a vigorous push the machine should fire almost instantly, and with a minimum amount of exertion. It is of course understood that the carburetter is properly adjusted, and that you flood it well before attempting to start.

A Model Petrol Engine.

Would you kindly tell me if phosphor-bronze could be used for the cylinder of a small model petrol engine? It would be water-cooled. If not, what are its chief disadvantages?—E.C.F.

Phosphor-bronze is probably perfectly satisfactory for a model. The objections to its use in large engines are the cost and the inferior wearing qualities by comparison with cast iron. Cast iron is most generally used as it has a special faculty for acquiring a glass-like surface under friction.

Risks on the Highway.

Would you kindly advise me on the following: I was motor cycling near Grimsby on a main road the other evening when I ran into some stray cows on the road, which threw me off and damaged my machine. Another motorist had done the same thing three minutes previously. Can we get damages from the farmer?—L.K.

It is practically impossible to obtain damages in such a case, although the police might get the farmer fined for allowing his cattle to stray. This is curious but it is the law.

Slow Running.

I have a new 4-5 h.p. Zenith. After trying several jets I find I can do 78 m.p.g. with a 32 jet. Is this the usual consumption? If not, how can I improve it, as I have tried to alter the level, but with no success? I cannot run in medium gear at less than about ten miles per hour without misfiring. There is no leakage, as I use insulating tape. Is it correct to give half a pumpful of oil every three miles?—E.B.

We think that the consumption is very reasonable. We should not recommend you to try and improve it, otherwise you will interfere with the power of the machine. The cause of absence of slow running is the fact that the carburetter is not an automatic, or even a semi-automatic one. It is not difficult to get slow running and good consumption. Slow running depends upon using an enriched mixture and little of it. The lubrication is about right, but slightly extravagant.

Advice to a Novice.

Would you be so kind as to help me to select a motor cycle and sidecar combination? I am a novice about to take up motor cycling, so, of course, do not want a complicated machine. I would rather pay the price to get a sound and reliable machine. (1.) What power machine would you suggest? (2.) Would you recommend single or twin-cylinder? (3.) What is the best book I can get to enlighten me on the working of a motor cycle engine? (4.) What machine or machines would you suggest? (5.) Do you advise me to buy a new or second-hand machine?—A.H.C.

(1.) We should advise not less than a 3½ h.p. single or 5-6 h.p. twin. (2.) This is a matter for your own individual taste. A twin is more flexible and more pleasant to use. (3.) We recommend the following books: "Motor Cycles and How to Manage Them," "Motor Cycle Hints and Tips," and "Tracing Troubles," all of which can be obtained from these offices, price 1s. 2d. each, post free. (4.) We regret we cannot recommend any particular make of machine. If you care to ask our advice about any *one* which you think will suit you we shall be glad to let you know if this will be the case. (5.) It will be better to buy a new machine, as good second-hand machines are now very difficult to obtain.

A Misty Drip-feed.

(1.) I have a Royal Enfield countershaft two-speed gear. What oil should you recommend for the chains? (2.) When on the road the glass of my drip-feed, normally ordinary glass colour, assumes a copperish colour. Is this a sign of over-lubrication? The oil leaks terribly from the valve tappets.—S.H.W.

A graphite grease should occasionally be put on the chains, and a little engine oil should be applied to the expanding clutches of the gear. (2.) If your drip-feed is misty it is not necessarily a sign of excessive lubrication. The glass should be detached and cleaned occasionally. The fact that oil leaks from the valve tappets seems to indicate that you are giving the engine plenty, and you might possibly reduce the supply a little. This might also be due to the fact that the tappet guides are worn.

Clutch will not Free.

I am the possessor of a 1914 2¾ h.p. motor cycle on which I have had conflicting advice from makers and agents which I should be glad if you would settle. When the machine is on the stand and the engine running I find the back wheel still revolves when the clutch lever is lifted, or if the back wheel is revolved by hand with the clutch out it moves very sluggishly and is not at all free. I wrote to the makers, who replied: "We cannot understand the wheel revolving on the stand with the clutch lever lifted. The possible cause is tightness of chain or want of lubrication in the gear box." The agent writes: "The back wheel will naturally revolve with the clutch lifted, or move sluggishly on account of the spring being more or less always in tension." Will you please say which is right, as I believe some wheels are perfectly free with the clutch lifted for running down hills? This machine has not done 500 miles, and is quite in order as regards chains and lubrication.—W.W.C.

Probably you are using rather too thick an oil in your clutch, or else the clutch is not withdrawn sufficiently. There is a certain amount of friction in many clutches when out of engagement, due to a variety of causes. Of the two causes suggested in your letter we should say that made by the makers is the more likely to be correct.

A Trailer for Passenger Carrying.

[?] I have just purchased a second-hand 2½ h.p. Motosacoche, and I have been wondering whether, as I have never ridden a motor bicycle before, a bicycle trailer could be safely run behind it. What I would like to know is—(1.) Can a trailer be safely run behind a 2½ h.p. motor cycle? (2.) What, if any, are the objections to it, in a flat county such as Cambridgeshire? (3.) Is there any more duty to pay than on a motor cycle or combination?—C.S.G.

(1 and 2.) The machine is not sufficiently powerful for taking a trailer. Moreover, a trailer is not a particularly safe or comfortable means of taking a passenger; also the rider gets the benefit of your dust and the smell from your engine. (3.) The local taxation licence for a trailer is £1 in excess of the motor cycle licence, while a sidecar costs nothing extra. It is better to use the machine as a solo mount first, and when you have acquired sufficient confidence, purchase a more powerful machine, to which a sidecar may be attached when desired.

Barrow-in-Furness to London.

[?] I intend riding up to London from Barrow-in-Furness, and I believe that it is better to go *via* the Great North Road in order to avoid as many towns as possible. Can you tell me the best way to join this road from Penrith (Cumberland), and also the best way of getting to Hampton Court when near London—avoiding the city—breaking off, say, somewhere about Hatfield?—W.F.H.

Your best route would be as follows: Barrow, Ulverston, Kendal, Kirkby Lonsdale, Ingleton, Settle, Skipton, Ilkley, Otley, Harewood. About two miles south of Wetherby turn right and go through Aberford, Ferrybridge, Doncaster, Retford, Newark, Grantham, Stamford, Stilton, Eaton Socon, Biggleswade, Baldock, Stevenage, Welwyn, Hatfield, to Barnet. If you are going from Penrith, make your way from Penrith to Kendal, and then by the route we have given. As regards getting to Hampton Court, your best plan is to branch off at Barnet, and follow the road marked in blue on the R.A.C. Official Map of Recommended Routes Round London (obtainable from *The Motor Cycle* offices price 1s. 3d. post free). Turning right at Barnet, this avoiding route passes through Elstree, Little Bushey, Harrow Weald, Wealdstone, Greenford Green, Heston, Hounslow, Fulwell Park, turning right near Strawberry Hill, and following tramlines to Hampton Court.

A Powerful Solo Mount.

[?] (1.) Would an 8 h.p. spring frame machine (chain driven), fitted with T.T. handle-bars, be suitable for solo work? (2.) Would there be a great deal of vibration? (3.) How long would it take a novice to learn to manage such a machine?—X.Y.Z.

(1.) The machine would be rather heavy for solo work, but some riders are fond of a powerful machine. (2.) There should be very little vibration. (3.) The machine is not suitable for a novice. However, an intelligent rider would not take long to learn to manage one of these machines. You could learn to ride almost at once, and at the end of a few weeks you would have begun to know the machine.

READERS' REPLIES.

The Red Flag.

The following additional information may interest "F.B.R. and others. The legal obligation for a man to carry a red flag in front of the mechanically-propelled vehicles on common roads was enforced by the Locomotives Act, 1865, 28 and 29 Vict., C. 83, S. 3, p. 2, for the whole of the United Kingdom of Great Britain and Ireland, but as regards England was repealed by the Highways and Locomotives (Amendment) Act, 1878, 41 and 42 Vict., C. 77, S. 29, and as regards Scotland by the Locomotives Amendment (Scotland) Act, 1878, 41 and 42 Vict., C. 58, S. 4. Nevertheless, the practice of carrying a red flag was voluntarily continued in many cases long after it had ceased to be obligatory, and this no doubt led to the general belief that it was done in consequence of legal requirement. It was heavy taxation (£10 per county authority per annum), ridiculous speed limits (two and four miles per hour in town and country respectively), restrictive and varying local byelaws with road and bridge prohibitions and limitations, and the obligation to have three persons in charge which hampered light mechanical road traction prior to 1896, but *not* the red flag so far as England and Scotland were concerned.—S. R. SHEPPARD.

Retreading.

"H.L." may be interested in the following experience of retreading: I had a Hutchinson, 26×2¼in., retreaded last July (1914) by the Beldam Co. I fitted it on the driving wheel of my 3½ h.p. Singer with sidecar. The machine was used constantly from then up to April this year with the retread still on that wheel, when the tyre was discarded owing to the bead giving out from rust and wear and tear. The roads here (Co. Limerick) are never steam rolled—just pot-holes and loose stones, mud and (in dry weather) dust. I have had the tyre pulled off with skidding on loose metal, but never once suffered from the puncture fiend. The retread is not half worn, but only discarded on account of the bead. I believe that any tyre with sound beading will make a satisfactory retreading job. Such is my own experience on excessively bad roads, winter and summer. The charge for retreading was 13s. 6d. Usual disclaimer.—A. MCBRATNEY.

[We think it only fair to state that we have received other letters which speak well of retreads by the company named.—ED.]

SCENE IN MILAN.

An Italian lady selling a Red Cross souvenir to a military rider of a Triumph.

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"F.B." (Berkhamsted) and "W.M.B." (Yorks.).—Grado multi-pulley for sidecar work.

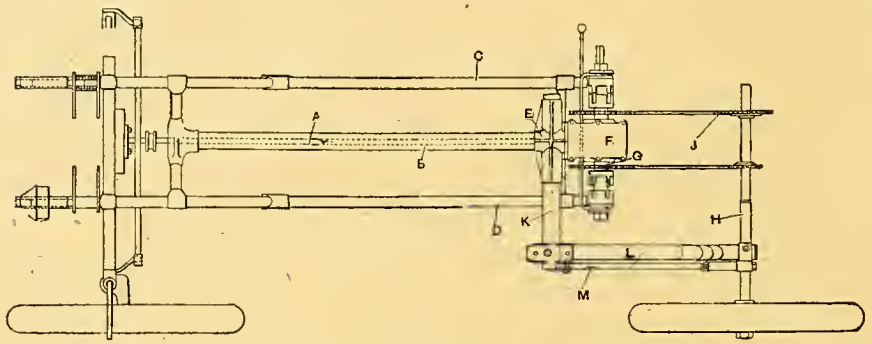
"A.G.F." (Perth).—Binks carburetter fitted to 1914 6 h.p. twin J.A.P. engine for sidecar work.

"E.L.F." (Hampstead).—Wooler two-stroke. Reliability, durability, consumption, and hill-climbing.

"W.F." (Worcester).—Suitable two-stroke for sidecar work on country roads; also 2½ h.p. or 5 h.p. F.N. Ease of handling, general reliability, and cost of upkeep.

A Morgan Four-wheeler.

It will be seen that the illustration is a partial plan view of a four-wheeled chassis. The forward part of the chassis is on the same lines as the well-known three-wheeler, the engine being mounted at the front, and the drive being taken by a shaft A passing through a tube B built into the frame. At the rear the main frame tubes C D are connected by a casting E, with which is formed ntegral a gear box F driving the countershaft G, from which the drive is taken to the back axle H by either of two chains J, giving different gear ratios. The casting E is extended on either side, as shown at K, to form the



platforms on which the springs L are mounted, and radius rods M may also be supported by the extensions, the radius rods being adjustable for the purpose of effecting adjustment of the driving

PATENTS

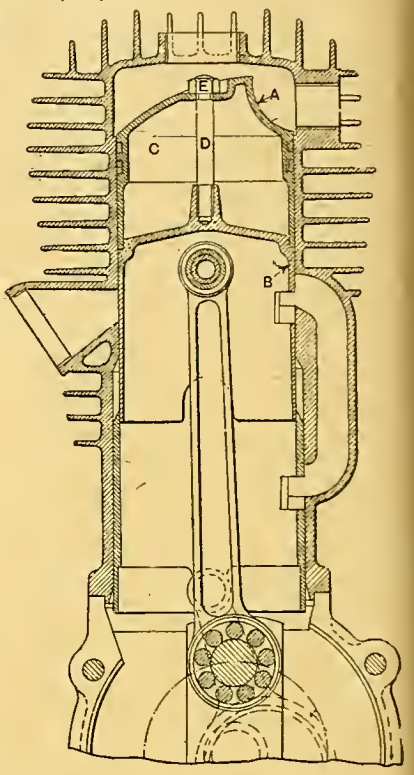
BY

ERIC W WALFORD.

chains.—H. F. S. Morgan, No. 19,467, 1914.

A Piston for Two-stroke Engines.

With the object of increasing the compression pressure in the crank chamber without a corresponding reduction of compression in the cylinder, the piston is made in two parts A and B, the upper part A effecting the cylinder compression and the lower part B performing the corresponding function in the crank case. Thus the space C enclosed by the piston parts is deducted from the crank case capacity, with a consequent increase of pressure. The parts A and B are secured together by a rod D and nut E.—The Enfield Cycle Co., Ltd., and F. W. Smith, No. 8,978, 1914.



Forward Plugs.

We are informed by the Forward Motor Co., Summer Row, Birmingham, that, owing to the heavy demand for Forward plugs and fasteners by the War Office, they have been compelled to discontinue the manufacture of Forward motor cycles.

Mr. George King and Hutchinson Tyres.

Rumours have been current lately to the effect that Mr. King has severed or is about to sever his connection with the Hutchinson Co. The origin of these rumours is unknown, but both the company and Mr. King desire emphatically to deny them.

The Low Accessories.

The business of the British Low Accessories Co., Ltd., has now been taken over by the Low Accessories and Ignition Co., Ltd., Morley House, 26 and 28, Holborn Viaduct, E.C. This company intends to deal with the Cup sparking plug, the Low Averometer, and several other novel and valuable accessories.

"Coolie" Motor Cycle Oil.

Many successes have lately been credited to Coolie oil, produced by the County Chemical Co., Bradford Street, Birmingham, notably on Magilligan Sands, Portmarnock, and during the Cork reliability trial on Whit-Monday. This oil is suitable for every class of machine, as evidenced by the fact that it was used by Ariel, Bradbury, Diamond, Douglas, Levis, New Hudson, Rover, and Sunbeam riders.

Pedley Belts.

Messrs. J. Pedley and Son, Ltd., Great Charles Street, Birmingham, have just received cable information that the Australian Grand Prix Race, run on the 28th ult., was won by James Millar on a Matchless motor cycle fitted with Pedley belt. This win is particularly gratifying, as this race has now been won two years in succession on Pedley belts. The Douglas team, which won the Melbourne-Sydney reliability trial, also all used Pedley belts.

Racing in New Zealand.

An important series of races was held on the New Brighton Beach track, New Zealand, recently. In the fifty miles handicap, Brown (4 h.p. Triumph) made the fastest time of the day, although pitted against riders of 7 h.p. twins. His time was 55m. 56s. On handicap, Brown was severely penalised, and finished third. The ten miles handicap was won by A. J. Barker (4 h.p. Triumph), fastest time again being made by G. B. Brown, in 10m. 29s.

Precision Engines in South Australia.

In the fifty miles road championship of South Australia, held on Saturday, April 3rd, the first prize was won by A. B. Carnell on a Lewis T.T. motor cycle equipped with 3¾ h.p. Precision engine, with overhead valves, in 1h. 7m. 21⅘s. The second man finished exactly 7m. later. Mr Carnell's record for the season is remarkable. It includes, in addition to the above-mentioned event, the Sellicks Hill-climb of the Motor Cycle Club of South Australia, in which he made fastest time and the best performance on formula; the petrol consumption test (246 miles to the gallon); and the half-mile speed event for machines under 560 c.c. In 1913-14 Mr. Carnell had also won the Sellicks Hill-climb and the petrol consumption test on a similar machine.

Reviews.

Rudge-Whitworth, Ltd., Coventry, send us a copy of a very attractive coloured showcard depicting scenes in connection with the 1914 Tourist Trophy Race, also a new edition of their 1915 motor cycle catalogue, and a copy of "Rudge Wrinkles."

We have received an interesting booklet entitled "The Largest Motor Cycle Business in the World" from the Hendee Manufacturing Co. The book gives a number of interesting illustrations concerning the manufacture of the Indian, and illustrations of the various British and American riders who have helped to make it famous.

MOTOR CYCLES FOR SALE.

Bat.

BAT, 4h.p. De Dion, Druids, h.b.c., horn, new P. and H. lamps, etc., perfect order; £7.—Wheatley, 59, Sedgwick Rd., Leyton. [8220

BAT-J.A.P., 1913, 7-8h.p., 2-speed couch combination, with accessories; £55; special terms for large deposits; exchanges.—Lamb's, 151, High St., Walthamstow. [8143

BAT-J.A.P., 1912, 3½h.p., single gear, in excellent condition; £21/10.—The Exeter Motor Cycle Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0569

1913 6h.p. 3-speed Bat-Jap, and coachbuilt sidecar, speedometer, Rushmore lamp, and all necessories, tyres new, all in perfect condition; £47.—Collins, 76, High St., Watford. [8083

3½h.p. Bat, J.A.P. carburetter, Simms mag., Palmer cords, speedometer, lamp, generator, fast, reliable; 10 gns., sacrifice, no offers.—31, Burton Rd., Kingston-on-Thames. [8339

Bradbury.

4h.p. Bradbury, Gondola sidecar, new 1913, 2-speed, equal to new; best offer over £36.—96, Vavasour St., Rochdale. [X9888

BRADBURY, 1915 models, 3-speed counter-shaft, from stock; keen exchanges.—Motories, 68, Horton St., Halifax. [0388

BRADBURY, 4h.p., 2-speed, F.E., £24/10; sidecar, cane torpedo, £5/10.—20, Beauchamp Rd., Clapham Junction, S.W. [8253

1914 6h.p. Bradbury Combination, kick start, 3-speed, lamps, speedometer, spares, and tools, first-class condition; £65.—164, Clonmore St., Southfields. [8114

BRADBURY, 1912, just re-enamelled, lamp, tools, spares; after 7 p.m., or appointment; 3-speed gear and sidecar extra; £18/10.—3, Kenton Av., Harrow-on-the-Hill. [8296

BRADBURY Combination, 4h.p., 1913, 2 speeds, 1914 handle-bar clutch, lamps, horn, speedometer, spares, excellent condition; cash offers.—Burgin, Hemsworth, Wakefield. [0432

3½h.p. Bradbury New Horizontal Twins, 1915, 3-speed, chain drive, countershaft models; £64; delivery from stock; exchange or easy terms arranged.—Wanchope's, 9, Shoe Lane, London. [X0535

Brough.

BROUGH, 5-6h.p., torpedo sidecar, fast and powerful; £14.—30, St. Martin's Rd., Stockwell. [8175

Brown.

BROWN Combination, 6-8h.p., powerful twin. 1911-12 model; £28.—45, Church Rd., Acton. [X0627

3½h.p. Brown, countershaft 2-speed, free engine, kick starter, basket sidecar; £30.—Particulars, 5, Swan St., Warwick. [X0433

BROWN, 3½h.p., Bosch mag., B. and B., exceedingly sound and quite fast; £18/10.—Layton's Garage, Bicester, Oxon. [X0526

8h.p. Twin Brown and sidecar, B. and B. carburetter, Bosch mag., perfect; £22/10.—G. Selley, 4, Parth Rd., Plaistow, London, E. [8080

B.S.A.

B.S.A., 1912 model, 2-speed gear and clutch, accessories; £28.—Moss, Wem. [X0666

B.S.A. and Sidecar, 1912, 2-speed, beautiful condition; £40.—Leighton, opposite Wood Green Station. [8170

B.S.A. Combination, late 1913, 2-speed, kick start, new condition; £38.—Walton Lodge, Surbiton Rd., Kingston. [8059

B.S.A., 3½h.p., late 1912, 2-speed, free, T.T. bars, perfect condition; £32 cash.—Smith, County Bank, Maldon, Essex. [X0346

NEW 1915 B.S.A., cane sidecar, counter-shaft gears, chain drive; £65.—25b, Lea Bridge Rd., Clapton, London, N. [8372

1914 B.S.A., 3-speed, chain-cum-belt, torpedo sidecar, Lucas lamps, spares; £49.—D. Monro, Bannockburn, New Barnet. [8313

1915, new, £18/10 B.S.A. sidecar, wind-screen, apron, all-black lamp, horn, grand outfit; £70, lowest.—190, Divinity Rd., Oxford. [8374

JUST Received, B.S.A., 4¼h.p., chain-cum-belt drive, in crate, not unpacked; £59/15.—T. H. Nice and Co., Bury St. Edmunds, and Ipswich. [8106

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B.S.A., 1913, 2-speed, chain drive, 2¾in. Bates tyres, Cancelet de Luxe sidecar, perfect condition, all accessories; accept £50, or near offer.—Bladon House, Holywell Rd., Abergavenny. [X0440

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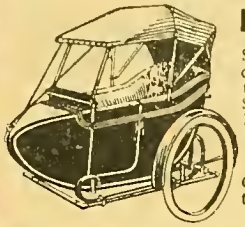

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CALTHORPE, 1915, latest 2-speed lightweight models in stock; cash or extended terms.—Eagles and Co., High St., Acton. [X0572

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CALTHORPE-J.A.P., 2-speed, and Calthorpe 2-stroke, actually in stock; free tuition.—Hucklebridge, 133, Sloane St., London. Tel.: 451 Victoria. [X9839

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CALTHORPE-J.A.P., latest model, 2¾h.p., Enfield 2-speed gear, actually in stock; £34/13.—Prestwich's Motor Exchange, 26, St. John's Rd., Hove, Brighton. [7764

1915 Calthorpe-J.A.P., 2-speed and clutch, £34/15; also 2¼h.p. 2-stroke, 2-speed, £31/8/6; delivery from stock; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6409

CALTHORPE-J.A.P., 2¾h.p., 2-speed, and free engine, lamps, horn, and tools, new end February, perfect condition; £28; owner now O.H.M.S.—Box L862, *The Motor Cycle* Offices, 20, Tudor St., E.C. [8180

2h.p. Calthorpe Junior, 2-speed, 1915 Precision engine, not run 300 miles, perfect order, complete with horn, tools, etc.; accept £16/16, cost £26/10.—Box L875, *The Motor Cycle* Offices, 20, Tudor St., E.C. [8348

Campion.

6h.p. Campion, 1915, twin J.A.P. engine, Jardine gear, countershaft chain drive, fitted with Empress coachbuilt sidecar, Lucas separate generator lamp, Lucas horn, and rear light, including 2 spare tyres and several spares, the complete combination including all extras; £67/10.—Wanchope's, 9, Shoe Lane, London. [0539

Centaur.

3½h.p. Centaur, 2 speeds, handle starting, splendid order; £31; sidecar optional.—43, Doverfield Rd., Brixton Hill. [8338

Chater-Lea.

CHATER-LEA, 3½h.p., m.o.v., Bosch, B. and B., good tyres, lamp, etc.; £11; exchange coach sidecar.—Selby, 26, Rosslyn Rd., Barking, E. [8113

Chater-De Dion.

3½h.p. Chater-De Dion, perfect, ride away, spares; £7/5.—Underdoun, 2, Little Queen St., Dartford. [8088

Chater-Lea-Antoine.

CHATER-ANTOINE, 3½h.p., Amac, U.H., low position, recently overhauled; trial given; £18.—Linter and Sons, 44, London Rd., Redhill, Surrey. [8058

Chater-Lea-Fafnir.

3½h.p. Chater-Lea-Fafnir, Simms, B.B. carburetter, just overhauled; £10.—Box 8,012, *The Motor Cycle* Offices, Coventry. [X0451

Chater-Lea-Jap.

CHATER-J.A.P., 6h.p., 1915 engine, new coach sidecar, apron, Druids, new tyres all round, speedometer, electric horn, 3 lamps, 2 generators; trial; lowest £47/10.—S., 286, Rotherhithe St., London. [8216

Chater-Precision.

4¼h.p. Chater-Precision, J.A.P. free, variable, new tyres, just overhauled at works, with cane sidecar; £35, or nearest.—Mayworth, Whiteside, Greenlaw, Berwickshire. [X0028

Clarendon.

CLARENDON, 3½h.p., mag., spring forks, footboards, carrier, etc., condition as new; £16; evenings 4 till 7.—Oakhurst, 19, Orlando Rd., Clapham Common. [8102

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CLYNO, 2-stroke, late 1914, splendid condition; £25.—35, Upper Tooting Rd., S.W. [8188

CLYNO Combination, late 1913, 3 speeds, perfect; offers.—Stretton and Smith, 23, Woodstock St., Bond St. [8073

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CLYNO Combination, 5-6h.p., kick start, 3-speed; £35; in good running order; bargain.—Apply, Lea, Headon Bakery, Brent St., Hendon, N.W. [8062

1914 Clyno, in perfect condition, with Millford Cabrio sidecar, cane body, lamps, and spares; £60.—St. Denis, 605, Alexandra Park Rd., Wood Green. [X0040

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1913 Clyno, 3-speed, twin, 5-6h.p., single chain drive, engine just overhauled, condition guaranteed, with Clyno coach sidecar; £45.—Robinson's Garage, Green St., Cambridge. [6865

6h.p. 1912 Clyno, 2-speed, F.E., just overhauled, new chains, 2 lamps, and horn, large white cane sidecar, with side entrance; £37/10, or near offer, cash. —Viewed at 161, King's Rd., Camden Town. [7447

CLYNO Combination, late 1913, coachbuilt, 3-speed, clutch, kick start, largest F.R.S. lamp and another, 2 generators, spare wheel, Clyno wind screen, Jones speedometer, horn, extra toolbags, strong luggage carrier to sidecar, also specially fitted toolbox thereon; very large number accessories and spares; ridden under 6,000 miles; total cost £120 net; in splendid condition and running order; owner buying car; inclusive price, £65; must sell all on; list of spares and accessories sent on application.—Wheeler, 62, Church St., King's Rd., Chelsea. [X0592

Connaught.

1915 Connaught Miniature, 2-stroke, not 3 months old, condition perfect, as new; £25.—6, Lansdowne Mews, Holland Park (Tube Station). [8263

De Dion.

DE DION, 2¾h.p., a.i.v., B. and B., new lamps, generator, belt, inner tube, pump, horn, tyres good, good running order; £10.—Constabulary, South Normanton, Alfreton, Derbyshire. [8249

Douglas.

4h.p. Douglas, 1915, 3-speed, very little used; best offer.—193, Mansfield Rd., Nottingham. [X0565

DOUGLAS, 1913, 2-speed, etc., grand condition; £32/10.—11, Luna Rd., Thornton Heath, S.E. [8228

DOUGLAS, 2¾h.p., 1912, £26; 1913, £34; both perfect.—Percy, 337, Euston Rd., London. [8357

1915 Model U Douglas, T.T. bars, footboard, spare belt and knee-grips; £45.—Wilderspin, Chatteris. [8053

DOUGLAS, 2¾h.p. to 10h.p. models.—Gourlay, the great Douglas agent, Fallowfield, Manchester. [4241

DOUGLAS T.T., 1910, new condition, everything original; £22/10.—Leighton, opposite Wood Green Station. [8169

DOUGLAS W, 1914, 2-speed, kick start, special tyres, new condition; £45.—Ashworth, Cloud, Congleton. [X0453

DOUGLAS, T.T., 2¾h.p., 1915, or late 1914, and accessories, first-class condition.—306, Fulham Rd., Kensington. [X0386

DOUGLAS, T.T., late 1914, condition and tyres very good, also lamp set; nearest £43.—18, Ranelagh Av., Barnes. [8266

2¾h.p. Twin Douglas, mag., h.b.c., new tyre, perfect running order; trial; £14.—Sibley, 106, Market Place, Romford. [8134

DOUGLAS, 1913 N, fast, finest, speedometer, lamp, coat, spares; £35.—Wall, Franche Villa, Franche, Kidderminster. [8256

DOUGLAS, 1914, Model W, 2-speed and clutch, little used, new condition, complete; £47.—Layton's Garage, Bicester, Oxon. [X0521

1911 Douglas, new forks, frame, belt, and tyre, guaranteed condition; £16; money wanted.—Tranter, Hampton-in-Arden, Birmingham. [X0485

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DOUGLAS, late 1913, 2-speed, with clutch, accessories, good condition; £36.—The Castle Motor Co., Ltd., Showroom, Kidderminster. [X0697

ONE Douglas 2¾h.p. Motor Cycle, model T.T., run about 80 miles, delivered 3rd May, 1915.—John Rodenhurst, Ltd., Market Drayton. [X0341

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DOUGLAS, 1913, 2-speed, free, speedometer, stand carrier, grand running order; £36.—Murray's, 37a, Charles St., Hatton Garden, Holborn. [X0608

1910 Douglas, tip-top condition; approval, deposit; £16, or close offer; must be sold.—Box L863, *The Motor Cycle* Offices, 20, Tudor St., E.C. [8181

DOUGLAS, 1914, 2¾h.p., 2 speeds, F.E., clutch, Lucas lamp, horn, all spares, good as new; £39/10, or near offer.—Fereday, Bridgtown, Cannock. [X0544

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DOUGLAS, 2¾h.p., T.T., 2-speed, 1914, purchased 1915, as new, unscratched; £44, no offers, or exchange combination.—Spencer, Richmond Rd., Kingston, London. [8309

DOUGLAS, 1914-15, 2-speed model V, only run a few miles, tyres and everything as new, speedometer, Lucas lamps and horn, knee-grips, etc.; £46.10.—Motor Mart, Eastbourne. [X0319

DOUGLAS, 1914 model V, scarcely used, without exaggeration as new, high-class accessories, speedometer, etc.; best offer over £45.—Chaplain, 33, Weltje Rd., Ravenscourt Park, W. [8297

DOUGLAS, 1911, perfect order, tyres and tubes splendid, new saddle, all accessories; £19, including head light and horn; trial willingly.—Coldham, 3, Gaskarth Rd., Balham Hill, S.W. [X0378

DOUGLAS, 1912¾, 2¾h.p., 2-speed, clutch, kick starter, new tyres and belt, just been overhauled, fast machine, all accessories; £27/10.—Humphrey, 47, Russell Rd., Hall Green, Birmingham. [0507

FOR Sale, 1915 2¾h.p. Douglas, T.T. model, condition perfect, mileage 1,200, 5 gn. Cowey, Autoclipse lamp and generator, horn, knee grips, complete tools; what cash offers?—Box L870, *The Motor Cycle* Offices, 20, Tudor St., E.C. [8352

DOUGLAS Agents Eastern Counties.—Although Douglas deliveries are temporarily suspended due to the action of the Government, we are prepared to accept orders now for delivery on the recommencement of supplies.—Tel.: 3888. T.A.: Bicycles.—Robinson's Garage, Green St., Cambridge. [6867

Elswick.

ELSWICK Combination, late 1913, 4½h.p., 3 speeds, speedometer, lamps, luggage grid, Dunlop and Kempshalls, spares; a bargain, £39; in quite new condition.—7, Vale Terrace, King's Rd., Chelsea. [8231

Enfield.

ENFIELD, 1914, 3h.p., lamp, horn, complete; £36. —Findlay, Bryn Rd., Swansea. [X0612

1912 6h.p. Enfield Combination, nice order; £46. —53, Brownhill Rd., Catford. [8203

ENFIELD 1914 6h.p. Coach Combination, perfect; £56.—11, Luna Rd., Thornton Heath, S.E. [8227

ENFIELD.—Delivery of all models from stock.—Sole district agents, The Morris Garages, Oxford. [X0617

3h.p. 1913½ Enfield, good order, accessories; £30. —Hart-Smith, Camphene, Throwley Rd., Sutton. [8194

ENFIELD, 2¾h.p., 1912, with lamp, horn, etc., in perfect condition; £20.—Motor Mart, Eastbourne. [X0323

1915 Enfield Combination, 6h.p., fully equipped, done 400 miles only; £80, or near offer.—Green, Ashfield, Settle, Yorks. [8071

ENFIELD Combination, 1914 gears, wheels, pistons, all new tyres; £48, or exchange 3½h.p.—Riches, Wollaston, Stourbridge. [X0585

1914 Enfield 6h.p. Combination, good condition; two new Palmer cord tyres; £56.—Flewitt, 193, Mansfield Rd., Nottingham. [8156

ENFIELD, 1913, 2¾h.p. twin, lightweight, 2-speed, kick starter; £28.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0492

ENFIELD, 1914, 3h.p., first-class condition, equal to new, Lucas lamp, horn; £36.—Apply, Peacey, 7, Caterham Rd., Lewisham, S.E. [X0272

1915 Enfield, 6h.p., with spring bare, C.B. sidecar, etc., in stock; 80 gns.; spring handle-bar 21/- extra.—Motor Mart, Eastbourne. [X0318

6h.p. Royal Enfield Combination, fully equipped, lamps, speedometer, etc., splendid condition, new last April; 55 gns.—168, Roman Rd., Bow. [8221

ENFIELD, 1914, 2¾h.p., 2-speed, fully equipped, spares, almost new, unscratched; £32 cash.—Box 8,014, *The Motor Cycle* Offices, Coventry. [X0479

1914½ 6h.p. Enfield Combination, new Palmer Cord tyres, speedometer, watch, etc., condition as new; 65 gns.—Osborne, 177, New Park Rd., Brixton. [8236

ENFIELD, Bat, Rex-Jap, Chater-Lea combination, chain drive, wanted for spot cash, or 4½h.p. B.S.A. —Letters only, Whittam, Mumbles, Glamorganshire. [8159

ROYAL Enfield 3h.p. Twin and 6h.p. Combination, from stock.—The Exeter Motor Cycle Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0571

ENFIELD Combination, late 1914, coachbuilt, new tyres, electric head, side lamps, accumulators, horn, perfect condition; £65.—8,006, *The Motor Cycle* Offices, Coventry. [X0044

ENFIELD 6h.p. (Oct., 1913), coachbuilt sidecar, perfect, screen, lamps, speedometer, luggage grid, 2 new tyres; £55; appointment, or after 7 p.m.—5, Kenton Av., Harrow. [8063

1915 8h.p. Enfield Combination, purchased new 28th last month, dynamo lighting set, unpunctured; cost £110, price £100. Easy terms £2 extra.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0681

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J.A.P., 2½h.p., mag., perfect running order; bargain, £10.—Cording, Yeo Vale, Barnstaple. [X0481

MOTOR Cycle, 4h.p. J.A.P.; £25, or exchange for Douglas.—C. Hayden, Chigwell, Essex. [8076

J.A.P.-MINERVA and Sidecar, latest 8h.p. engine; £30.—35, Arkwright St., Nottingham. [X0516

J.A.P., 6h.p., T.T., overhead valves, good condition; £22.—Hilton, Sharp, and Co., Ltd., Foxhall Sq., Blackpool. [X0550

1914 Lightweight 2½h.p. J.A.P., 2-speed, good condition, accessories; £22, bargain. — Simpson, Chemist, Ibstock. [X9710

BARGAIN.—8h.p. J.A.P., No. 7 Chater, 3 speeds, Bosch, and double-seated sidecar; £38.—53, Brownhill Rd., Catford. [8207

1914 4h.p. J.A.P., Chater-Lea, Sturmey-Archer gears, K.L. saddle, light coach sidecar, all perfect; any trial; lowest 36 gns.—22, Melbourne Av., Wood Green, N. [8061

1915 6h.p. J.A.P. Coachbuilt Combination, by Sun Fittings Co., with Sturmey-Archer counter-shaft gears, absolutely perfect, only run 700 miles; satisfactory reason for selling; £60; with Cowey, mirror, lamp set, horn, watch.—Springett, Haslemere, Billericay, Essex. [8222

J.E.S.

J.E.S., 1914, cost 23 gns., condition as new; bargain, £15.—Rollings, Kinsham, Presteign. [8127

1915 J.E.S. Model de Luxe, new from makers April, perfect running order; £22/10.—Kimber, Wanborough, Swindon. [X0344

J.E.S. Lightweight, with Druid forks, specially built frame, many extras; cost £26, what offers?—Millard's, Cyclist, Guernsey. [8118

Juno.

JUNO-J.A.P., 6h.p., 3-speed Sturmey-Archer, countershaft, kick starter, footboards; £71/18, or £6/6 monthly.—Seen at 248, Bishopsgate, London, E.C. [1705

JUNO-VILLIERS, 2½h.p., 2-stroke (silver medal), new; £27/11 cash, or £2/8/7 down and £2/8/7 monthly.—Seen at 248, Bishopsgate, London, E.C. [1704

Kerry.

T.T. 3½h.p. Kerry-Abingdon, 7-speed gear, speedometer, in splendid condition; £20, a bargain.—36, Bath St., E.C. [8316

2¾h.p. Kerry, good condition and running order; £6/10, or exchange good class push cycle.—Pearce, High St., Bishop's Castle. [X0559

KERRY-ABINGDON, 3½h.p., N.S.U. 2-speed, free engine, spring forks, stand carrier, lamp set, splendid condition; £25.—Murray's, 37a, Charles St., Hatton Garden, Holborn. [X0607

Lea-Francis.

LEA-FRANCIS, 2-speed, clutch, 3½h.p., enclosed chain drive, in thorough good order; £50.—Hucklebridge, 133, Sloane St., London [X0506

LEA-FRANCIS 1914 Twin, 2-speed gear, clutch and kick starter, Lucas lamp and horn, 1,000 miles, new condition throughout; 50 gns.—47, Waterloo Place, North Shields. [8190

LEA-FRANCIS, 1913, perfect condition, 2-speed, clutch, kick starter, Lucas lamp, generator and horn, Watford speedometer, back rest, new Wood-Milne back; £48.—72, St. Augustine Rd., Southsea. [8213

Levis.

LEVIS Popular, in stock.—Hilton, Sharp, and Co., Ltd., Foxhall Sq., Blackpool. [X0552

LEVIS, 1914, 2½h.p., 2-stroke, thoroughly sound; £22.—P. J. Evans, John Bright St., Birmingham. [8280

1915 Levis, mileage 250, accessories; £24/10; after 6 p.m.—63, Foxbourne Rd., Balham, S.W. [8089

LEVIS, 1913, 2-speed model, drip feed lubrication, Dunlop heavy tyres, grand order; £22.—Moss, Wem. [X0614

LEVIS Popular; £28/1 cash, or fifth down, 2½% on balance.—Reliance Cycle Co., 332, High Holborn, W.C. [2773

1915 Levis, 2½h.p., Popular model, absolutely in stock; £28/1; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6410

LEVIS Popular Model, 2¼h.p., just arrived from works; immediate delivery; £28/1.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [8126

LEVIS, the best of all the 2-strokes; immediate delivery from their sole distributing agents, Colmore Depot, 31, Colmore Row, Birmingham. [X0328

LEVIS 2-stroke Motor Cycles, latest 1915 models.—Sole London and district agents, Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent [0711

LEVIS.—Promptest delivery new models and 1915 model No. 1, only shop-soiled, complete with all accessories; £34; deferred payments.—Lamb's, 151, High St., Walthamstow. [8141

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LEVIS de Luxe, 1915, 2¾h.p., 2-speed gear box, counter-shaft drive, new Lucas head lamp and horn, tools, etc.; cost complete £47/10; only done 300 miles, perfect condition; £39/10.—Ernest Whittingham, Newport, Salop. [X0543

Lincoln-Elk.

LINCOLN-ELK, 1914, 2½h.p., free engine, good condition; £20.—Apply, 11, Effingham Crescent, Dover. [X0309

£15.—3½h.p. Lincoln-Elk, Bosch, B. and B., very good condition; clearance £15.—Hall's, Engineers, Matlock [X0591

LINCOLN Elk (July, 1913), 4½h.p., 2-speed, free engine, hand starter, wicker sidecar, speedometer, lamps, spare belt, all accessories, good condition; price £30.—54, Lincoln Rd., Ponder's End. [8212

Martin.

MARTIN, 6h.p., brand new, single-geared; £40.—65a, Rosendale Rd., West Dulwich. [X0631

Matchless.

4h.p. Matchless and Sidecar, 2-speed gears, guaranteed perfect; bargain, £28.—25, Colchester Rd., Leyton. [3291

MATCHLESS 8h.p. 1913 Combination, 2 speeds, kick starter, in good order; £44.—Percy, 337, Euston Rd., London. [8359

1912 5-6h.p. Matchless 2-speed Combination, in first-class condition, fitted with lamp, horn, tools, etc.; £42.—F. Wootten, 55, High St., Oxford. [X0581

MATCHLESS, 1913-4, 8h.p., 2-speed, and Ivy sidecar, all accessories, hood and screen; 60 gns.; large deposits secure preferential terms.—Lamb's, 151, High St., Walthamstow. [8144

MATCHLESS 1914 7h.p. Twin Combination, hood, screen, F.R.S. head lamp, sidecar, rear lamps, Cowey, Lucas, tyres, enamel, plate, etc., as new; the outfit is absolutely as new; cost over 100 gns., price £76 cash, no offers.—Westcliff Motor and Engineering Co., 6, Western Esplanade, Westcliff-on-Sea. [8241

Minerva.

MINERVA Motor Cycle, reliable and fast, £8; light sidecar, complete, £2.—Ison, Filemaker, Bloxwich. [8255

7-9h.p. Minerva Combination, free engine, perfect, just overhauled; £26, or exchange with cash for speed geared combination.—Syracuse, Saltash. [X0444

8h.p. Minerva, splendid condition, Canoelet sidecar, with wind screen, for Ford, cash adjustment, or sell £40.—30, Bamford Rd., Wolverhampton. [X0337

MINERVA and Sidecar, 4h.p. twin, Armstrong 3-speed, B. and B., lamp and horn; £16/16.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [8124

Monopole.

MONOPOLE, 2¼h.p., 2-stroke, 2-speed, new; £35, bargain.—Broad, Friars Rd., Coventry. [X0359

Moto-Reve.

MOTO-REVE 2¾h.p. Twin, extractor silencer, mag control, new Dunlop; owner on service; bargain, 12 gns.—Gale, High St., Lawston, Cambs. [8084

Motosacoche.

1915 Motosacoche, 3½-4h.p.; £52; owner enlisted.—Wallace, 2, Suffolk Terrace, Thurruck, Grays. [8295

2h.p. Motosacoche, everything splendid condition, and perfect; £10/10, no offers; satisfactory reason sale.—50, Bulkeley Rd., Cheadle, Stockport. [X0561

MOTOSACOCHE, 1913, 3½h.p. M.A.G. engine, with sidecar, 2-speed gear, lamps, etc.; £40.—W., c/o P.V. Motor Works, Perry Vale, Forest Hill, S.E. [8077

3½h.p. 1915 New Motosacoche, 2-speed countershaft, chain drive; an ideal solo mount; £62; exchange or easy terms.—Wauchope's, 9, Shoe Lane, London. [X0531

1914 Motosacoche, 3½-4h.p. M.A.G. twin, Lissa valves, countershaft 2 speeds, Lucas equipment, everything perfect; bargain, £42/10.—17, Calverley Rd., Tunbridge Wells. [8224

MOTOSACOCHE, 1915, 3½h.p. twin, just delivered, fitted with the famous M.A.G. engine, De Lissa valves, countershaft gear, chain drive, phenomenal acceleration; £62; best exchange terms.—Eagles and Co., High St., Acton. [X0573

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NEW Hudson, 1912, 3½h.p., 3-speed and clutch, overhauled; £26.—Layton's Garage, Bicester, Oxon. [X0527

NEW Hudson, 1914, 6h.p., with sidecar, lamps, accessories, and spare parts; £55.—Terry, 28, Preston Rd., Brighton. [X0371

4h.p. July, 1914, New Hudson 72 gn. Combination, hood, accessories; sacrifice, £55; want tricar.—Postmaster, Wymondham. [8328

NEW Hudson.—All models delivered from stock.—The Exeter Motor Cycle Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0603

NEW Hudson, 1913, 2½h.p., 3-speed gear; £25/10.—The Exeter Motor Cycle Co. Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0570

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NEW IMPERIAL-J.A.P., 2½h.p.; £34/3/6 cash, or fifth down, 2½% on balance.—Referee Cycle Co., 332, High Holborn, W.C. [2774

1915 2¾h.p. New Imperial-J.A.P., 2-speed, actually in stock; price £34/3/6; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6408

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NEW Ryder, 2½h.p. J.A.P. engine, counter-shaft 2-speed gear; 32 gns.—Motories, 68, Horton St., Halifax. [0707

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N.S.U., 3½h.p., Bosch, B. and B., low, fast, and powerful; £10/10.—Speechley, 45, Church Rd., Acton. [X0626

N.S.U. 4h.p. Twin, 2-speed, Bosch, B. and B., Lyco belt, splendid order; £13.—Lloyd, West Langton, Market Harborough. [X0501

N.S.U. Lightweight, 2½h.p., mag. ignition, needs slight overhauling; clearance price, £9.—Layton's Garage, Bicester, Oxon. [X0525

N.U.T.

1914 N.U.T., 3½h.p. twin J.A.P., lamps, horn, Cowey; £28/10.—Railway Garage, Staines. [8346

1914 6-8h.p. N.U.T., complete combination, with speedometer, lamp, and horn, almost new; £60. —West End Garage, Blackburn. [0677

1914 N.U.T., 3½h.p., 3-speed model, with T.T. bars, kick starter, etc., very fast, and in new condition; £45.—Motor Mart, Eastbourne. [X0320

O.K.

O.K. Juniors, immediate delivery; the perfected 4-stroke motor cyclette.—Meeten, Motors, Dorking. [7736

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6h.p. Twin Peugeot, Roc 2-speed gear, mag., Montgomery sidecar, good running order; real bargain, £19.—Patrick, Church Rd., South Benfleet. [8317

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1911 P. and M., 2-speed, speedometer, etc.; £26/10. —91, Melbourne Rd., Eastbourne. [X0686

PHELON-MOORE, late 1912 combination, kick starter; £37.—Shone, 70, Watergate St., Chester. [7891

P. and M., 3½h.p., 2-speed, free engine, speedometer, accessories; £53.—54, Rathfern Rd., Catford. [8243

P. and M., splendid condition, 2 speeds, free engine, tyres perfect, take sidecar; £26; seen appointment.—24, Newton Rd., Cricklewood. [X0446

BARGAIN.—3½h.p. P. and M., chain drive, 2-speed, free engine, handle start, P.H. lamp; trial; £20; take sidecar.—45, Bowcommon Lane, E. [8166

P. and M., good condition, and up-to-date 3½h.p., 2-speed, free engine, with Montgomery sidecar; £37.—Rev. Stebbing, Cogenhoe Rectory, Northampton. [X0358

PHELON-MOORE Combination, 1914, 2-speed gear, speedometer, Lucas head and rear lights, excellent condition; £50.—Matthews, Pawnbroker, Croydon. [X0498

1913 Phelon and Moore, 3½h.p., 2-speed gear, F.E., perfect condition, only done 5,000 miles, speedometer, lamp, tube carrier, watch, etc.; £52.—Wond, Redclyffe, Worcester Rd., Sutton. [8286

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PREMIER, late 1912, 2½h.p., variable gear, new tyres, perfect; 20 gns.—10, Tabor Grove, Wimbledon. [8335

PREMIER, 2¼h.p., P.F. engine, good order, and tyres, battery ignition; bargain, £5.—Gale, High St., Lawston, Cambs. [8085

1912 Premier, 3½h.p., 3-speed, sidecar, horn, speedometer, good condition; £26.—Apply, 178, Munster Rd., Fulham, S.W. [8119

PREMIER, 1912, 3¾h.p. twin, B. and B., new tyres, fast, climb anything, accessories; any trial; £24. —James, 76, Cricklade Rd., Swindon. [X0325a

1912 3½h.p. Premier, enamelling, plating, like new, all accessories; bargain, £22, or offer.—Pooley, 1, Wastdale Rd., Forest Hill. [8269

MILITARY Model 3½h.p. 3-speed counter-shaft Premier, in crate, not unpacked; £60.—T. H. Nice and Co., Bury St. Edmunds, and Ipswich. [8107

PREMIER, 1914, 3½h.p., 3-speed, wicker sidecar, quantity of spares, new head and rear lamps; £40, no offers.—Stone, Worshro Bridge, Barnsley. [X0510

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1914½ Quadrant, coach sidecar, as new, 4¼h.p., 3-speed gear, used 2 weeks only, property of officer £48.—59, Binfield Rd., Clapham. [8341

QUADRANT 4¼h.p. 1914½ Combination, perfect condition, practically new, 3-speed gear, Bosch mag., Senspray carburetter, Canoelet coachbuilt sidecar; 50 gns.—Beaman, 11, Glasslyn Rd., Crouch End, N [8176

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3½h.p. Rex, sidecar, 3-speed, wheel; £30.—94, Caulfield Rd., East Ham. [8079

3½h.p. Rex, Bosch waterproof, B. and B., low, fast; £18.—53, Devana Rd., Leicester. [8096

£7.—3½h.p. Rex, good condition, wants accumulator.—Tomblin, c/o Baker, Kirkstead Rd., Woodhall Spa. [X0035

2½h.p. Lightweight Rex, new mag., B. and B., fine condition; £12/10.—66, Mackenzie Rd., Beckenham, Kent. [8185

REX, new 1914, 6h.p., 2 and 3-speed, coach Sidettes, just delivered; 10%; keen exchanges.—68, Horton St., Halifax. [0708

3½h.p. Rex, powerful; trial B. and B., climb anything; gift, £12.—Tucker, 142, Salmon Lane, Limehouse, E. [8261

1910 Rex, 3½h.p., Bosch, B. and B., studded tyres, fast, low; £17.—Apply, J. Newman, Farmer, Ibstock, Leicestershire. [X0587

TWIN Rex Combination, good condition; £28, or exchange for same or higher power chain drive.—11, Pigott St., Limehouse, E. [8074

3½h.p. Rex, 1911, 3-speed, good condition, powerful, spare piston, accessories; £20, sidecar £5.—E. H. Fawcitt, West St., Buckingham. [X0441

REX 1913 6h.p. Twin, 2-speed, and coachbuilt sidecar, splendid condition; £39; exchange lower power and cash.—A. Holland, Earlsdon, Coventry. [X0511

3½h.p. Rex, 2-speed, not done 10 miles since engine re-bushed throughout, splendid puller, £18; smart Rex cane sidecar, £5.—Newton, Stanley Villa, Chard. [X0694

1912 6h.p. Rex, Roc 2-speed, free engine, handle starter, overhead mechanical valves, speedometer, wicker sidecar; £26; trial; bargain.—45, Bowcommon Lane, E. [8165

REX, 1914, 6h.p., 3-speed, chain drive, kick starter, luxurious coachbuilt sidecar, new 700×80 Stepney Road-grip back tyre, perfect condition; £55.—The Premier Motor Co., Aston Rd., Birmingham. [8366

1914 Rex Combination, 6h.p., 3-speed counter-shaft gear, h.b.c., cork inset clutch, enclosed chain drive, Enots auto-lubricator, all refinements, Lucas head lamp, side and rear lights, smart outfit; £57.—90, Upton Lane, Forest Gate. [7949

NEW 6h.p. Twin Rex Sidettes, 1914 models, 3-speed countershaft gear, chain drive covered in, kick start, and free engine, handsome coachbuilt sidecar, 4-point fixing, including apron; £69 cash, or exchange. —Wanchopa's, 9, Shoe Lane, London. [X0541

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REX-J.A.P., 1913, 6h.p., 2-speed, coachbuilt sidecar lamp, horn, and tail lamp, perfect condition; £52 —The Premier Motor Co., Aston Rd., Birmingham. [8367

Rover.

1914 Rover, 3½h.p., like new, accessories; any trial; £35.—Sibley, 106, Market Place, Romford. [8132

ROVER, with or without sidecars; immediate delivery. —Colmore Depot, 31, Colmore Row, Birmingham. [X0331

ROVER, 1913, 3½h.p., 3-speed hub, lamp, horn, etc., in perfect order; £34.—Sims, Preston, Hitchin. [8178

ROVER, 3½h.p., 1912, 3-speed, complete with £12/12 cane sidecar, lamp, horn, spares; £40.—Moffat, Yeovil. [8094

1914 3½h.p. 3-speed Rover Combination, splendid condition; £50.—Page, 58, Kingston Rd., Teddington. [X0692

LATE 1914 Rover 3-speed Motor Cycle for sale, new condition throughout; £46.—Apply, 46, Kensington Rd., Coventry. [X0483

1913 3-speed Rover and Godiva coachbuilt sidecar, excellent condition; £40.—Gandertoa, 81, Fotheringham Rd., Enfield. [X0032

ROVER, 1913½, 3½h.p., F.E., 3-speed, speedometer, all accessories, just overhauled; £37.—Jarvis, 33, Salisbury Rd., Enfield Lock. [8246

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1914 Velocette, 2-stroke, 2 speeds; £21.—Cross, Agent, Rotherham. [X0491

VELOCETTE, new model DL, open frame, 2¼h.p., 2-speed, 120 miles per gallon; £36/8; immediate delivery.—The Premier Motor Co., Aston Rd., Birmingham. [8370

VELOCETTE.—New 1915 models in stock; model A, £27; model B, 2-speed, chain drive, £35/5; model DL (special open frame, lady's), £36/5.—Sole Midland Agents, The Premier Motor Co., Aston Rd., Birmingham. [7817

Williamson.

WILLIAMSON 8h.p. 2-speed Combination, overhauled by makers; £59/10; exchanges.—Lamb's, 151, High St., Walthamstow. [8145

WILLIAMSON New 1914 Sidecar Combination, late delivery; reduced price £94; exchanges quoted.—Motories, 68, Horton St., Halifax. [0706

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WOLF-J.A.P., 1914, 2¾h.p., 3-speed, free engine, kick starter, spare tube, and accessories, new condition; must sell; £30.—Getgood, 114, Fleet St., E.C. [8099

Yale.

YALE Motor Cycle in stock, 8h.p., 2-speed, kick start; £59/10.—Jones, The Broadway, Muswell Hill. Sole agent for N. London, trade and retail. 'Phone: Hornsey 2562. [7636

Zenith.

1912 4h.p. Zenith-Gradua, too fast for owner; nearest offer £24.—45, Bowcommon Lane, E. [8167

1913 Zenith, Gradua gear, condition perfect; £30; approval.—Davies, Buildings, Blaenffos, Pembs. [X0379

ZENITH, 6h.p., 1912, T.T. bars, very fast, complete, lamp, horn, spares, really good machine; £35.—Moffat, Yeovil. [8095

1913 Zenith Motor Cycle, clutch, kick-starter, absolutely as new throughout, only 2,400.—Parkinson, Builder, Chatteris. [8329

ZENITH, 1912, 3½h.p. J.A.P., Gradua gear, excellent condition throughout.—P. J. Evans, John Bright St., Birmingham. [8279

1913¾ 6h.p. Zenith, coach sidecar, £48; 1914 shop-soiled 7h.p. 3-speed F.N., £68.—Brighouse Motor Agency, Bailiffe Bridge. [X0033

1914 Zenith-Gradua, red T.T. 3½h.p. twin, lamp, horn, tools, dual oiling, perfect condition, unridden since August; owner in Flanders; £45.—C/o J.A.P. Works, Tottenham. [X0568

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ZENITH, late 1914, 8h.p., T.T. red finish, countershaft gear, 90 bore, side-valve J.A.P. engine, Gloria coachbuilt sidecar, enamelled red, large electric head light, sidecar and rear lamps, speedometer, horn, tools, spares, splendid outfit, cost new £130, guaranteed sound; £72.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0480

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SMART Powerful Modern Combination, smartly upholstered; owner nervous.—Bungalow, Wadshelf, Chesterfield. [X0034

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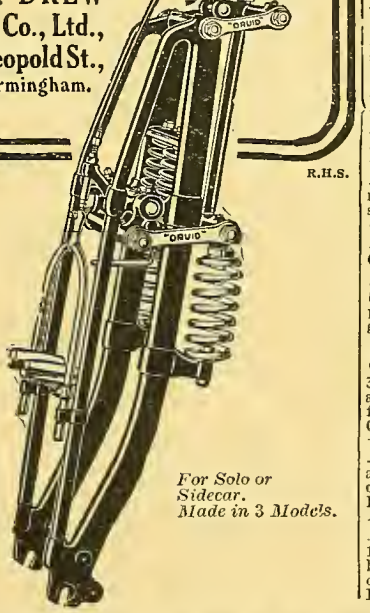

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EAGLES.—Any of the above can be had on approval, "The Motor Cycle" deposit system.—Eagles and Co., High St., Acton. Tel.: 556 Chiswick. [X0574

SECOND-HAND Motor Cycles.—We have a large stock of machines in excellent condition at very low prices to clear; send us your requirements and we will guarantee to satisfy you.—The Morris Garages, Oxford. [0314

8h.p. 2-speed Hazel-Jap and Sidecar, shop-soiled, £80; 2½h.p. 2-speed Hazel-Precision, nearly new, £30; 3½h.p. 3-speed Premier, £35; 3-speed Triumph and sidecar, £48; lightweight Premier, £25; several others from £10.—Hazel Motors, 24, Woodford Rd., Forest Gate. [8230

MOTO-REVE, 2¼h.p., Kempshalls and Michelins, speedometer, engine overhauled by makers, £17/10; and magneto motor cycle, Michelins, Brooks, in very good order, 12 gns., or near offers to clear.—Lamb's, 151, High St., Walthamstow. [8140

1913 Enfield 6h.p. Combination, excellent condition, speedometer, lamps, spares, £50; also Scott, late 1911, and wicker sidecar, not run 3,500, Binks carburetter, lamp, speedometer, spares, excellent condition offers over £30; appointment.—Col. Lewin, 51, London Lane, Bromley, Kent. [8328

MOTOR CYCLES FOR SALE.

Miscellaneous.

WANDSWORTH Motor Exchange, London's leading motor cycle exchange; finest value in the world.

WANDSWORTH.—Alldays Allon, 1915, new, 2-stroke, mag., 2 speeds; bargain; offers; exchanges.

WANDSWORTH.—Indian 1914 coachbuilt combination, 7-9h.p., mag., 2 speeds, complete; £65; exchanges.

WANDSWORTH.—Indian, 1914, 7-9h.p., mag., 2 speeds, speedometer, beautiful order; £52/10; exchanges.

WANDSWORTH.—B.S.A., 1914, 3½-4h.p., mag., 3 speeds, counter-shaft, kick, perfect; £43/10; exchanges.

WANDSWORTH.—B.S.A., 1913-14, 3½-4h.p., mag., 2 speeds, counter-shaft, like new; £39/10; exchanges.

WANDSWORTH.—New Hudson, 1913, 3½-4h.p. J.A.P., mag., 3 speeds; bargain, £32/10; exchanges.

WANDSWORTH.—Sun-Villiers, 1914, 2-stroke, mag., beautiful condition; cheap, £23/10; exchanges.

WANDSWORTH. — Zenith-Gradua, 1912-13, coach combination, 8h.p., mag.; any trial; £42/10; exchanges.

WANDSWORTH.—Humber, 1914, 3½-4h.p., coach combination, mag., 3 speeds, beauty; £45; exchanges.

WANDSWORTH.—F.N., late, 5-6h.p., 4 cyls., mag., 2 speeds, speedometer; sacrifice £28/10; exchanges.

WANDSWORTH.—Enfield, 1911, 2½h.p. twin, mag., Druids, splendid order; £18/10; exchanges.

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WANDSWORTH.—Triumph, 1911, 3½-4h.p., mag., fitted Zenith-Gradua gear, perfect; £30; exchanges.

WANDSWORTH.—Rover 1912 coach combination, 3½-4h.p., mag., F.E., clutch; trial; £32/10; exchanges.

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WANDSWORTH.—Antoine 5-6h.p. twin, h.h.c., good tyres, running order; £10/15; exchanges.

WANDSWORTH.—Easy terms.—Wandsworth Motor Exchange, Ebner St., Wandsworth Town Station. 'Phone: Battersea 327. [X0649

PALMER'S Garage, Tooting.—The pre-eminent place for purchasing. Auction sales fortnightly. Write for catalogue.

PALMER'S Garage, Tooting.—6-8h.p. Bat-Jap and coachbuilt sidecar, £30; one sole machine, similar, £20.

PALMER'S Garage, Tooting.—One 3h.p. Bradbury, £5; 2½h.p. Precision, 1914, 2-speed, lightweight, as new, £21.

PALMER'S Garage, Tooting.—3½h.p. 1913-14 Premier, 2-speed counter-shaft gear box; £40.

PALMER'S Garage, Tooting.—2¾h.p. 1910 Douglas lightweight, 2 cyls., horizontal; £18.

PALMER'S Garage, Tooting.—5-7h.p. twin Rex, 2 speeds, £21; 3½h.p. Lincoln-Elk, £20; 3½h.p. T.D.C., £21; 2¾h.p. Royal Enfield lightweight, £20.

PALMER'S Garage, Tooting. — 1¾h.p. Clement-Garrard lightweight, vertical engine, mag., countershaft gear; £7/10.

PALMER'S Garage, Tooting.—2¼h.p. N.S.U. lightweight, free engine, reliable turnout; £15.

PALMER'S Garage, Tooting.—50 motor cycles available. Write for illustrated catalogue of bargains issued fortnightly. The best and cheapest mart in London.—Palmer's Garage and Motor Auction Rooms, 183, 185, 187, and 189, High St., Tooting. 'Phone: 208 Streatham. [8302

GOOD Second-hand Motor Cycles, combinations, and cycle cars offered at exceptionally low prices. For real satisfactory service they are worth much more than we ask. We can quote you lowest inclusive terms for any make of cycle or car. Insurances effected. Accessories, new and second-hand, supplied. We offer more benefits to buyers than any other house. Being one of England's largest motor cycle distributers, we can render you exact service. Write or call, stating your exact wants.—Morgan and Maxwell, The London Motor Mart, 80, High Rd., Streatham, and branches. [8188

TRICARS FOR SALE.

A.C. Delivery Tricar, large roomy box front of driver's seat; £35; great bargain.—Wauchope's, 9, Shoe Lane, London. [X0538

PARCEL Car, 7h.p. Alldays, 3-wheeler, water-cooled, reverse, box at front, 2-seater, used only 6 months; £38.—Moore, George St., Knutsford. [8191

SIDECARS AND FORECARS.

SIDECAR, less seat, perfect; 42/6.—66, Greyhound Lane, Streatham, S.W. [8193

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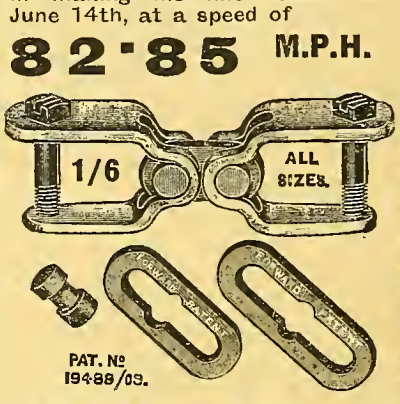

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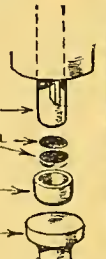

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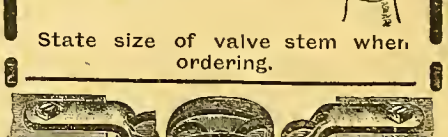
With quantity of discs.

State size of valve stem when ordering.



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Detachable, **1/-**

Adjustable, **1/3**

Leather-covered Links, **10d.**

FORWARD MOTOR CO.,

SUMMER ROW, BIRMINGHAM.

Makers of "Forward" British Plugs.

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BASTONE'S.—New cigar pattern bodies, wicker and rush; 45/- each.

BASTONE'S.—New coachbuilt sidecars, with Michelin tyre; £8/8.

BASTONE'S.—Several £7/7 coachbuilt bodies at £3/17/6.—228, Pentonville Rd., King's Cross, London, N. [8038

COACHBUILT Rigid Sidecar; 50/-, bargain.—170, Cape Hill, Smethwick, Birmingham. [X0566

PHŒNIX Sidecars from £4/17/6 to 14 gns.; write for catalogue, fully illustrating the various models.

PHŒNIX Sidecars.—Special models to suit Indian and Douglas motor cycles.

PHŒNIX Sidecars.—See our latest design underslung chassis, coachbuilt sidecar; 10 gns.; easy terms arranged.

PHŒNIX Sidecars.—We are also making a special coachbuilt sidecar; £8/15.

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PHŒNIX Sidecars are built as sidecars should be; our reputation is a guarantee; see testimonials.

PHŒNIX Sidecars.—100 complete sidecars always on show; call, write, or 'phone.

PHŒNIX Sidecars are manufactured throughout in our own works; originators of the Phœnix Trimo forecar, popular throughout the world.

PHŒNIX Sidecar Dept. (Proprs. Phœnix Motors, Ltd., established 1889), 736, Holloway Rd., and 4, 5, 6, Criterion Mews, London, N. Tel.: Hornsey 449. Telegrams: Sycamix, Upholl, London. [2218

PHŒNIX Coachbuilt Sidecar, splendid condition; £6/15.—8, Danvers Rd., Priory Rd., Hornsey. [809]

BASKET Sidecar, £2; another, torpedo, cane; £5/10. —108, Bennerley Rd., Battersea Rise, S.W. [8254

MILLFORD Castor Wheel Sidecar, wicker, good condition; bargain, £2.—21, Tudor Rd., East Ham, E. [8078

MILLFORD'S Latest Corvette and Skiff Models in stock.—Eagles and Co., High St., Acton, W. [X0571

WILLIAMSON Coachbuilt Sidecar, torpedo, side door; cheap, £6/15.—1, Ebner St., Wandsworth. [X0640

PHŒNIX, coachbuilt, underslung, nearly new, 4-point; £8.—Dines, 14, Ridgway, Wimbledon. [8287

SPLENDID Coachbuilt Sidecar, leather upholstered; bargain, £4/10 (near).—79, St. Albans Rd., Bristol. [X0693

DOUGLAS Sidecar for a 1915 4h.p. Douglas, in stock; what offers? quite new.—Moffat, Yeovil Tel.: 50. [1479

1915 Bramble Coachbuilt Sidecar, like new, storm apron; cost £17, bargain, 11 gns.—Booth, Malpas, Cheshire. [X0497

SIDECAR, smart cane body, side door, apron, chassis re-enamelled, quick-fit joints; £6.—Harries, Maisonette, Byfleet. [X0597

SIDECARS for Harley-Davidson and B.S.A.'s from stock; best on the market.—Leighton, opposite Wood Green Station. [8171

HERALD Sidecar, model D; £6/6 cash, or 11/8 down and 11/8 monthly.—Seen at 248, Bishopsgate, London, E.C. [1708

JUNO Side Entrance Wicker Sidecar, model A, £6/10, or 12 monthly payments of 10/10.—Seen at 248, Bishopsgate, London, E.C. [1706

WATSONIAN Folding Sidecar, equal new, Palmer; cost £13/13, £7.—Merriman, Highbury, Beech Tree Lane, Cannock, Staffs. [X0383

COACHBUILT Sidecar, perfect, £2/10; new coach canoe body, 25/-; chassis, wheel and tyre, 30/-.—Basnett, Cross St., Cheadle, Staffs. [X0267

SIDECAR, Godiva, coachbuilt, yellow, torpedo racing model, 1914; cost £14, sacrifice £7.—Davies, Barkerhouse Rd., Nelson, Lancashire. [X0514

SIDECARS, new and second-hand, C.B. and Torpedo, wicker models from £5/10; immediate delivery from stock.—Motor Mart, Eastbourne. [X0521

WATSONIAN Featherweight Sidecars, 1915 models; £6/7/6, or 11/8 monthly; £9/10, or 17/5 monthly.—Seen at 248, Bishopsgate, E.C. [1711

JUNO Sidecar, coachbuilt, side entrance, 2¼ Bates tyre, finish various colours, quick detachable joints; £6/8; 15/5 monthly.—Seen at 248, Bishopsgate, London, E.C. [1707

CANORLET, Swan, and Middleton record breaking sidecar; trade supplied. — Sole Wholesale Agent London, Rey, 378-384, Euston Rd., and 173, Great Portland Street. [5381

ROYAL Leicester, 2-seater, coachbuilt sidecar, practically new, hood, screen, curtains; cost £25; smart family turnout; sell £16, bargain.—Bond, Wolverhampton Rd., Cannock. [X0335

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ESTABLISHED IN 1903
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The Business Man's Sidecarrier.

THE slow progress of the sidecarrier is somewhat difficult to explain, but the business man's tardiness in adopting it can only be put down to the British characteristic of fighting shy of anything unconventional. When, at the outbreak of war, hundreds of horses were commandeered for use in the Army, this journal was not slow to recognise the possibilities of the light motor cycle parcel carrier for tradesmen's use, and in several issues focussed attention upon the commercial sidecarrier as the lightest, cheapest-to-purchase, and cheapest-to-run motor transport in existence. It was further pointed out that the body could, if necessary, be made interchangeable, *i.e.*, as a business carrier during the week and transformed into a pleasure body for week-end trips with the owner's family, by the simple substitution of a pleasure type body. Our efforts were not unavailing, but, nevertheless, from enquiries which we have engineered since that time, it is evident that nothing like the amount of support has been received which one would have expected in view of the comparative dearth of horses. This comatose condition is not to be accounted for by the tightness of money, for, as a matter of fact, money flows freely enough in England, and the vast majority of tradesmen are continuing to make good profits.

Probably our Post Office authorities have been the slowest to adopt the sidecarrier for one of the most suitable purposes for which it is fitted, and that is for collecting rural district mails. For years the Post Office have been satisfied to negotiate through contractors to collect the country mails, and are, moreover, content to see ponies ambling long distances morning and evening with mails, which have necessarily had to be collected some hours previous to the time they would leave their nearest postal centre. With a reliable motor cycle and sidecarrier the expense would not have been increased—rather the reverse—whereas the service would have been considerably accelerated and brought up-to-date. Some time ago we brought these facts to the notice of the authorities concerned, and it is some small consolation to note that, with painful slowness, the sidecar is being adopted in the different rural districts, happily with great success.

Bad Roads: An Appeal.

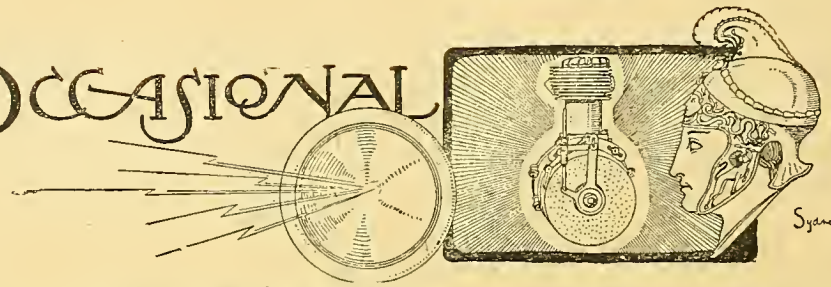
AS many of our readers are aware, numerous roads in this country have been severely damaged by motor transport waggons. There is little likelihood of any immediate improvement as regards road surface, though the authorities are in most cases gallantly struggling against tremendous odds to keep the roads in fair order. We know the position of certain of these roads, and we have been to some extent assisted by the A.A. map, which, however, is, we are sorry to say, incomplete and in some respects inaccurate. There is only one way of helping our readers, and that is for the many motor cyclists who are touring the country at the present time to communicate with us when they meet with any roads which have suffered severely from the extremely heavy traffic they have to withstand.

We know for a fact that certain roads in Hampshire, Wiltshire, and Oxfordshire have suffered severely, and we earnestly hope that those readers who are resident in these districts, or who have occasion to traverse them, will send us as complete and accurate reports as possible, so that we may eventually draw up a map by means of which we can assist those who are contemplating tours, or who have to make journeys on business.

The kind co-operation of our readers in this respect will help not only those who are engaged in war work, and who have a brief respite from their labours in which to take a health-giving trip into the country, but also the many despatch riders and others who are using their machines in the service of their country, and who wear the King's uniform.

An index to the advertisements in this issue will be found on the page facing the back cover.

OCCASIONAL COMMENTS



By "IXION"

Amateur Shell Makers.

I am asked to announce that an association of amateur mechanics is being formed to machine shell cases in their spare time. Mr. Watkins-Pitchford, of Lamport, Northants, is the chief organiser, and the armament works are behind him to this extent that they are providing unlimited supplies of blanks to be machined up by amateurs on their own lathes. Some of the public school and technical institute workshops are responding very eagerly, and are sending in excellent work. There must be thousands of amateur motorists who possess medium-sized lathes, and have four or five evenings and an afternoon to spare each week. If they will communicate with Mr. Watkins-Pitchford, he will show them how to be of real service to the nation. It is on the cards that garage workshops may be employed on similar tasks in the evenings.

Petrol Consumption.

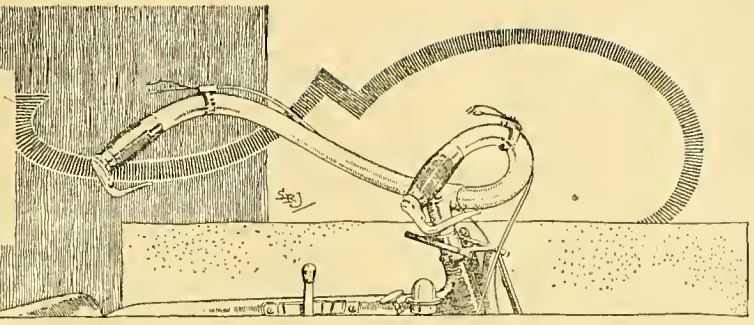
I have never sighed so deeply over the deficiencies in my technical education as during the last two years, when cycle car experience has shown me the ridiculous anomalies of petrol consumption. Last year, to quote a single example, I found myself in possession of a 2¾ h.p. twin motor bicycle, and a 10 h.p. four-cylinder cycle car. The former could cover no more than 60 m.p.g unless I adjusted the carburetter so as to tune down the engine power rather considerably; I could get up to 100 m.p.g. in a freak consumption trial at legal limit average, but for touring work 60 m.p.g. was the maximum I secured on a decent all-round adjustment, which provided easy starting, occasional speed bursts, and fast climbing. The cycle car, which weighed about 8 cwt. all on, was quite exceptionally economical, and compared very favourably with most of its rivals, but it averaged from 58-62 m.p.g. according to the roads on which it was used. In other words, the 160 lb. 2¾ h.p. motor bicycle, carrying one person, and the 8 cwt. 10 h.p. cycle car, carrying two persons, used approximately the same amount of fuel. I came to two conclusions on the matter; the one was that the motor bicycle, having a single jet vaporiser, wasted its fuel recklessly at low speeds; the other was that the cycle car wasted no fuel through "blowback." Liquid petrol was continuously sprayed out of the air intake of the bicycle carburetter, apparently when one of the inlet valves shut. When an inlet valve of the four-cylinder cycle car engine shut, a similar "blowback" doubtless occurred, but the rebounding gases were immediately caught in the suction of whichever inlet valve was then opening, and no rebound ever reached the main air intake, situated 3ft. or more from the valves, thus there was no wastage of fuel. By employing a three-jet Binks carburetter I reduced the fuel consumption of the bicycle to 85-90 m.p.g., but I could never approach the 120 m.p.g. which one would expect to obtain, and for this failure I blame the "blowback" more than anything else. When I have time I shall experiment with a very long inlet pipe, heated if necessary, in the effort to reduce the blowback on twins; but on single-cylinders the rebounds are so violent, and so unaffected by the next suction stroke, that there will always be a heavy wastage from this cause. Can any user of the automatic Claudel-Hobson carburetter tell us what consumptions he obtains with 2¾ h.p. twins and 3½ h.p. singles? I dislike using several very tiny jets on motor cycles, as they can hardly be efficiently screened from dust, and are apt to choke. The compensating effects of motor car carburetters, with their petrol reserves and so forth, are probably sound substitutes for the multiple jet.

At any rate, we are all dissatisfied with the petrol consumption of our bicycles when we see light car men and cycle car owners averaging from 40 to 60 m.p.g., and it is high time that some magnate of the carburetter world reassured us by demonstrating why our consumptions are so high, and what is being done to reduce them.

Spring Frames.

A very cute rider remarked to me the other day, "If our roads are overworked and under-repaired for another twelve months, a rigid frame motor cycle will be practically unsaleable." I do not notice that our manufacturers are evincing any notable interest in spring frames, and nobody could sympathise more than I do with the troubles which interrupted supplies of raw material and labour shortages are causing them. Yet, is the technical designer's time wholly absorbed throughout the year, and do the special problems of manufacturing in war time occasion any great increase of work for him? If not, the neglect of the spring frame is unpardonable. Even if our roads are put into decent order after the war, our manufacturers will have to compete with excellent spring frames of foreign construction. My experience is that when foreign manufacturers take up the springing question, they generally make a good job of it, perhaps because their roads (*e.g.*, American prairie tracks and Continental *pavé*) are so atrocious that first-rate springs are essential. In the light car world, the French Baby Peugeot and the American Trumbull are better sprung than 90% of the British chassis. It is high time that we gave up our muddling methods, faced existing problems, and set ourselves to solve them efficiently. There is no reason, except our innate *laissez faire*, why every standard British motor cycle should not be more comfortable than the average car; at present most of our machines are uncomfortable by comparison.

Experiences with a Scott Motor Cycle and Sidecar.



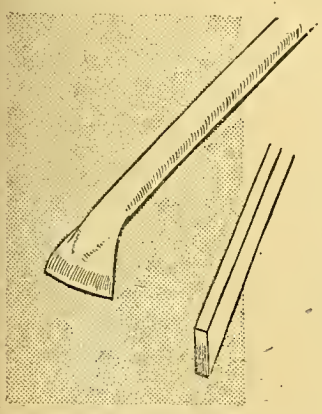
With some Hints and Tips on Care and Upkeep by a Member of our Staff.

ABOUT a year ago the writer invested in a Scott motor cycle, this machine being selected from other makes for certain peculiar features, namely, a two-cylinder two-stroke engine which can be driven hard without harm owing to the cylinders being water-cooled and the absence of valves and valve gear, an open frame of scientific design and construction, which, moreover, is eminently strong, and, finally, a speed gear and clutch operated by the foot, thus allowing full-arm control of the handle-bars at all times. The machine was altered from standard in certain respects, and includes "Tim Wood" racing handle-bars, Binks carburetter, semi-open exhaust outlet; a few small fitments were substituted for the original parts and fittings.

From the time at which the machine was purchased up to the present moment, the mileage has amounted to about 4,500, which cannot be called an immense total, but it is quite sufficient to enable anyone to judge how a machine will behave over three or four times that distance, and, incidentally, such mileage also enables one to learn how to treat a machine in the future from the amount of experience gained. So far the machine has given great satisfaction, but the knowledge required to keep an engine of the Scott type in perfect order is quite distinct from that gained by running an engine of the usual four-stroke variety.

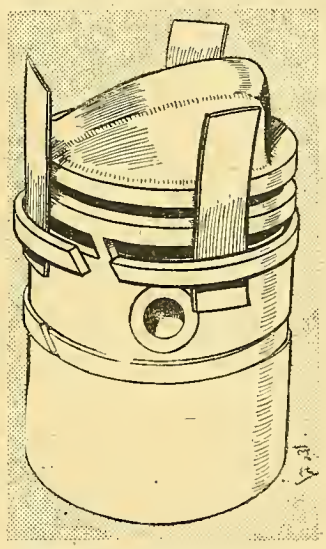
Tuning up.

The cardinal points in keeping a Scott engine in tune are clean transfer port gauzes, clean pistons, and consistent lubrication. In order to give the uninitiated reader a clear idea how to set to work we will presume he has just invested in a second-hand Scott machine which has been carelessly looked after by its previous owner and requires an overhaul preparatory to a lengthy season's work.



Two useful tools for scraping out carbon deposit.

In the first place, the engine had better be removed from the machine altogether, and this is a simple operation if the makers' instruction booklet is followed. The engine being on the bench, proceed to remove the exhaust and transfer port covers, and these, in addition to every other small fitting, should be stored in a box as they are taken off the engine to avoid the risk of loss. Now withdraw cylinder holding-down bolts by slackening off nuts under crank case lugs, and as the cylinders are being taken off, see that the pistons are in line with each other, otherwise binding may occur. After this operation, place the cylinders on the bench where they will not fall, and if the coslettised finish is still good, do not spoil it by placing the cylinders amongst a lot of odd tools and scrap. The removal of piston rings in the Scott engine should be carried out very carefully by the old process of three pieces of tin (as shown in the sketch), as in all probability the rings will be carbonised in their grooves and will have a tendency to snap in pieces if forced open. If the rings are troublesome squirt paraffin in and around the grooves *via* the slots, and gently urge them to move with the aid of a blunt-nosed darning needle. As each ring is removed (bottom one first and the others in order afterwards) hang it on a nail against the wall and place a pencil number beside it so that you will know the order in which they are to be put back on the pistons. The rest of the engine should now be put on one side and the cylinders dealt with next.



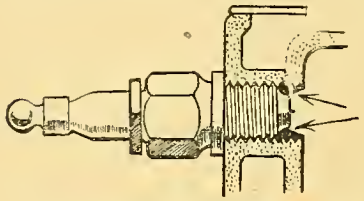
Removing piston ring with three slips of tin.

Removing Deposit.

The writer has found that two satisfactory tools for removal of carbon deposit in the cylinders can be made from steel rod, as shown in the first sketch. In most cases the deposit in Scott engines is soft and easy to scrape away, owing to the cylinders being

Experiences with a Scott Motor Cycle and Sidecar.—

water-cooled, but great care should be taken to clear out any carbon that tends to collect in the few threads that are exposed to the heat in the region of the sparking plug as seen in the accompanying diagram. This can be done with a sharp tang of a small file bent over in the form of a hook. It is advisable here for the novice to note that the cylinder heads on the Scott engine are cast in one with the cylinders themselves, and that the detachable rings on the outside of the cylinder heads are for access to the water spaces only. With the aid of a sharp penknife, scrape out all signs of deposit or caked oil which has formed in the exhaust and inlet ports and passages, and when both cylinders are completely dealt with wash out thoroughly with two or three pints of fresh paraffin and clean with a soft brush. After this has been done, the cylinders should be wiped perfectly clean with dry rags, so that not a particle of grit or chipped deposit remains.



The arrows show locality of deposit in sparking plug threads.

Pistons and Crank Case.

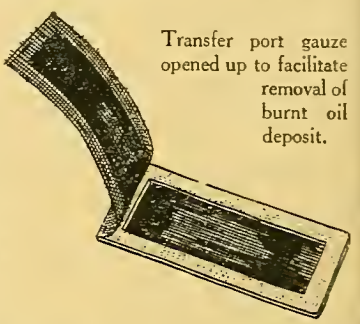
We now return to the pistons and crank chamber. After the rings have been removed, the piston heads and grooves can be scraped clean quite easily with a penknife, but in doing so a rag should be stuffed in the pit below the piston to prevent the chips of deposit from falling into the crank chamber. Having cleaned the pistons thoroughly, use the penknife also to scrape away all signs of packing that may exist on the surfaces of the crank chamber upon which the cylinders sit. After this has been accomplished, the crank chamber (minus inspection doors, clamp nuts and bars) with pistons, etc., should be immersed in a bath of fresh paraffin and thoroughly washed and scoured out with the aid of a stiff hair brush, particularly in the sumps and the region behind the flywheel and chain sprockets. One cannot be too particular in carrying out this job, as it is astonishing how much dirt and grit can be hidden away behind wearing surfaces and other important places. The crank case can now be stood on the bench on its base, so that the paraffin runs down into the sumps. By using a small oil pump, the sumps can be drained, the final extraction of grit being carried out with rag stuffings.

After these operations the cylinders, crank case, and internal parts should be perfectly clean, and if at this stage one happens to be leaving the job for any length of time, it is advisable to cover all parts with a sheet or two of newspaper to exclude dust.

The remaining cleaning operations concerning the engine relate to the transfer ports, gauzes, and exhaust port covers.

Transfer Ports.

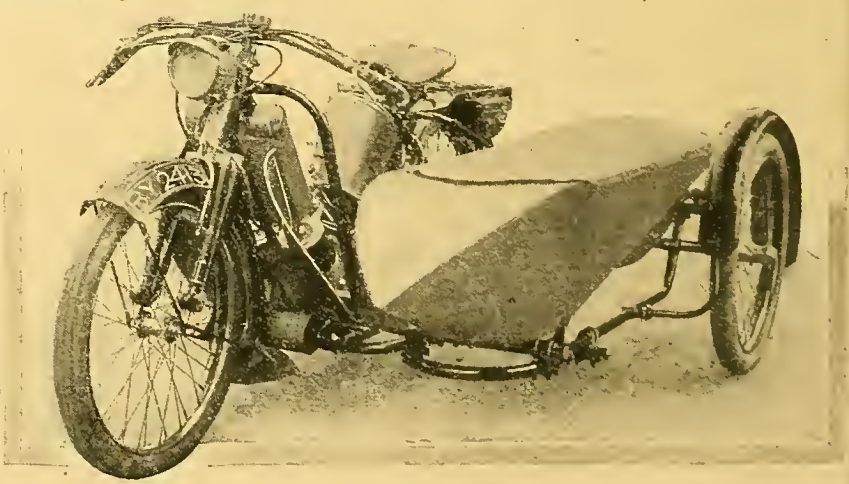
A transfer port gauze, which has become clogged with burnt oil through back-firing, is one of the most puzzling things to clean, and it is a common impulse by the novice to try and dislodge the deposit from the interstices in the gauze by brushing or jamming it with a stiff brush or something of a similar nature. It can be done after a style by this method, but it is an unsatisfactory job at the best. The writer cleans the gauzes of his engine in the manner shown in the sketch. The Scott gauzes are built up of two pieces of gauze separated by an oblong piece of lead packing, the whole pressed together to make it air-tight at the edges. If a pen-knife blade is used to lever three or four strands of wire gently from one corner away from the lead, it becomes quite easy to pull one of the gauzes carefully away from the packing with the fingers. In order to render the choked dirt that is revealed inside easily removable with a stiff wire brush, it is necessary to dip the whole gauze in paraffin, so as to wash away all loose oil: it may then be heated all over with a match to dry the deposit. It will now be found that when one leaf of gauze is pulled away the dirt inside brushes away like fine powder. Great care must be taken *not* to pull the gauze right off the lead packing, otherwise the final procedure of pushing a gauze back into position and gently hammering it back into the lead packing will be spoilt.



Transfer port gauze opened up to facilitate removal of burnt oil deposit.

Both inlet and transfer port covers should be scraped and cleaned in a similar manner to the cylinders. Similarly, the little half-compression valve in each cylinder can be removed with the special tool provided, and if they are suspected of leakage, the valves should be ground in with a little fine emery and thin oil. Wash them in paraffin afterwards and replace in cylinders.

(To be continued.)

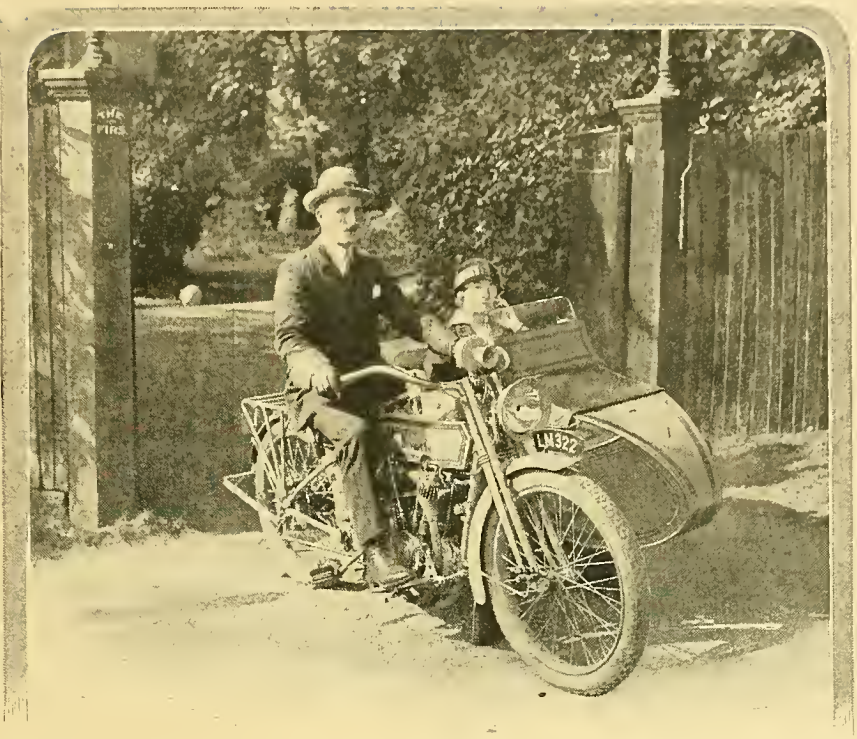


The writer's Scott and sporting sidecar.

ROAD TESTS OF NEW MODELS.

The 7-9 h.p. Harley-Davidson Sidecar Outfit.

Two cylinders, 84×89 mm. = 989 c.c.; mechanical lubrication; three speeds and chain drive.



IT was on the occasion of the wounded soldiers' sidecar outing, described in *The Motor Cycle* of June 24th, that we had an opportunity of trying for the first time on the road one of the new Harley-Davidson passenger outfits, which had been placed at our disposal for this particular purpose by Messrs. Robertsons' Motors.

A Smooth Working Clutch.

We took the machine over from the firm's depot at 157, Great Portland Street, on the previous afternoon, and had a good opportunity of gauging its capabilities in negotiating traffic on the way from that part of London to our own garage. We found the clutch to be delightfully sweet in action, though to anyone not accustomed to handling it the degree of movement seemed to be somewhat greater than was absolutely necessary. With regard to the twist handle control, we can quite understand that this is highly appreciated by a driver who is the actual owner of one of these machines, but the writer who is accustomed to driving all makes found it difficult to get into his mind the direction in which to turn the handle to close the throttle, and, moreover, it is difficult to see at a glance whether the throttle is open or shut.

Captain J. E. Hollington, of the 2/5th Gloucesters, on his 7-9 h.p. Harley-Davidson.

To revert to the clutch. We learnt afterwards that it is not desirable when driving slowly to engage the clutch to the fullest possible extent, as if it is only partially engaged a small amount of slip is allowed to take place, which is just sufficient to take the initial shocks of the engine off the chains, and so to cause the combination to run with a great deal more sweetness than would otherwise be the case.

The sidecar fitted was rather narrow, and so the machine required some amount of care, especially when turning left-hand corners, but a new batch of sidecars is being manufactured specially for this model which are a great deal wider, so this trouble will not be again experienced.

One of the features of the Harley-Davidson which appealed to us most was the automatic Schebler carburetter, which provides a wonderful degree of controllability.

On the Brighton Road.

On the following day we made our way down to Worcester Park, the machine being in excellent condition. When a start was made at Ewell with a wounded Belgian on board, we began to get a good idea of the behaviour of the outfit on the open country roads. Once on the broad highway to Brighton, the throttle was opened, and a steady pace of about 30 m.p.h. was maintained. In fact, this appeared to be about the machine's best speed. We did not attempt any faster speed so as to avoid shaking our passenger, who had been somewhat badly wounded. The run demonstrated the fact that the particular combination we used was rather too highly geared for sidecar work, and a change down was necessary at Peas Pottage on the outward journey, and at Handcross and Reigate hills on the way back.

Two points specially struck us as being excellent in every degree, and of these one was the steering

Road Tests of New Models.—

of the combination, which was one of the best in this respect we have ever driven, and the other was in the comfort of the saddle.

The Advantage of Mechanical Lubrication.

It was indeed pleasant to find that the lubrication of the machine was entirely taken out of the driver's hands. Once, because the machine was new, we put a little oil from the hand pump into the crank chamber, but for the rest of the trip the well-designed automatic pump was allowed to carry out its duties of lubrication. It is interesting to note that the oil used in this machine is of the thinnest possible variety, and would be looked upon with suspicion by the average English motor cyclist.

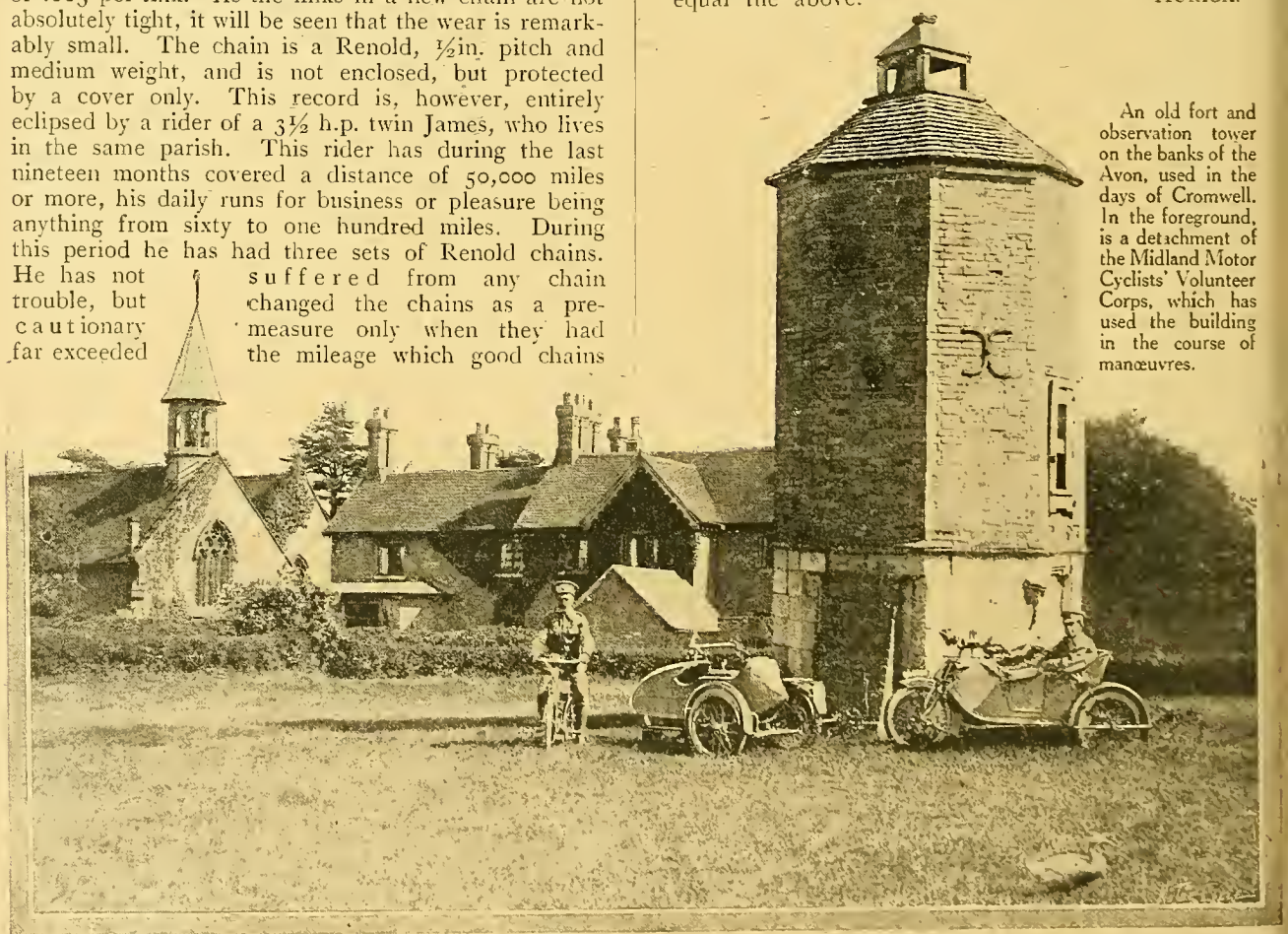
The spring forks seem to do their duty admirably, while the interlocking mechanism on the change speed gear, which prevents the gear from being engaged when the clutch is in engagement, is a most ingenious feature. The particular model we were driving was equipped with the Remy Electrical Co.'s electric lighting system, which also worked the horn. The head lamp was of the two-bulb variety, and we had occasion to use the small bulb in traffic on our return to town, and found it most satisfactory. Our passenger was most enthusiastic about the comfort of the sidecar.

It is interesting to note that the horn is cut out of action by means of an automatic switch as soon as the engine stops, thus preventing children or mischievous persons from tampering with it when the outfit is left standing in the roadway. The riding position is comfortable, and altogether the machine impressed us very favourably, though undoubtedly for sidecar work it would be better for a lower gear, larger filler caps, and one or two minor alterations which will doubtless be embodied in the 1916 models.

CHAIN STRETCH.

WHEN I removed the rear chain from my 3 h.p. Enfield recently for cleaning purposes I laid it on the bench and measured the play in the links, the distance run being upwards of 5,000 miles in all weathers. The amount of play in the entire chain of 120 links was not more than .375 inch, or .003 per link. As the links in a new chain are not absolutely tight, it will be seen that the wear is remarkably small. The chain is a Renold, ½in. pitch and medium weight, and is not enclosed, but protected by a cover only. This record is, however, entirely eclipsed by a rider of a 3½ h.p. twin James, who lives in the same parish. This rider has during the last nineteen months covered a distance of 50,000 miles or more, his daily runs for business or pleasure being anything from sixty to one hundred miles. During this period he has had three sets of Renold chains. He has not suffered from any chain trouble, but changed the chains as a precautionary measure only when they had far exceeded the mileage which good chains ought to run without trouble. In this case both chains are enclosed. These experiences conclusively prove the extreme reliability of chain drive when properly carried out with chains of good quality. One often hears of excellent performances achieved by belts, but I fancy they would be hard put to it to equal the above.

AURIGA.



An old fort and observation tower on the banks of the Avon, used in the days of Cromwell. In the foreground, is a detachment of the Midland Motor Cyclists' Volunteer Corps, which has used the building in the course of manœuvres.

THE NEW COUNTER-SHAFT

ROVER

Extract from Ireland's "Saturday Night":

RELIABILITY TRIAL IN CONNECTION WITH THE ULSTER CENTRE OF THE MOTOR UNION.

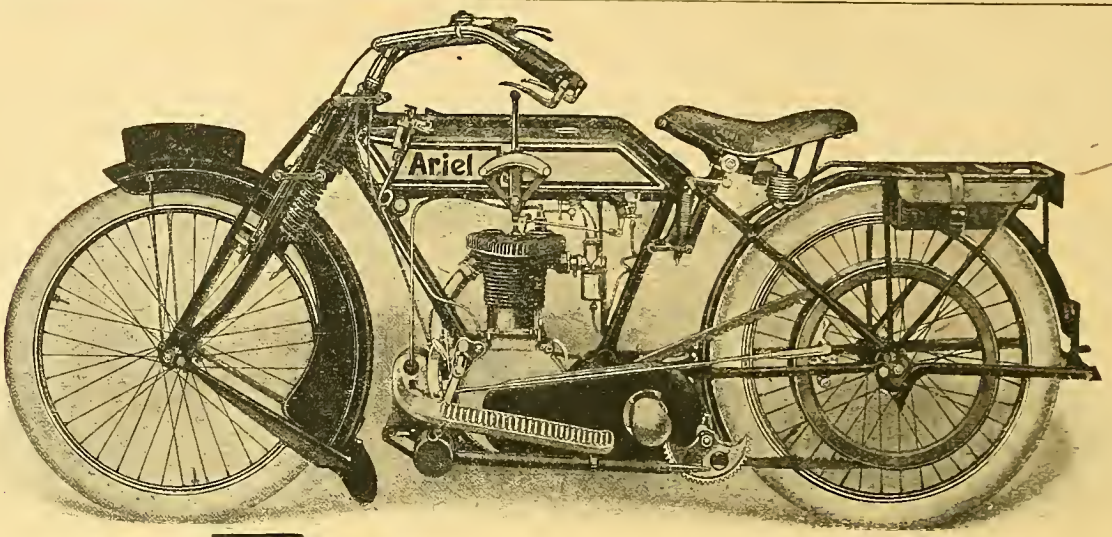
"George Graham (3½ h.p. Rover and Sidecar) was first . . . . . .

"I am sure that all his fellow-competitors will agree no better sport could have won the event than George Graham, whose new Rover covered itself with glory by the way in which it took all the test hills including the terror at Feestown. It was a supreme test of hill-climbing for a passenger mount of such moderate horse-power."

SIDECAR COMBINATION COMPLETE

£80 : 0 : 0

The Rover Co., Ltd., Meteor Works, Coventry.



A TRIO OF TRIBUTES.

THE FINEST 3½ H.P. IN MANCHESTER.

"I consider I have the finest 3½ h.p. in Manchester. I have done as much as 160 m.p.g. with passenger, and touched 50 m.p.h. with sidecar and passenger."

F. SPEAKMAN, Esq., Manchester.

WILL HAVE NOTHING BUT AN ARIEL.

"A postman who bought a 3½ h.p. Ariel from me in 1913 will have nothing but an Ariel. It is a splendid machine. After never less than 200 miles a week since February, 1913, it is pulling as well as ever."

AN ARIEL AGENT.

GIVING EVERY SATISFACTION.

"The Ariel is giving every satisfaction. It took my wife, boy, and baggage, recently over Kirkstone Pass in the Lake District, without a murmur."

A SATISFIED OWNER.

ARIEL WORKS LIMITED,
(Dept. A),
BOURNBROOK, BIRMINGHAM.

Ariel

THE MOST DESIRABLE MOTOR CYCLE

In answering this advertisement it is desirable to mention "The Motor Cycle."

TO REDUCE VALVE CLATTER.

Designs Adopted to Minimise the Noise.

WE have more than once made mention of that very undesirable noise—valve clatter—which is far too common on many makes of motor cycles. The very fact that a valve makes a noise shows that it is hammering on its seating or that its stem is being hammered by the tappet far more than should be the case. It is not difficult to design valves which shall be quiet in action at the cost of efficiency, but to combine efficiency and quietness is some-

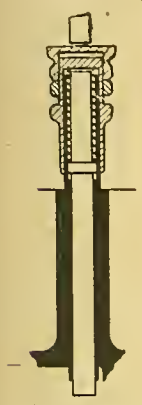


Fig. 1. An adjustable tappet, the head of which is kept in contact with the valve stem by a light spring. The tappet guide is extended to prevent the leakage of oil.

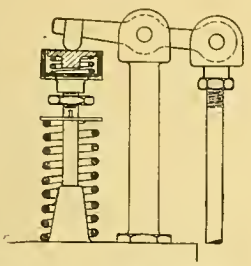


Fig. 2. An adjustable valve stem for an overhead valve, similar in principle to the tappet shown in fig. 1.

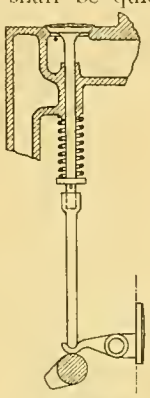


Fig. 3. Dispensing with tappet guides; the tappet is suspended between the valve stem and cupped rocker.

thing of a problem and one which is not entirely solved at the present time, although, as the examples we give on this page will show, inventors and manufacturers have not been altogether idle. It is obvious that if the valve stem and valve tappet could be kept in constant contact no noise would occur at this point. Owing to the expansion of metals by heat this is only possible by interposing a spring or springs to keep the tappet pressed against the valve stem, the result of which is to introduce noise at another point, viz., between the tappet and the operating cam. or rocker. Noise here is less noticeable as the parts are enclosed in the timing gear and are supplied with a liberal amount of oil from the crank case which materially helps to deaden the sound. It is upon these lines that most inventors are experimenting, as evidenced by our illustrations.

To design a cam which will give a maximum of efficiency by means of a quick lift and drop of the valve and yet return it slowly on to its seat is not easy, but such a cam is shown in fig. 6. In this case the drop is very quick until the last moment before closing, when a projection on the cam causes the valve to fall quite gently. If such a cam would allow the engine to turn backwards it would seem to be a satisfactory solution of the difficulty. It is very desirable that this noise of the valve gear should be reduced as it is most irritating to many, but it must be done without any appreciable loss of efficiency—a quality so dear to the heart of every motor cyclist, and herein lies the *crux* of the problem.

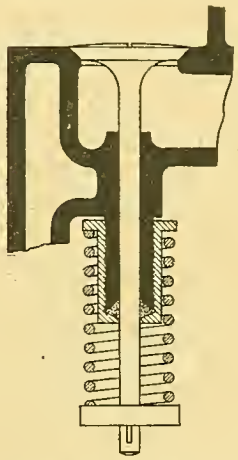


Fig. 4. A method of lubricating the valve stem; a stuffing box formed at the lower end of the valve guide is filled with graphite. This also prevents the passage of air or gas.

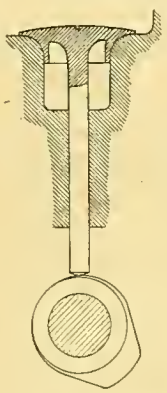


Fig. 5. A specially shaped valve, which prevents nearly all passage of gas when not quite seated; the final movement can therefore be slow.

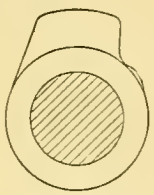


Fig. 6. A diagrammatic sketch of a special cam which allows the valve to return gently to its seat.

Touring the Overseas Market.

WE have received from Auckland, N.Z., a letter from Mr. J. W. Sparke, who, as we announced some time ago, is making a tour overseas on behalf of his firm, the Lloyd Motor Engineering Co., Ltd., of Birmingham. The joint enterprise of Mr. Sparke and that of his company is meeting its just reward, for a large number of orders have been handed to Mr. Sparke. Enclosed with his letter was an interesting photograph of a *châlet* on Mount Egmont (8,270 feet), North Island, N.Z., and a motor car and motor cycle trip was organised for the opening ceremony. In the foreground there is an L.M.C. motor cycle and sidecar, this being the only outfit of its kind to negotiate the climb. As a matter of fact, only ten out of a total of twenty-five vehicles which started managed to get up to the *châlet*, mainly on account of the road surface, which is very bad.

Mr. Sparke had already been in India when he wrote us, and, after completing his business in New Zealand, he will return to Australia. His next trip was to have been to Japan, but at the time of his writing matters looked very serious between Japan and China, and the Yokohama agents for the L.M.C. cabled Mr. Sparke to postpone his trip.

It was his intention to return to England *via* America, but the air having since been cleared in the Japan-China outlook Mr. Sparke may have decided to proceed with his original programme.

We have always been strong advocates of the practice of personally seeking business in the British Empire overseas. American competition is very keen in our self-governing dominions and colonies, and to take adequate steps to meet it it is necessary for British manufacturers to send out representatives to study local conditions and look after agents.

Some Notes for Fast Tourists.

HOW TO ATTAIN A GOOD AVERAGE WITHOUT RECKLESS DRIVING.

THESE few remarks are by one who, although not a prominent race rider, can claim to have covered his total mileage at an average speed well above the ordinary. It is in no way intended to appeal to those who aim at sheer maximum speed for short distances only: the article is meant to be interesting to the motor cyclist who wishes to make the most of his time on the road without indiscriminate "blinding," but who wishes to travel at a good average speed.

Average Speed.

First of all, let us define "average speed," a term which many seem to misunderstand. It is not the figure to which the speedometer needle generally points on a long run, and neither, unless specially stated, is it the distance travelled divided by the number of hours between setting out and arriving at one's destination. It is the number of miles actually travelled divided by the number of hours that the machine is actually in motion. This, so far as pure average speed is concerned, should be obvious to all, but for practical purposes in comparing the merits of different machines, the time spent in involuntary stops should be included, for a machine which does thirty miles in an hour, takes an hour's roadside adjusting, and then covers the next thirty miles in an hour, has the same average speed as a machine which consistently covers twenty miles in the hour. For solo work any machine fitted with a modern engine of over 500 c.c. capacity, and kept in good tune, is very fast, and the average speed of any such mount depends more on the skill and capability of the rider than on the size of the engine.

This type of machine has been developed and brought to such a high pitch of efficiency that for solo work no want of power is likely to be felt if it is well driven and cared for. Another point in its favour is low running cost.

The majority of riders, however, seem to want something which will keep the speedometer hand at a high figure when riding solo on the open road, is docile in traffic, economical to run, and yet, when a sidecar is coupled up, will be capable of taking a passenger without losing the life and vigour of a solo machine.

Let it be said here that the writer entirely disagrees with a high average on a sidecar combination. To obtain such, it is necessary to take the corners and bends without slowing up very much, and high speed cornering on such an unmechanical contrivance as a sidecar imposes strains on the frame tubes far in excess of the safety mark.

Having ridden almost every type of machine from a 1¼ h.p. Motosacoche to an 8-10 h.p. Zenith with and without sidecars, the writer is of opinion that a 5-6 h.p. twin with some form of variable gear, kick-starter, and clutch is the ideal for such a double-purpose mount as is under discussion. A big 1,000 c.c. twin in good tune may be flexible, easily started, and, for sheer maximum speed, cannot be beaten, but the extra power and speed are merely a danger, and, further, the additional weight is disadvantageous in traffic, in grease, and for the rider's comfort. The petrol and oil consumption is decidedly higher than in the 5-6 h.p. twin.

Turning to the lower powers, we have the 3½ h.p and 2¾ h.p. singles and twins.

Now, except in expert hands and in tip-top tune, over twenty miles in the hour for any length of time on a 3½ h.p. and sidecar requires a good deal of doing, and also the life and response are in many cases woefully absent. For ordinary touring a 3½ h.p. and sidecar is quite sufficient, but, if mere vim, which is the mustard to the beef of motoring, is required, there is not quite enough power.

The 2¾ h.p. machine of the popular horizontal type can compete very favourably with many 3½ h.p.'s for solo work, and is very handy for all traffic riding and very occasional sidecar work, but a passenger on the carrier is distinctly felt by the willing little engine.

Thus we see that, for the man who cannot spend much timing in "tuning," but who wants to cover his hundred miles solo in as little time as possible, consistent with comfort and safety, and who, when in want of companionship, wishes to take a passenger without overtaxing his engine, the light 5-6 h.p. twin with a variable gear and clutch will suffice.

As a solo mount there is, of course, ample and almost a surfeit of power, still it is economical, efficient, and tractable, and as a passenger machine will pull a comfortable coachbuilt sidecar up any non-freak hill and without nursing or special tuning.

Avoid High Gears.

There is no greater mistake which one can make when in search of a good average speed than to overgear the engine. A petrol engine is designed and meant to "rev." and to develop power when turning over rapidly. A high gear means either "konking" or unnecessary "revving." owing to a forced gear change when climbing or in traffic; the drive becomes jerky, resulting in wear on the transmission and tyres, whilst the engine overheats far more readily.

With a low top gear, say 4¾ to 1 on a 3½ h.p. single, quite as much speed can be obtained on the level, provided the engine is accurately balanced, as with a high top gear, and the machine will romp up hills without changing into a second gear of, say, 7 to 1. A consistently good speed is required for fast touring, and time lost on a low gear on a long medium-graded slope means "blinding" on the level to make it up.

When taking off or putting on the sidecar, a change of gear ratios is very desirable. With a belt drive

Our pleasure.

Readers may have noticed that, since September last, we have repeatedly claimed in our advertisements that "the Clyno Combination is, as far as we can ascertain, the only Combination expressly designed for sidecar use which the War Office is ordering."

Before issuing the above we obtained the sanction of the War Office to do so, and, further, secured their assurance that the claim was correct, but even then we were careful to insert the qualifying phrase—"as far as we can ascertain"—as we were most anxious to avoid causing any injustice to other manufacturers. Having received no disclaimer after several months of advertising we, recently, announced the claim in more emphatic and concise terms, briefly stating that "the Clyno is the only sidecar combination being ordered by the War Office."

We now learn that another well-known firm of Motor Cycle manufacturers have been and are now supplying a special department of the War Office with a single-cylinder machine to which a sidecar is attached, hence we willingly, in justice to them, modify our claim to the one we originally made, and—

We do this with pleasure.

Keep in touch with us.
CLYNO ENGINEERING CO., WOLVERHAMPTON.
'Phone—992 Wolverhampton.
Wires—Clyno, Wolverhampton.

He says—

"I am writing to let you know how pleased I am with my 4½ h.p. Quadrant Combination. To say that it has surpassed my expectations is saying little indeed. The way it tackles, with ease, these stiff hills in Devonshire is really surprising—for speed and power she is IT. The whole finish of the outfit is superb, and one is led to wonder how it can be sold at the price, especially when one considers this combination costs no more than some 3½ h.p. solo machines."

"He" is an enthusiastic

QUADRANT

rider (J. C. W. of Honiton) and his enthusiasm is common to them all.
Do *you* ride a Quadrant?—if not, details of our latest models will interest you, including—

THE QUADRANT 4⅛ h.p. with B.S.A. Countershaft 3-speed Gear—Solo, £55; Combination, £66 11s.

QUADRANT WORKS, LAWLEY ST., BIRMINGHAM.
London Depot—78, Gt. Queen St., Kingsway.
The above and all other Quadrant prices are now advanced by 5%.

There's no Query about Quadrants

Concerning Tyres for Lightweight Machines.

Because you run a Lightweight machine, do not be misled into fitting Tyres that are inadequate for the work, but use

Wood-Milne
MOTOR CYCLE TYRES.

"GRIPRIB"
3-ply
26/9
per cover.

26 x 2"

They are built specially for this purpose from the same materials (fabric and rubber) as our famous Car Tyres, and unite the maximum of resiliency with great strength, leaving an ample margin, which reduces the chance of Tyre Trouble to a minimum.

Write for new list.

WOOD - MILNE, LTD., PRESTON.
Wire—"Comfort, Preston." 'Phone—Preston 413.
LONDON: MANCHESTER AVENUE, E.C.
Wire—"Byturning, London." 'Phone—City 4797.
Bristol, Birmingham, Dublin, Glasgow, Belfast, etc.

"SPECIAL"
3-ply
26/9
per cover.

M.C. 300

Some Notes for Fast Tourists.—

and adjustable pulley this is, of course, a simple matter, and even with a chain drive the operation is fairly easy to perform.

As to lubrication, naturally a good brand of oil must be used, and usually the thicker it is the better. Lubricant with the consistency of water when heated up is no use at all; a proper lubricant remains as oil with body in it under almost any conditions.

Hard tyres are faster than soft, and do not roll on corners. T.T. or semi-T.T. bars are a hundred per cent. better than the upturned patterns, and all controls should be on the handle-bars. Two pairs of footrests really do help on a long journey.

Tall Tales.

Do not believe the tales told in garage yards and roadside inns any more than you are forced to by etiquette. Many people are very fond of adding a few artistic flourishes to their performances.

The man who blinds into the yard and announces that he has just done twenty-five miles in thirty-four and a half minutes should be encouraged, and after a little time will inform you that perhaps his best show was when he climbed "Sludgeside" (average gradient 1 in 3½—1 in 1½ for ten yards) on a wet night on one cylinder with the petrol turned off.

No; a man who does anything over thirty-five miles in the hour for any distance is "some" rider, and, except by fools who take terrible risks, over forty in the hour is well nigh impossible. If a hundred miles of give and take roads are covered in three hours, the rider can feel quite pleased with himself, and with good cause.

Do not imagine that a decent average will be put up by blinding from one pub to the next; it is the machine that keeps "revving" nicely up hill and down dale that will have outdistanced all before nightfall.

With regard to personal comfort, wear plenty of clothes and a good water and dustproof outside covering. Breeches and leggings are distinctly comfortable, and look smarter than a pair of bagging overalls. To keep clean, keep out of other people's dust; if you are the faster, pass straight away if possible, and don't hold back in a dust cloud waiting for a better opening.

In conclusion, there will probably be many who, having read this article, will decide that the writer is a blinding fool urging others to risk their necks. This, it is hoped, is the wrong view, and, as said before, the aim of the article is to give a few hints to those who wish to put up a good average speed in safety and comfort.

MILES.

THE JOY OF THE OPEN ROAD.

"THE MOTOR CYCLE" RECRUITING SECTION.

Vacancies Still Existing in the Motor Machine Gun Service.

A VERY large number of enquiries from prospective recruits were dealt with last week, the total dealt with by the Editor since the M.M.G.S. was inaugurated considerably exceeding 2,000.

Many push-cyclists are anxious to get into the Service, but only a very limited number of men of this class of good physique may be accepted.

Experienced motor cyclists are desired at the moment, preferably men with sidecar experience. Men who have had previous military experience are specially desired. General conditions:

Age, 19 to 38.

Enlistment for duration of war.

Usual separation or dependent's allowance.

Pay, 1s. 2½d. per day, all found.

Height is not important, and glasses do not debar a man so long as he can see quite well with them.

Among the men accepted last week were the following:

C. V. Lewis-Jones
G. Darker-Gudgeon
J. F. Harkness
W. L. Rawlins
H. Monks
R. Hargreaves
K. W. Leake
J. R. Lane
C. A. Hall
R. E. James
F. Robinson
C. I. Britton
C. G. Bodle
T. Joyce
R. Berry
P. Whyte
A. Williams
H. Kelsey
C. T. Barker
J. R. Lewis
E. W. Jeffrey
C. P. B. Ogilvie
F. A. Burnett

A further inspection of recruits is to be held at the Recruiting Office, Masonic Hall, Coventry, on Wednesday next, July 21st, and all who can should attend. Mr. Geoffrey Smith (Editor *The Motor Cycle*) will be in attendance to answer any enquiries, and those accepted will be attested and sent forward to their training centre. In the case of men living at a distance, a free railway warrant will be issued, provided a man first obtains a medical certificate of fitness.

WAR OFFICE,

30 June, 1915.

Sir,

I wish to express to you personally, and to those who have helped you in your recruiting work, my best thanks for the energy that has been displayed by you all in the matter of Recruiting.

I would ask you to take an early opportunity of urging all able-bodied men in your neighbourhood to come forward and enlist, so that they may be trained as soldiers to take part in the War, and help to keep our forces in the Field at the maximum strength.

I shall be glad to hear of any reasons that may be given you by young and suitable men for not availing themselves of this opportunity to see service in the Field, where they are so much wanted.

I am,

Sir,

Your obedient Servant,

Geoffrey Smith Esqr

Kitchener

Fac-simile of letter received by the Editor of *The Motor Cycle* from the Secretary of State for War.

The two men of No. 4 Battery who have been awarded D.C.M.'s will receive the congratulations of all motor cyclists. Their names are Sergeant J. S. Clarke and Gunner J. Rafferty. These awards were made for "conspicuous devotion to duty" in the operations at Hill 60 on April 17th and 18th.

Some motor cyclists write several long letters, with all sorts of statements not affecting recruiting. To ensure prompt attention to the large number of letters, brief applications mentioning age, height, when free, and if medically fit should be sent. Two Eastbourne motor cyclists, C. T. Barber and J. R. Lewis, were so anxious to join last week that they did not write at all, but paid their own fare to Coventry, and, two hours after being passed by Mr. Smith, had been attested, received their day's pay, and were on the way to the training centre.

T. E. Greene, of Dublin, the erstwhile Rudge T.T. and End-to-end rider, now with the A.S.C. (M.T.), was home for a few days' leave last week.

So keen are some men to join the M.M.G.S. that the Editor has received applications from four men already on service in France to be transferred. This, however, is impossible.

Among the last list of recruits the name of L. A. Bees may have been noticed. Bees was the competition rider and tester for the L.M.C. Co., and now joins other well-known mechanic-riders in the M.M.G.S., such as F. H. Brown (Rex), Fielder (New Hudson), Cocker (Triumph), Ponntney (Rover), and Davenport (Lea-Francis). Bees brought two friends from Birmingham with him, and all went home again on the single-geared twin L.M.C.—one astride the tank, Bees driving, and the third on the carrier. Naturally, it made the countryside stare in amazement.

MOTOR CYCLING CLERGYMAN ON ACTIVE SERVICE.

IN a postcard received from the Rev. R. M. Bankes-Jones, on ambulance work with the B.E.F., he tells us that though he does most of his work on horseback he manages to get occasional trips on a Douglas or Triumph. Mr. Bankes-Jones will be remembered by many of our readers as a keen rider and an occasional contributor to *The Motor Cycle* of articles on touring and kindred topics.

Bates-built at the "Front."

MORE SPEED,
MORE SAFETY,
MOST MILEAGE.

W. & A. BATES, Ltd.,
Leicester. 21st June, 1915.

Gentlemen,

I feel that I must write to you and express my appreciation of your Motor Cycle Tyres as being second to none. Owing to the fact that I experienced no trouble from a Bates Tyre in civil life I fitted one to a Douglas before coming to the front. Roughly, the tyre ran for about a month in England and six months with the B.E.F., on roads more fitted for a steam roller than a motor cycle, without a puncture or without once being deflated, and, surprising as it may seem, the tyre was as good as new when evacuated with the machine. I don't know whether this constitutes a record or not, but I think it really marvellous.

Yours faithfully,
(Signed) G. S. GARRARD, L.-Cpl.,
Despatch Rider,
Leicester Yeomanry,
B.E.F.

P.S.—The Tyre I bought first from you is now at my home in England fitted to a Triumph M.C., and was when I left as good as new, although it had been run considerably.

W. & A. BATES, LTD.,
St. Mary's Mills, Leicester.

Depots—LONDON, GLASGOW, and NEWCASTLE.

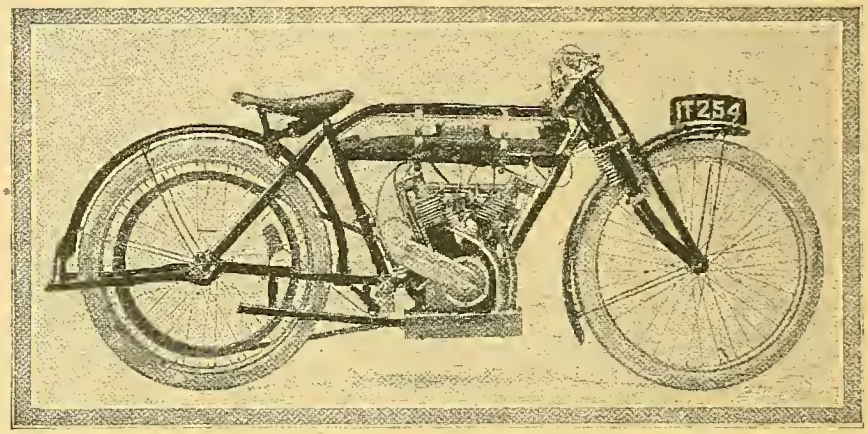
Bates SUPER RUBBER Tyres

"The tyre of no regrets."

Colonial Wholesale Stockholders:

Smith, Denham and Co., Henderson's Buildings, Von Brandis Street, Johannesburg, South Africa. Childs, Farr, and Joseph, Nairobi, British East Africa. David F. Laing, 9, Weld Road, Kuala Lumpur, F.M.S. Cycles and Motor Supplies, Ltd., Farish Street, Wellington, New Zealand. W. Cornell and Son, 122, 124, Pirie Street, and 29, 31, and 33, Hyde Street, Adelaide, South Australia. A. G. Healing and Co., Ltd., 354-356, Post Office Place West, Melbourne, Australia. Bennett and Barkell, Castlereagh Street, Sydney, Australia.

The **J.H.** *is at the Front.*



This is the New 1915 T.T. Racer Model.

3½ h.p. M.A.G. Twin Engine with Overhead Inlets 496 c.c.
Also 2½ h.p. Two-stroke; to 6 and 8 h.p. Twins.

WRITE FOR CATALOGUE AT ONCE.

J.H. Motor Engineering Works, Castle Mill Street, Mumps, Oldham.

JAMES HOWARTH, Proprietor.

Unsolicited Testimonial from the Front.

Base M.T. Depot Rouen, France,
20/6/15.

To the J.H. Motor Works, Oldham.

Sirs,—I am writing to state that for the short time I have ridden your J.H. 3½ h.p. Twin, it is only in justice to you to state that the machine has never given me a moment's anxiety, and really is, in my opinion, the ultimate machine for solo work on all kinds of roads—easy starting, silent running, acceleration, and speed, being but a few of its good points.

You may use this testimonial as you please. I am in no way connected with the firm.

07761, Private
Constad, H.

BOWDEN WIRE LTD. LONDON

PRATT ST. N.W.

BOWDEN WIRE MECHANISM.
For effectively controlling all movements from the handle-bar. Made in various strengths and finishes.

BOWDEN CONTROLS.
Levers for Brakes, Clutch, Air Inlet, Magneto, etc., controls. Made for right or left hand, for one to three movements.

BOWDEN TWO SPEED GEAR.
A very simple countershaft gear with kick-starter. Can be fitted to a number of machines without any—to most with slight—alteration. Guaranteed for engines up to 6 h.p.

BOWDEN RAPID VALVE GRINDER.
Helps to grind a valve quickly and with absolute accuracy without dismantling the cylinder. Most efficient. Acts also as Valve Spring Lifter.

STOPS, PORTABLE CLIPS,
Etc., and all necessary fitments for use with Bowden Wire Mechanism.

Godbolds.

On Active Service with the M.M.G.S.

News from a Member of the No. 10 Battery now at the Front.

WE have received a letter from A. G. C. Wheeler, who is now with the No. 10 Battery M.M.G.S. over in France. It is one of the most interesting letters we have received from the Front, and we reproduce it *in extenso*, as it gives a very good idea of the work of the men in France.

"As you have taken a big interest from the first in the M.M.G.S., I thought a few notes as to how we get on out here would interest you.

"In the first place, I have not heard yet of any battery going into action complete, *i.e.*, riding the motor cycles right up to the spot where the guns were fired.

"Of course you remember the double-page illustration in a contemporary depicting a supposed scene near Hill 60, where the machines had just been rushed up and everyone was firing very busily—well, on this particular occasion the guns were taken up to their position the night previous in box body cars.

"The motor cycles are very useful for transporting the guns from place to place. No. 10 Battery has had twelve different billets in the eight weeks it has been in France.

"At present we are doing spells in the trenches—two sections in and one out—eight days in and four out. We come about five miles from our billets in the box body cars—right up to the last line of trenches—and then have a walk of about a mile and a half to reach our position, which is on the extreme right of the British lines, and has in front of it a fairly well known orchard and crater. There is very little rifle fire—only the occasional 'crack!' from a sniper, of whom there are two or three quite near.

"We have far more shells than anything else—happily for us, most of these pass overhead—as their objective is on both sides the opposing artillery positions. Of course, we do not get all the shells passing overhead. We had quite two dozen this morning dropping just before and just over our position, which was not actually hit, although four of our fellows were struck by pieces of shell.

Despatch riders attached to the Royal Flying Corps studying a map. The four machines are P. and M.'s.

Artillery Dominates Everything.

"I have been out here two months and have not yet seen a German. In fact, the last time No. 10 Battery was in the trenches one of the Warwicks told me he had not seen a German, although he had had two months facing their trenches, which were only 150 yards away. This is partly accounted for by the fact that the Germans fire through loop-holes in their parapets. My impression is that the Artillery dominates everything else in this war.

"No. 7 Battery has not yet been in the trenches, although it has been out here three months. It is attached to a cavalry division, and this accounts for its inactivity up to the present. No. 10 is billeted in the same field as No. 1 Battery. We rather envy No. 1's Daimler cars, but this is more or less equalised by the fact that our motor cycles are better equipped.

"No. 3 has had about eighteen casualties so far."

Midland Motor Cyclists' Volunteer Corps.

The Advantage of Special Training.

THE corps on Thursday paraded at headquarters to hear the commandant's criticism on the work done, and to have explained the schedule for future training.

The corps was formed in March last, with the idea of banding together a body of motor cyclists to be trained for home service, and to assist in promoting recruiting for H.M. Forces, the training to consist of despatch riding, scouting, signalling, vedette and outpost duty, reconnaissance, and patrols. The men's work has been submitted to the highest military officers in the Seventh District, and has met with their approbation. Several members of the corps have joined the Regulars. Further, a number of men (fifty in all) has been placed on the list to act as Special Constables in the Birmingham district.

The corps now commences the second and more difficult stage of its training. On future parades the men will act more on their own initiative. Each man will now be trained so that if occasion arises he can at once take command of any unit of despatch riders.

Home from the Front.

The commandant lately received a visit from Sergeant H. Newman, of Ivy fame, who went to the Front last August. Sergeant Newman is convinced that no man should attempt to become a despatch rider before he can read a map. He said that competitions and the Tourist Trophy had their thrills, but not such thrills as are experienced by our despatch riders at the Front. On many nights have they turned out in inky darkness after a hard day to carry important letters through a strange country invested by the Germans.

Sergeant Newman is full of enthusiasm, and has gone back with a stout heart.

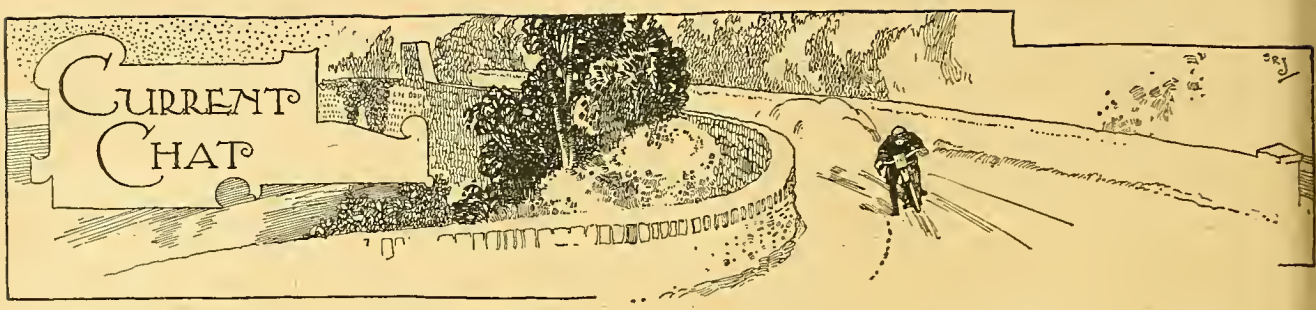
The following is another instance of the advantage of training the motor cyclist as a scout: A member of the corps had joined the machine gun section. The battery commander gave the men a reconnaissance of a road; each man had to make a report.

The reports were examined, with the result that the late member has been appointed scout for the battery; the battery leaves for the Front next week.

Incidents like these certainly encourage the corps to persevere in its training.

On Sunday the corps paraded for an attack on the village of Ashow. Reds and Blues were the opposing forces. Each advanced by parallel roads with intersecting roads on Ashow. The first force arriving there had to hold the village against attack.

On Saturday next the corps parades at the Style Cop hill-climb to give a display. The heads and posts will be on the hill. Competitors ride up, cut off two heads, and point off the ring. The one who does the three and makes fastest time wins.



TIMES TO LIGHT LAMPS.

July 15	...	...	9.11 p.m.
,, 17	...	...	9.8 ,,
,, 19	...	...	9.6 ,,
,, 21	...	...	9.4 ,,

Race in Sweden.

The Swedish race known as the "Skaane Rundt" has recently been held over a distance of 255 miles. In the class for machines of under 4 h.p. three Wanderers, one Wolf, one N.S.U., one Rudge, and one Indian started, but, as showing the severity of the race, only three finished in the following order: Rudge, Wanderer, Wanderer. The winning Rudge was riden by Mr O. Bendixen of Copenhagen, who won the same race last year.

A.A. and M.U. Notes.

OBSCURING INDEX MARKS ON SIDECARS AND MOTOR CYCLES.—Motor cyclist members of the Automobile Association are warned that the authorities in certain counties are serving summonses for the offence of not clearly showing the rear numbers on motor cycles. Among cases already heard, the following causes of offence were brought forward: A lady sitting on the carrier, the cushion had shifted and obscured the number-plate; coat-tails of male passengers on carriers covering the numbers; in another case a parcel hid the number. The front number on a passing motor cycle cannot always be seen, therefore the police authorities are, as a rule, very strict with regard to a clear view of the rear plate.

Lost Toolbag.

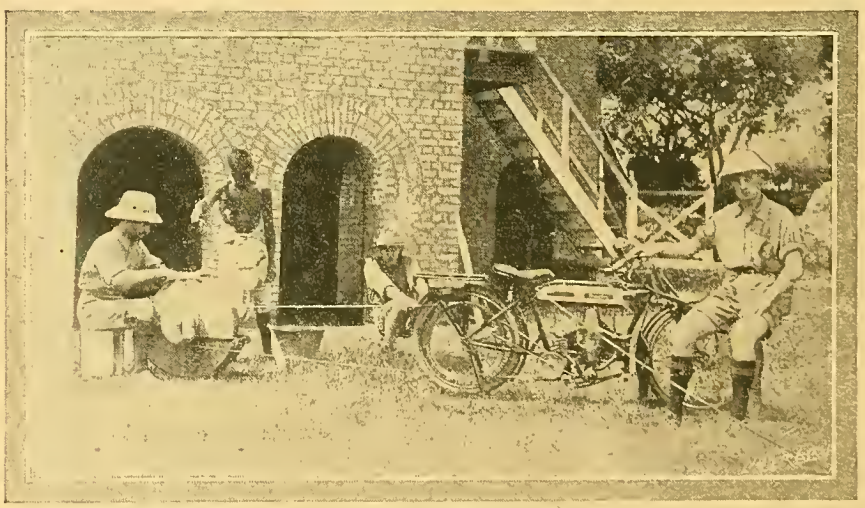
A military rider of a Triumph lost his pannier bag between Brentford and Newbury in the afternoon of June 5th. If any reader should have found it, would he kindly forward to Lance-Corporal A. S. Rivett, No. 055,251, 357 Company, M.T., A.S.C., Stockcross Camp, near Newbury?

'Ware Police with Revolvers.

The absolute necessity of immediately stopping when called upon by either soldier or police constable was emphasised a few days ago when a Richmond (Yorks.) medical man was fined £2 for not stopping. Defendant, who stated that he was hurrying to an urgent case, was motor cycling past Scotch Corner on the Great North Road at midnight on June 27th when the police constable raised his red lamp and called upon him to stop. He did not do so, and the constable fired his revolver at the motor cycle and missed.

High Speeds in U.S.A.

At the Dodge City Speedway, Kansas, U.S.A., on June 28th, some of the most prominent American crack riders contested a 300 mile race for the International Grand Prize Cup. Otto Walker, on a Harley-Davidson, came in first at an average speed of 76 m.p.h.. Time, 3h. 55m. 45s. Harley-Davidson machines finished first, second, fourth, fifth, sixth, and seventh, thus securing an overwhelming victory. An American Excelsior occupied the third place. There were twenty-seven starters.



A novel method of driving a grindstone. The photograph shows a Douglas (owned by Lieut. C. C. D. Hobbs, Garrison Engineer, Ambala, Punjab), which is driving a grindstone for sharpening bayonets.

SPECIAL FEATURES.

WITH THE M.M.G.S. ON ACTIVE SERVICE.
NOTES FOR FAST TOURISTS.
VISIT TO AN R.E. SIGNAL STATION.

Second-hand Prices.

We give below the average prices of the various second-hand models offered for sale in the last issue of *The Motor Cycle*, and also the average prices for the last eight weeks. The prices quoted may be regarded as their standard value.

Make.	Year.	H.P.	Last week's average.	Average for past 8 weeks.
A.B.C.	1914	3½ 3-sp. sidecar ..	£69	£69
,, ...	1914	3½ 3-sp. T.T.	£45	£45
A.J.S.	1913	6 3-sp. sidecar ..	£56	£57
Ariel	1914	6 3-sp. sidecar ..	£68	£68
,, ...	1914	3½ 3-sp. sidecar ..	£50	£52
Auto-wheel .	1914	1	£10	£10
Bat	1913	8 3-sp. sidecar ..	£51	£53
Bradbury ..	1914	6 3-sp. sidecar ..	£65	£63
B.S.A.	1914	4½ 3-sp. sidecar ..	£49	£54
,, ...	1914	4½ T.T.	£43	£40
Calthorpe ..	1914	2 2-speed	£19	£20
Clyno	1914	6 3-sp. sidecar ..	£60	£64
,, ...	1914	2½ 2-speed	£25	£30
,, ...	1913	6 3-sp. sidecar ..	£57	£56
Douglas ...	1914	2¾ 2-sp. kick start	£46	£44
,, ...	1914	2¾ 2-sp. T.T.	£44	£39
,, ...	1913	2¾ 2-sp. clutch ..	£36	£36
Enfield	1914	6 2-sp. sidecar ..	£63	£65
,, ...	1914	3 2-speed	£36	£39
,, ...	1913	6 2-sp. sidecar ..	£54	£52
Hazlewood .	1914	6 3-sp. sidecar ..	£60	£55
Henderson..	1914	8 2-sp. sidecar ..	£69	£69
Humber ...	1913	2¾ 3-speed	£25	£27
Indian	1914	7 2-sp. sidecar ..	£64	£63
,, ...	1913	7 2-sp. sidecar ..	£44	£51
James	1914	4½ 3-sp. sidecar ..	£54	£54
,, ...	1914	3½ 3-speed	£45	£45
Lea-Francis.	1914	3½ 2-speed	£52	£52
,, .	1913	3½ 2-speed	£48	£48
Matchless ..	1914	7 3-sp. sidecar ..	£76	£75
,, ..	1913	7 2-sp. sidecar ..	£53	£56
Motosacoche	1914	3½ 2-speed	£43	£43
,,	1913	3½ 2-speed	£40	£40
New Hudson	1914	6 3-sp. sidecar ..	£55	£58
,,	1913	3½ 3-speed	£35	£35
N.U.T.	1914	6 3-sp. sidecar ..	£60	£64
,, ...	1914	3½ 3-sp. T.T.	£45	£47
P. & M. ...	1914	3½ 2-sp. sidecar ..	£50	£60
Premier ...	1914	2¾ 3-sp. sidecar ..	£40	£47
,, ...	1913	3½ 3-speed	£36	£36
Quadrant ..	1914	4½ 3-sp. sidecar ..	£50	£50
Rex	1914	6 3-sp. sidecar ..	£56	£56
Rover	1914	3½ 3-sp. sidecar ..	£50	£51
,, ...	1914	3½ 3-speed	£48	£47
,, ...	1913	3½ 3-sp. sidecar ..	£40	£43
Royal Ruby	1014	3½ 2-speed	£45	£45
,,	1914	2½ 2-sp. 2-stroke .	£24	£24
Rudge	1914	5 Multi sidecar..	£54	£58
,, ...	1914	3½ Multi sidecar..	£45	£53
,, ...	1914	3½ Multi	£42	£42
,, ...	1913	3½ Multi	£37	£36
Scott	1914	3½ 2-sp. sidecar ..	£65	£58
,, ...	1913	3½ 2-sp. sidecar ..	£40	£45
Singer	1914	3½ 3-sp. sidecar ..	£50	£50
,, ...	1913	4 2-sp. sidecar ..	£40	£40
Sunbeam ..	1914	6 3-sp. sidecar ..	£78	£75
,, ..	1914	3½ 3-sp. sidecar ..	£63	£69
,, ..	1914	3½ 3-speed	£60	£58
Triumph ...	1914	4 3-sp. sidecar ..	£58	£58
,, ...	1914	4 3-speed	£48	£45
,, ...	1914	4 T.T.	£40	£40
,, ...	1913	3½ 3-sp. sidecar ..	£48	£47
,, ...	1913	3½ 3-speed	£38	£37
Williamson .	1914	8 2-sp. sidecar ..	£60	£52
Wolf	1914	2¾ 3-speed	£30	£30
Zenith	1914	8 Gradua sidecar	£72	£66
,, ...	1914	3½ Gradua	£45	£46
,, ...	1913	6 Gradua	£48	£43

Sidecar Outings for Wounded Soldiers.

Any London motor cyclist who would care to give a wounded soldier a day's pleasure by taking him in his sidecar from King George's Military Hospital, Stamford Street (near Waterloo Station), to Teddington, should write to Quartermaster-Sergt. W. D. Atkins, Ward E5, at the above named hospital.

The Motor Cycle Trade.

The Board of Trade returns for June show a tremendous increase in the numbers of motor cycles imported into this country over both the previous month and the June, 1914, figures. The totals and amounts are as follow :

IMPORTS.

June, 1915.—822 motor cycles, value £34,990 (including parts, £65.671).
May, 1915.—331 motor cycles, value £16,982 (including parts, £34,200).
June, 1914.—400 motor cycles.

Slight Increase in Exports.

Although, of course, the number of machines exported last month, compared with the same period of last year, is considerably less, the June, 1915, figures show a gratifying, if small, increase over those of the previous month.

EXPORTS.

June, 1915.—1,020 motor cycles, value £45,128 (including parts, £68,162).
May, 1915.—858 motor cycles, value £36,667 (including parts, £65,221).
June, 1914.—1,950 motor cycles.

Motor Volunteers for Cardiff.

In connection with the National Motor Volunteers movement, a battalion is being formed for Glamorgan, and Cardiff and District will be the No. 1 Company. The latter is now in course of formation, and it is hoped that all local car and motor cycle owners, who possibly can, will join. Motor cyclists are required for scouting, despatch, and patrol work. All interested should write to the secretary, Mr. T. A. James, City Hall, Cardiff.

Motor Machine Guns at the Front.

We publish this week on page 59 a letter from a member of the No. 10 Battery M.M.G.S. now at the Front. One of the most interesting statements is the fact that the writer, A. G. C. Wheeler, has not yet seen a German, although he has been out in Flanders a couple of months and often stationed in the trenches.

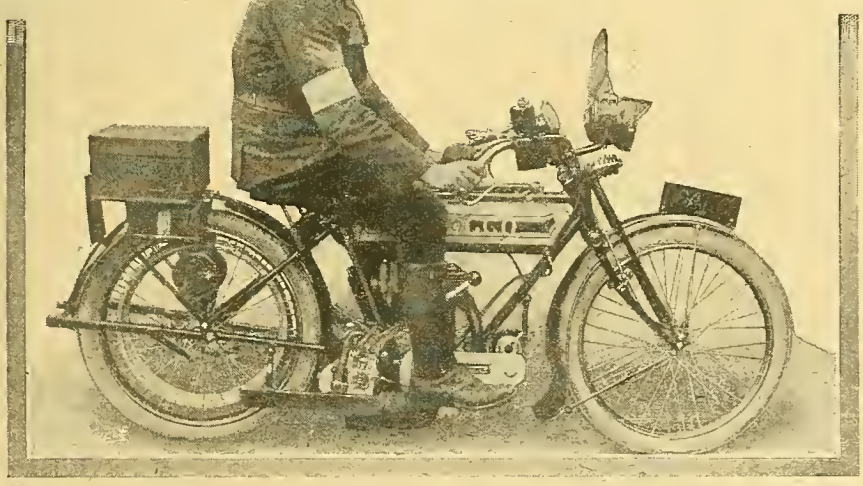
Firms and the War Loan.

We are informed that the Dunlop Rubber Co. has applied for £250,000 in the War Loan; while Messrs. Humber, Ltd., with a view to encouraging their employees to invest their savings in the loan have undertaken to purchase the shares of all those who wish to sell in January next, repaying the holders all sums laid out with 4½ per cent. interest. Thus money which may be wanted need not be locked up beyond that time.

The East London Rubber Co. will purchase £5 worth or more of the War Loan for members of their staff, and will accept payment by weekly instalments spread over an extended period. The firm is also presenting 5s. to each purchaser of a £5 bond, and all accrued interest will be handed over to him on completion of the instalments.

The Price of "The Motor Cycle."

We have received from John A. Hilger, interned at Ruhleben, a postcard referring to the letter written by Corpl. J. H. Dale, and published in *The Motor Cycle* of May 20th, in which it was stated that copies of this journal fetched sixpence each. Hilger writes: "Sixpence a copy is by no means a record, as a few old copies were sold here last January at 2.50 marks (approximately 2s. 6d.) each, and were worth twice that as copies were scarce then. Now more come in and go from barrack to barrack, and are scanned by hundreds. Life here is not so bad now; we have plenty of outdoor sports, concerts, and plays, also science and art schools, but what I desire most of all is to get on my faithful Rover with a route card marked London-Exeter-London on the handle-bar."



6,000 MILES TO ENLIST.

Corporal Fauraine, despatch rider R.E., who travelled all the way from California to enlist. His mount is a 1915 countershaft model 4 h.p. Triumph.

A.C.U. Membership.

Members are requested to note that membership for one year, instead of expiring on December 31st, continues for twelve months from the date of payment, so that under existing arrangements there is no object in a man who thinks of joining towards the end of the year waiting till January 1st, since if he joins when he feels inclined his membership will be available for exactly twelve months.

To Stop Oil Splashing.

One of our readers tells us that he has stopped the oil from his engine being thrown about in the following manner: He first took off the pulley side of the crank case, and with a small round file cut a groove half-way through the bearing, and an oil-way down the outside of the crank case. Having replaced the case he made a tin washer slightly less than the pulley in diameter, and having a projection on one side to cover the oil-way. This is placed in position with a thin felt washer, and the projection attached to one of the crank case bolts. The device, we are assured, is very effective.

A Successful A.A. Prosecution.

Whilst travelling on his car a few weeks back in the vicinity of Wolverhampton a member of the Automobile Association met a taxicab coming in the opposite direction. As the vehicles passed one of the taxi passengers stood up and deliberately threw an egg, which, fortunately, struck the windscreen instead of the occupant of the car. The car was immediately turned, and a stern chase followed. The culprits were ultimately overtaken, and their names and addresses were obtained. The Association, upon becoming acquainted with the facts, decided to prosecute on behalf of the member. The sequel to this flagrant case of assault upon motorists occurred on June 18th, when the Bridgnorth magistrate fined the man who threw the egg £3.

Lights on Motor Vehicles.

The following lighting regulations will come into force in the county of Kent (including the cities and boroughs) from July 19th :

(a.) For motor vehicles, motor cycles, and ordinary cycles burning oil or candles, no change.

(b.) For motor vehicles burning electric light the head lights are not to exceed twenty-five candle power, and the side lights are not to exceed eight candle power.

(c.) For motor vehicles using acetylene, the lights from these are not to exceed the lights from an electric light, *i.e.*, twenty-five candle power for head lights, and eight candle power for side lights.

(d.) The whole of the reflectors, except *(a)*, on all lamps on motor vehicles are to be dull blacked.

(e.) Head lights and side lights, except *(a)*, the upper portion of the glass (from the top to a horizontal line half an inch below the half-way line) to be dull blacked.

(f.) For motor and ordinary cycles, except *(a)*, the lower half of the reflector and upper half of the glass to be dull blacked.

Whatever the Cal
Sidecar M

(1) For pleasure: three sidecar ri
cyclists on Saturday.
(2) For business: a milkman's Tr
(3) A Senior Service man on pleas
(4) A lady rider with four convale
(5) A scene in the Dutch trial, de
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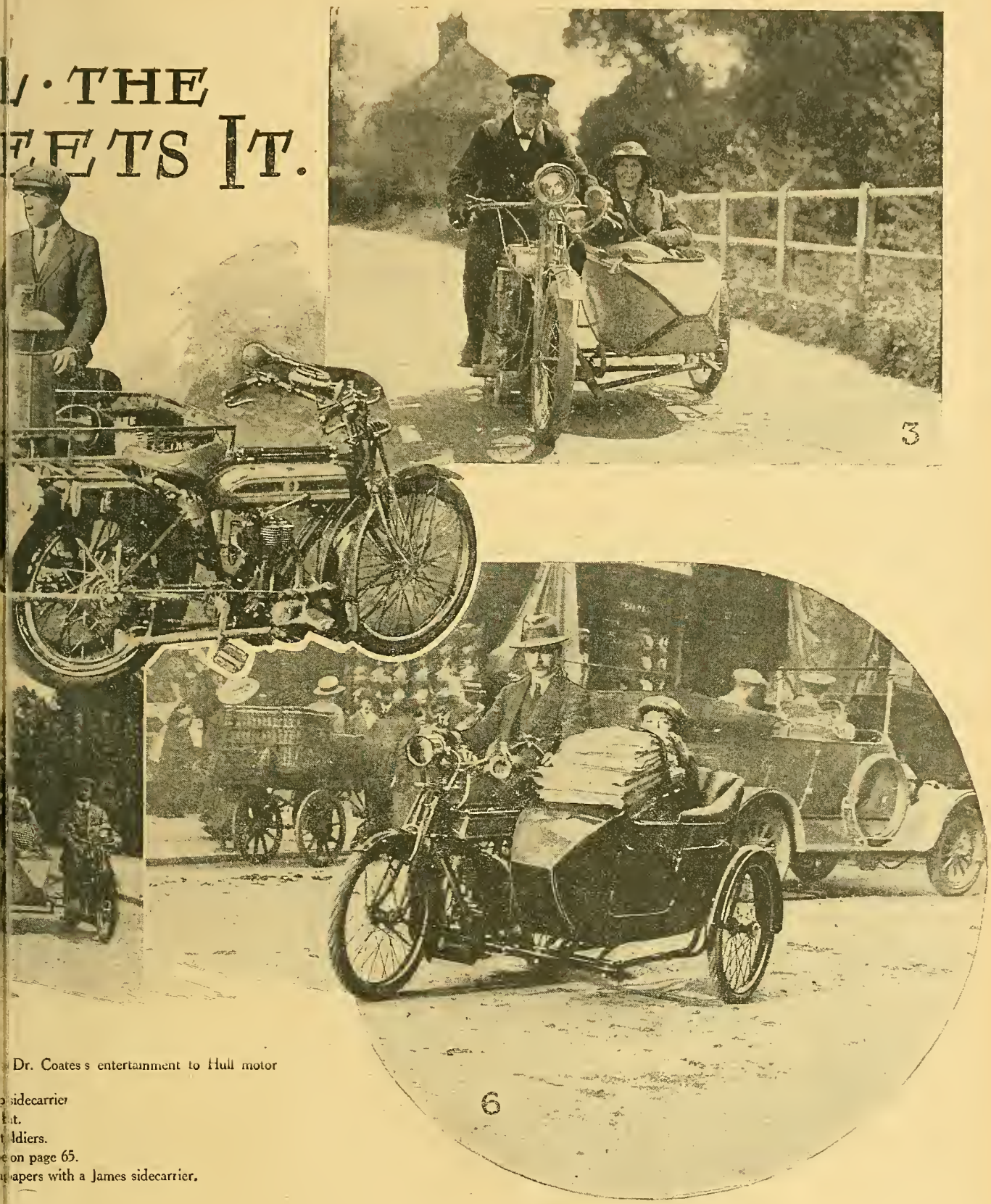

Dr. Coates s entertainment to Hull motor

sidecarrier
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apers with a James sidecarrier.

Large Entry List for the Style Cop Hill-climb.

THE Wolverhampton M.C.C. has received a large number of entries for its hill-climb, to be held at Style Cop, near Rugeley, on Saturday next. The start is arranged for two o'clock. All the proceeds will go to the Wolverhampton branch of the Red Cross.

CLASS 1.—Solo machines, single or twin-cylinders, c.c. not exceeding 300.

W. Chinn (2½ h.p. Burnam)
W. J. Clarke (2½ h.p. Wolf)
W. H. Butterfield (2¼ h.p. Levis)
G. E. Kuhn (2¼ h.p. Levis)
G. Brew (2½ h.p. New Imperial)
J. G. Orford (2½ h.p. New Imperial)
C. Lindall (1.9 h.p. Levis)
S. O. Duck (2½ h.p. Metro)
W. T. Berry (2½ h.p. Metro)
A. J. Berry (2½ h.p. Metro)
E. Wheeler (2½ h.p. Villiers)
W. Savage (2½ h.p. Villiers)
H. Newey (2¼ h.p. Levis)
B. H. Morris (2½ h.p. Sun)
R. W. Richards (2½ h.p. Sun)
A. R. Limsworth (2½ h.p. Sun)

CLASS 2.—Solo machines, single or twin, c.c. not exceeding 350.

J. L. Mitchell (2¾ h.p. A.J.S.)
T. C. de la Hay (2¾ h.p. Sunbeam)
G. Dance (2¾ h.p. Sunbeam)
H. Newey (2¾ h.p. Levis)
F. W. Corbett (2¾ h.p. A.J.S.)

CLASS 2 *(Continued)*.

O. Wade (2¾ h.p. A.J.S)
W. Heaton (2¾ h.p. A.J.S.)
S. H. Giles (2¾ h.p. A.J.S.)
J. H. Mason (2¾ hp. A.J.S.)

CLASS 3.—Solo machines, single or twin, c.c. not exceeding 500.

H. Petty (3½ h.p. Norton)
P. Slingsby (3½ h.p. Norton)
J. Smith (3½ h.p. Triumph)
G. Dance (2¾ h.p. Sunbeam)
G Dance (3½ h.p. Sunbeam)
C. G. Lambert (3½ h.p. Norton)
J. W Walker (3½ h.p. Norton)
J. H. Mason (2¾ h.p. A.J.S.)
A. W. Thrush (3½ h.p. Triumph)
J. W Walton (3½ h.p. Rudge Multi)
C. Smethurst (3½ h.p. Norton)
T. C. de la Hay (3½ h.p. Sunbeam)
F. W. Corbett (2¾ h.p. A.J.S.)
A. Lindsay (3½ h.p. Norton)
J. L. Mitchell (2¾ h.p. A.J.S.)
O. Wade (2¾ h.p. A.J.S.)
W. Heaton (2¾ h.p. A.J.S.)
S. H. Giles (2¾ h.p. A.J.S.)
K. Hoblin (B.S.A.)

CLASS 4.—Solo machines, single or twin, unlimited capacity.

H. Petty (3½ h.p. Norton)
T. Simister (8 h.p. Dot)
T. Heath (6 h.p. Sunbeam)
S. T. de la Hay (3½ h.p. Sunbeam)
G. Dance (2¾ h.p. Sunbeam)
W. H. Butterfield (2¾ h.p. Levis)
H. Newey (2¾ h.p. Levis)

CLASS 4 *(Continued)*.

G. Brew (2½ h.p. New Imperial)
F. W. Corbett (2¾ h.p. A.J.S.)
A. Lindsay 3½ h.p. Norton)
S. O. Duck (2½ h.p. Metro)
W. T. Berry (Dot)
O. Wade (2¾ h.p. A.J.S.)
W. Heaton (2¾ h.p. A.J.S.)
S. H. Giles (2¾ h.p. A.J.S.)
K. Hoblin (B.S.A.)
W. Chinn (2½ h.p. Burnam)
G. E. Kuhn (2¼ h.p. Levis)
J. G. Orford (2½ h.p. New Imperial)
C. Lindall, jun. (1.9 h.p. Levis)
C. G Lambert (3½ h.p. Norton)
A. J. Berry (2½ h.p. Metro)

CLASS 5.—Sidecar machines, single or multi-cylinder, c.c. limit 600.

J. Smith (3½ h.p. Triumph)
J. R. O'Donovan (3½ h.p. Norton)
F. W. Corbett (2¾ h.p. A.J.S.)
W. Heaton (2¾ h.p. A.J.S.)
S H. Giles (2¾ h.p. A.J.S.)
J. Hoblin (B.S.A.)

CLASS 6.—Sidecar machines, any number of cylinders, c.c. unlimited.

T. Heath (6 h.p. Sunbeam)
W. H. Butterfield (Levis)
J. R. O'Donovan (3½ h.p. Norton)
F. W. Corbett (2¾ h.p. A.J.S.)
H. Bottom (6 h.p. Bradbury)
W. Heaton (2¾ h.p. A.J.S.)
F. W. Giles (2¾ h.p. A J S.)
J. Hoblin (B.S.A.)
A. Hankett (6 h.p. A.J.S.)

The Irish "End-to-end."

AT 4 a.m. on Tuesday last, competitors in the Irish End-to-end trial, promoted by the Ulster Centre of the M.C.U. of Ireland, started from Rock Island Coastguard Station. The trial extended over two days, 293 miles being covered on the first day and 213 on the second day (yesterday). Those who started were as follow :

F. M. Summerfield (2¼ h.p. New Hudson)
Lieut. V. J. Farrell (5 h.p. Indian)
W. J. Henderson (7-9 h.p. Harley-Davidson sc.)
W. J. Chambers (4¼ h.p. B.S.A. sc.)
R. S. Russell (2¾ h.p. Douglas)
J. Stewart (2¾ h.p. Douglas)
W. H. Butterfield (2¾ h.p. Levis)
H. Newey (2¾ h.p. Levis)
T. Woods (4¼ h.p. B.S.A.)
"Sou' Wester" (2¾ h.p. Douglas)
J. Doleman (3½ h.p. Rover)
J. Browne (3½ h.p. Rover)
E. J. Jack (3½ h.p. Rover)
T. Toole (4¼ h.p. B.S.A.)
C. B. Franklin (7 h.p. Indian sc.)
J. Dwyer (4 h.p. Triumph)
T. W. Ladd (6 Bradbury sc.)
A. W. Mooney (6 Bradbury sc.)
R. Jones (4¼ h.p. B.S.A.)
F. L. Dooly (4¼ h.p. B.S.A.)

Open Trial in Ireland.

AN open reliability trial of a somewhat novel character was run off on Saturday last under the auspices of the Dublin and District Motor Cycle Club. It was rather unfortunate that the date selected for the event came so close to the End-to-end of Ireland trial.

The route was arranged by Mr. Reuben J. Dodd, who presented the prizes for the event, and was not made public prior to the start. On assembling at Inchicore Bridge the competitors were told to proceed towards Carlow as far as Kilgowan, under the usual competition conditions. Arriving there each was handed a skeleton map and told to proceed to Poulaphuca by the route indicated thereon. The route took the competitors over a series of byroads south and east of Dunlavin and back to the town, and by further by-roads to the finish at Poulaphuca.

It was necessary to maintain the scheduled speed of twenty miles over the mapped part of the course, and several secret checks were taken to ensure its observance. In addition to this penalties were enforced against anyone using instructions regarding the route from outsiders.

The following competitors completed the course :

J. F. A. Day (2¼ h.p. Sun)
O. Roche (3½ h.p. Rover)
J. Paisley (6 h.p. Bradbury sc.)
R. Grimes (5 h.p. Indian)
G. A. M. Curtis (7-9 h.p. Indian sc.)
P. H. Hulse (4¼ h.p. B.S.A. sc.)
C. S. Kettle (4¼ h.p. B.S.A. sc.)

A motor machine gun battery complete and ready to take the road or field.

An All-khaki Race Meeting at Brooklands.

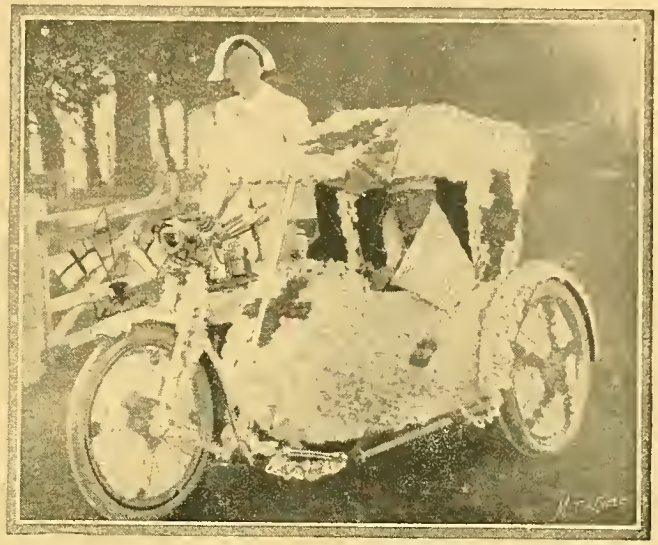
IN our issue of July 1st (page 13) we mentioned that an officer motor cyclist had suggested that it might be possible to get up some races at Brooklands for the many officers now quartered in and around Aldershot and the district in which Brooklands is situated. We have been into the matter with Mr. Kenneth L. Skinner, secretary of the B.A.R.C., and Colonel F. Lindsay Lloyd, both of whom have offered to lend their assistance.

It is known, of course, that the track is not in a sufficiently good condition to allow of races taking place throughout its whole length, but the railway straight is in quite good order, and some short sprint races might be held. A few gymkhana events and a hill-climb up the test hill could also be included.

It is suggested that there should be an entrance fee of 2s. 6d., and that all officers and men who come as spectators should be charged 1s. entrance fee, this to recompense the B.A.R.C. in some little way for letting the meeting have the use of the track free of charge. A small committee of well-known motor cyclists would take charge of the organisation. Saturday, July 31st, has been suggested as the date.

At the present time the general public are not admitted to the track, but it is open to members of the B.A.R.C. and B.M.C.R.C., while, of course, no objection could be raised to the meeting being attended by officers and men in uniform.

Perhaps some of the signal centres in different parts of the country would care to send competitors. All those who care to compete are asked to communicate at once with the Editor, *The Motor Cycle*, 20, Tudor Street, E.C. We think the idea quite a good one, as there is a distinct novelty about an event in which all the competitors would be wearing the King's uniform.



A decorated Triumph sidecar outfit, awarded first prize at a carnival in aid of a Belgian fund held at Timaru, New Zealand. The owner—"wounded" in the sidecar—is Mr. A. E. Dendy, at one time trials secretary of the West Essex A.C., and in the early days a rider of a Centaur. Mrs. Dendy is driving.

A Dutch Inter-club Reliability Run.

AN inter-club run known as the Three Provinces Trip was held in Holland on June 27th under the auspices of the Noord Nederlandsche Motor Club, the Ned. Motorwielryders Ver., and the Friesche Motor Club. Much interest was shown, especially by motor cyclists. In Class A (light machines) fourteen riders took part; in Class B (heavy motor cycles) twelve; in Class C (motor cycles with sidecars) five.

The whole road was divided as follows: First stretch, 41 km., time allowed 1h. 40m.; second stretch, 40 km., time 2h. 5m.; third stretch, 55 km., time 1h. 50m.; fourth stretch, 30 km., 1h. 5m.; fifth stretch, 56 km., time 1h. 50m. The start and finish were at Groningen. Results:

Some of the competitors—a Harley-Davidson sidecar outfit leading.

CLASS A.

		Marks lost.
1.	James (1-cyl.), silver gilt medal	0
2.	Douglas (2-cyl.), silver medal	1
3.	Douglas (2-cyl.), silver medal	2
4.	F.N. (1-cyl.), silver medal	4

CLASS B.

1.	Wanderer (2-cyl.), silver gilt medal	0
	F.N. (4-cyl.), silver gilt medal	0
3.	Simplex (4-cyl.), silver medal	1
4.	Pope (2-cyl.), silver medal	3
5.	Rudge (1-cyl.), silver medal	10
6.	F.N. (4-cyl.), remembrance medal	24

The run was through interesting and beautiful scenery in the provinces of Groningen, Drente, and Friesland. The trip may seem rather complicated, as there were different roads for motors, motor cycles, and motor cycles with sidecars. Everything was, however, arranged excellently, all participants receiving a clear description of the roads, and a good map, also the controls were worked well, so that the whole thing went off without a hitch. The weather being very fine most of the riders were back at Groningen by seven o'clock. An excursion to Giethoorn, a picturesque village, had been made the day before, and the proceedings finished with a pleasant dinner

A Visit to an R.E. Signal Station.

THE scene was a house labelled "To Let" in a small country town; in fact, it was more of a cottage than a house. Being to let, it was taken over by the War Office and handed over to the R.E. Signal Service, who swept and garnished it, and made it habitable. It had a nice courtyard and a lean-to shed, which our French Allies would have called an *abri*, and in this there were sixteen Douglases and one Triumph. Many of the former were of the new W.D. pattern, being fitted with stronger frames, new back fork ends and larger weatherproof hubs, while the belt rims were not only attached to the rims by means of short spokes, but were clipped on to the main spokes. These latter

(Upper) A group of despatch riders outside the signal station referred to in the accompanying article. With the exception of one Triumph, all the machines are Douglases.
(Circle) Some of the men in the telegraph office.
(Lower) The shed in which the motor cycles are stored. The sergeant in the foreground is one of the many men who have come from distant parts of the Empire Overseas in the Mother Country's hour of need.

A Visit to an R.E. Signal Station.—

were of a much stouter type than is ordinarily met with on these machines. Every machine had a large box on the carrier which was intended to take the necessary spares and the rider's personal belongings.

There was room for a workshop, but this had not been fitted up, as the workshop equipment is not served out till the D.R.'s are sent on active service. The men were quite ready to go to the Front, as they had had their training at a big D.R. centre.

The Officers' Quarters.

In the front room, parlour, or whatever one may call it, was the officers' mess room, which was very plainly furnished, while, of course, the luxury of an ante-room was denied them. In the hall there was a rifle rack in which there were several of the new short Lee-Enfield rifles. These were for the guard, as the D.R.'s are armed with revolvers.

Upstairs was the officers' bedroom. In this there were two camp beds and one mattress on the floor, which was occupied by our friend at whose invitation we came down. Being a hardened soldier who had been through Mons, Landrecies, Le Cateau, the Marne, the Aisne, and Flanders, he scorned the luxurious bed, and nightly rested his weary limbs on the mattress in a "flea-bag"; but he scored over the others as he had purchased a real chair and a genuine washstand, the only luxuries of this kind in the room. Next to this was a small room, stocked with the implements of the sartorial art. One of the D.R.'s had been a tailor by profession, and he was made to ply his trade to some good purpose, as he was as skilful with the needle as on his doughty Douglas.

A few doors up the street was the signal office, rigged up in a similar dwelling. In the front room were telegraph instruments and telephones, the air lines being ingeniously led in through a board above the open window. The field telegraph and field telephone have reached a high degree of perfection, but air lines may be cut, also lines running along the ground may be cut or damaged by shell fire. Then comes the despatch rider's chance, for it is on him that Headquarters have to depend for getting through the all-important message. The layman little realises that he is a swifter and surer means of sending a message than flag-wagging, and his despatch cannot be read by the enemy unless he is actually captured, and even when this happens it may cause the enemy some trouble to find it. How many thousand times has the motor cyclist D.R.'s work been proved to be of inestimable value, and how often has his pluck, skill, and doggedness saved the lives of our brave men?

It is interesting to note that in this small station the D.R. and Air Line officers were each provided with Singer light cars, though of these the former still retained his motor bicycle as well. The D.R.'s were mostly North-country men, and were most expert riders. Our officer friend was a proud man when we left him, as there had been an inspection that morning, and most people had been called over the coals, but the D.R.'s and their machines had been praised for their smart appearance.

The Four-cylinder Motor Cycle.

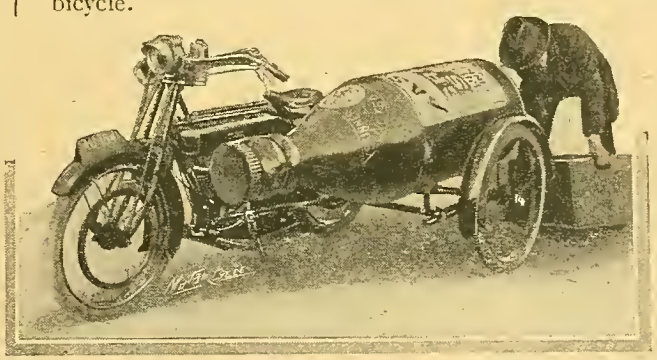
By JOHN ARMSTRONG.

THE development of the motor cycle has been attended by a continuous, if gradual, advance in many directions, and in none more so than that of the engine. With the exception, however, of the Belgian-made F.N. and the American Henderson machines, the majority of mounts are still provided with either vertical single or V twin-cylindered motors, while the English Douglas is one of the few cycles having a two-cylinder horizontal engine.

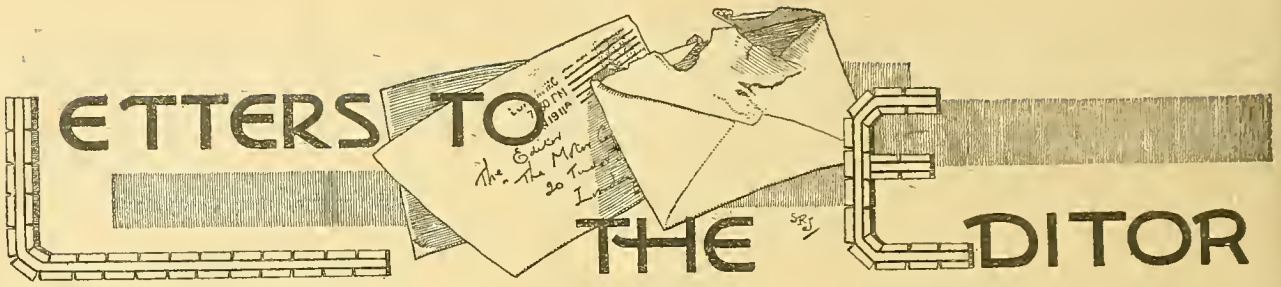
In the early days of the movement the direct driving horizontal four-cylinder Holden motor bicycle was unique, and it was followed later by such machines as the four-cylinder Binks and the transverse vertical double-cylindered Princeps. Now there is no question that to obtain the most superior torque, not to mention several other subordinate but important advantages, a four-cylinder engine is desirable. Now the difficulty would appear to rest with securing a sufficiently compact motor, but I suggest that the obstacle is purely an imaginary one. In a word, where more than one cylinder is required it is at present the custom to use a diagonal twin-cylinder motor.

There exist, in my opinion, no objections whatever to immediate improvement along that line by constructing a four-cylinder V engine. Such a motor could be made to occupy little, if any, more width, and certainly no greater height, than the usual V-twin engine; and it possesses this great advantage, that it could easily be arranged to drive through a propeller-shaft or a belt. This proposal obliges no alteration in the general design of the machine, and, while a large bore engine could be utilised for special requirements, it would be found quite enough, and perfectly satisfactory, to have four small diameter cylinders of a size no larger than the Belgian and American cycles already referred to.

This idea is well worthy of special attention by the astute British manufacturer. Such a device would dispense at a bound with the noise and irregularity inseparable from the single and twin-cylindered motor bicycle.



The advertising value of a sidecarrier is strikingly illustrated by this picture of a Lea-Francis outfit used by Messrs. Skinner and Rook, a Nottingham firm of wholesale bottlers of "Bass." It has been in daily use since early last year, and it has covered 20,000 miles. The body was designed and fitted by Messrs. Bennetts, of Nottingham.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Riding Hints.

Sir,—In reply to "K 9582" in a recent issue of *The Motor Cycle*, I ride a 2 h.p. O.K., and always run down hills a mile or more long in neutral, and run the machine till it is about to stop, then put in the low gear, and the engine fires at once. I may say I have done this for a year, and have found no bad results. H.G.C.

Useless Brakes.

Sir,—Has it, I wonder, ever struck the manufacturing world of motor cycles that probably the most ridiculous and inadequate fitting to a cycle is the hand brake? Even your staid old motor cyclist of 60 summers *will* go a mile or two over the limit occasionally; then why not provide him with the means of stopping in a few yards, should the need arise?

I venture to say that 50% of the accidents would be averted by the using of more powerful brakes. We know the carefulness of motorists in general, and how they always ascertain that a main road is clear before branching on to it from a side road. There is no reason why the front brake should not be dispensed with, and two powerful foot brakes fitted, acting on the rear wheel. Hand brakes are suitable for lightweight machines and lightweight riders, but for nothing heavier. L.G.S.

Despatch Riders' Work.

Sir,—I notice in your issue dated June 24th a letter written by Corporal O'Connor, in which he lays great stress on the dangers attending the duties of a motor cyclist despatch rider at the Front.

Corporal O'Connor begins by saying that he is "somewhere in the firing line of Flanders." I hope his fair and impressionable readers realise that, even if Corporal O'Connor is in the habit of writing from the firing line, other despatch riders do not—and should not.

The general rule for despatch riders is that brigade headquarters is about the nearest they should go to the firing line, in all ordinary circumstances. And it is a foolhardy brigade headquarters which plants itself nearer than 1,000 yards from the said firing line. The brigade with which I am stationed is certainly no nearer, and, like Corporal O'Connor's, is subject to a good deal of shell fire. In fact, it is also hit quite frequently by rifle bullets. Also, the roads from my headquarters to my divisional headquarters are for some distance in full view of the enemy. Like Corporal O'Connor, I also "encounter more shells in one day than the average man at home would care to dream of in a year." But that is not saying a great deal, for I do not imagine the average man at home cares to dream of even one tiny little "whizz-bang" in a year, or even any number of years. I do not wish to draw comparisons between Corporal O'Connor's hairbreadth escapes and my own little experiences, but I should like to say that there is nothing left of any of the houses in my little village, and the church (half a mile behind us) does not disappear bit by bit; it sat down in a heap one day under my own rather startled eyes.

What risks have to be run by despatch riders attached to a cavalry division I know not, but I can and do say that Corporal O'Connor's phrase is quite correct. It is only in exceptional cases that a despatch rider attached to an infantry brigade runs any very big risks. Of course, I have known despatch riders, some of them friends of mine, get wounded or even killed. But these cases are not very frequent, and are generally attributable either to sheer bad luck (such as a stray bullet or a shell fired at venture) or else to their own foolishness. If some five months with a brigade, nearly always under shell fire, and if a period of five weeks in one of the stiffest bits of fighting on the British front during last April and May, entitle me to speak with any authority on this subject of danger, then I should like to say that, generally speaking, a despatch rider never encounters such real danger that he is justified in writing home such letters as the one in question, so calculated to disturb and cause needless anxiety to the parents and friends of despatch riders.

In conclusion, may I enquire if Corporal O'Connor is attached to one of the new formations so recently arrived out here, and if he yet knows the meaning of the Army word "windy"? H. E. KEITH SAWTELL,
Corporal R.E.

Lady Motor Cyclists.

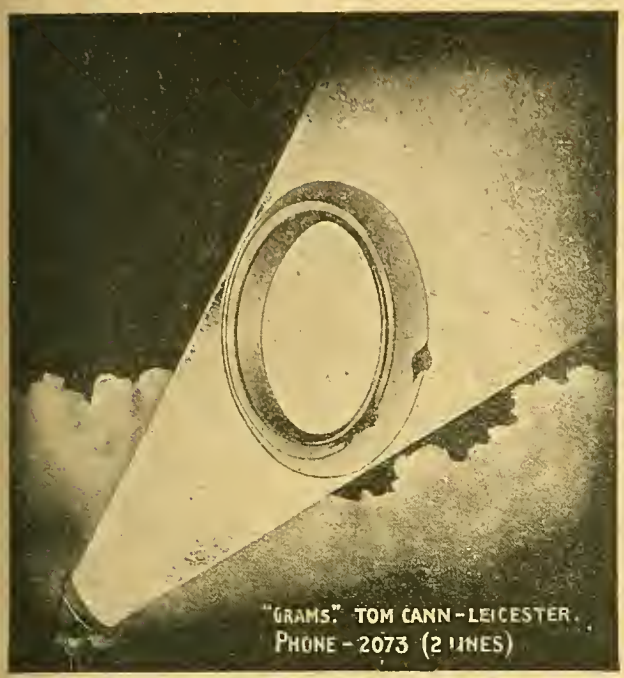
Sir,—I wish to answer "S.E.M.'s" letter. From my experience I should advise a 2¾ h.p. Douglas. I ride a man's model, but, of course, ladies' models are made by the Douglas Co. Personally, I cannot advise whether to start with sidecar or solo. Solo riding has so far been good enough for me.

As to breakdowns—well, if one is careful with a good machine (and has a fair run of luck), nothing very serious should happen. On the occasions on which I have ridden alone and had trouble with my machine I have always found fellow motor cyclists most sporting about helping.

I think every lady who rides would advise "S.E.M." to get a motor cycle; it is the greatest pastime going.
FRANKETTE.

The Advantages of a Petrol Strainer.

Sir,—The following may be of interest to riders of two-strokes with petroil lubrication. I had a good deal of trouble with the carburetter flooding and a choked petrol pipe, owing to a kind of fluff (presumably taken in with the oil). I have now fitted a B. and B. petrol strainer (price 3s. 6d.) in the petrol pipe, about 3in. from the tank. The result has been most satisfactory. I often run my 1914 Triumph Junior for 800 miles without touching the carburetter or filter. All that is required then is to unscrew the union nut of the filter, take out the gauze strainer, clean, and replace. This prevents any particles getting to the carburetter which can cause flooding. The running of the machine is more regular and the consumption lower. I average 100 miles to a gallon of mixture. I always use No. 1 petrol now. I found No. 2 carbonised much quicker. I can run my machine well over 1,000 miles without dismantling. When I do take the engine down I remove the piston and clean the inside well. As a rule I get more deposit there than on the top. I am inclined to think this is often overlooked, and causes many of the troubles riders complain of in the two-stroke. I have ridden my machine now well over 10,000 miles, and it is pulling quite as well as when new, if not better. I trust this may be of service to some readers of your delightful paper. TWO-STROKER.



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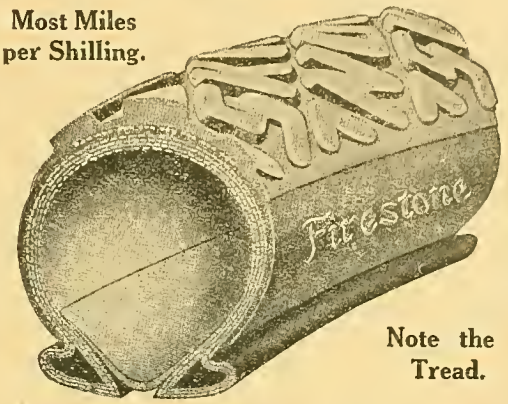

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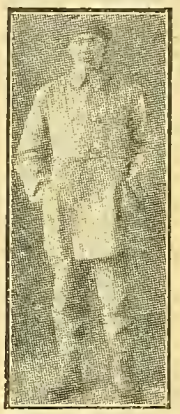

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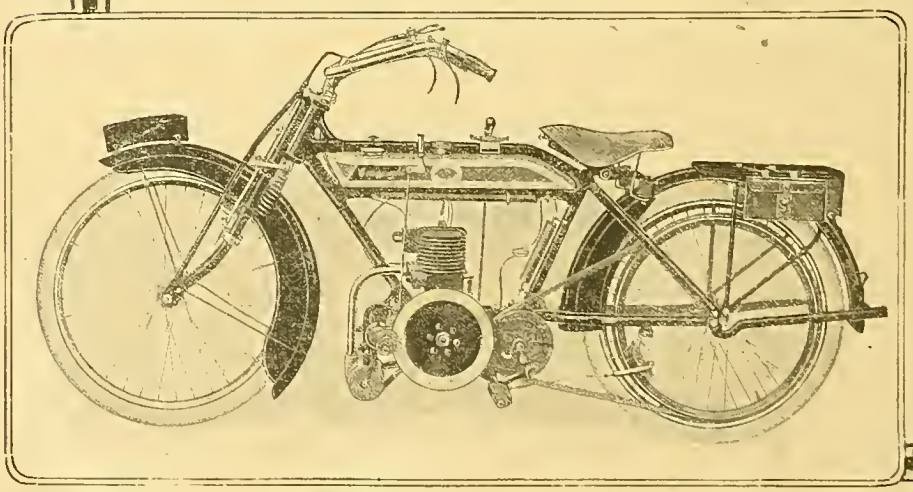

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Improving the Consumption on a Two-stroke.

Sir,—Perhaps you will allow me to thank the writer of the article which appeared some time ago on improving the consumption by fitting an arrangement made out of a valve from an inner tube and a needle to engage with the jet. I have tried the tip, and I may say the result was more than satisfactory. On my 1914 two-stroke I was unable to get more than 60 m.p.g. (petroil mixture). Wishing to be able to improve on this I fitted a home-made sight oiling arrangement, making the connection to the inlet tube, and found that while the engine got enough oil I could not get satisfactory running either as regards power or mileage, although I tried all sizes of jets, as at almost all except high speeds four-stroking continued. But what a change now. The Senspray, since it got the "needle," gives me about 120 m.p.g., sweeter running, apparently more power at all speeds, especially low; in fact, the result is such that I am looking forward to doing some decent runs this summer, whereas last year I was afraid to go far, seeing the tank is so small, without having a supply of petrol on the carrier, which is, in my opinion, not very suitable on a lightweight.

In conclusion, I wish again to express my appreciation of *The Motor Cycle*, which has saved me—a working man, whose hobby is his two-stroke—more money than I could very well afford to spend. N.B.

The Protection of Patents in Spain.

Sir,—I think it would prove of considerable benefit to British trade if you could do something to bring home to our inventors and manufacturers the need for protecting their patents and trade marks in this country. I am an Englishman, and am sole agent for many English firms.

Recently I had offered to me, at a lower price than I can buy in England, "Whittle" belting. I was offered by the same concern the "Dr. Low" acetylene generator. The house in question is Spanish, and the name is at your disposal if you wish to know it.

The "Dependence" tail lamp of Messrs. J. and R. Oldfield, Ltd., is also being imitated, and some time back I came across an imitation of one of the "Wood-Milne" productions. I was able to obtain the withdrawal of this from the market, although it has since reappeared under name of "Wood-Mild." In this case it was a question of "trade mark" only. As regards the "Dependence" tail lamp, I am taking the necessary steps, as agent of Messrs. Oldfield, to defend their interests.

It is hardly feasible that the instances I have brought to your notice above are the only ones, and that being so I am sure you will see the need for giving prominent warning to our inventors and manufacturers so that they can protect themselves against this despicable form of modern Spanish trading, which is calculated to rob them of the legitimate rewards of their brains and energy.

Barcelona, Spain. HARRY WALKER.

"Mac," the mascot of the Australian D.A.P., M.T., is photographed on a despatch rider's Rudge.

Overhead Valves.

Sir,—I have read with great interest many of the readers' opinions published in *The Motor Cycle*, and also the short articles by various designers. The things that interest me most in the latter are the advantages claimed by the overhead inlet valve, viz., better cooling of the exhaust valve and less "pocketing" of dead gas. This is, in my opinion, only going halfway. It would be far better to have the exhaust valve overhead. This would embody both the advantages of the overhead inlet, and also gain: (1.) A more direct flow for spent gas. (2.) The thick metal between the valve pocket and cylinder wall would be cooled by the fresh charge of gas, thus avoiding local distortion. The great drawback would be that the exhaust pipe would not find much favour. The change from the neat side port would no doubt disgust the average motor cyclist. Appearance must come before efficiency.

(Corpl.) S. ABRAM.

The £100 Car.

Sir,—I have read with much interest your article in *The Motor Cycle* of June 24th entitled "The £100 Car," and should like to criticise it a little.

Your remarks are to the effect that we have not a two-seater car on the market at that price, which is true to a certain extent. But what about cycle cars, which are very near to it?

Before mentioning the name of the one I am referring to, I should like to add that I am not pecuniarily interested in it. The car I refer to is the 8 h.p. Carden, with J.A.P. engine. This little car took two of us (a combined weight of 23 st.) up the Cornish hills in fine style, never once failing. I must admit that it is fitted with only a single seat body; but if this little runabout is capable of taking two people of average weight, why are the makers (whoever they may be) not enterprising enough to fit a two-seater body? The car, as it is, sells, I think, at about £70. For, say, £75 a two-seater car ought easily to be well within the reach of those who at present carry their passenger on the carrier of a motor cycle costing anywhere from £50 to £60, and you will notice the cost of such a car would be at least £20 cheaper than an average priced sidecar combination. The cost of upkeep is practically the same, the weight being divided among four (motor cycle) wheels instead of three.

WOULD B. ENTERPRISING.

The British Magneto Supply.

Sir,—The words that summed up the above-mentioned article do not do much credit to the patriotism of the British, although they are true.

I could only grasp from the reports of the various British magneto companies that their present output was as much as they could manage, and after the war they feared a complete loss of trade owing to cheap foreign lines.

Many motor cycle and cycle car manufacturers *will* fall back on foreign magnetos as soon as possible on account of the cheaper price; but it rests with the buyers of such machines whether these magnetos are patronised. If motorists when buying new machines were to insist that British magnetos should be supplied, the manufacturers would soon supply the desired article, and I am sure I am safe in saying that British magnetos are quite as good as, or even superior to, foreign ones. A decrease in the price could be looked for when the trade had established itself and when raw materials could be easily obtained.

Give the British magneto manufacturers a chance, and let us support and try their machines, and see if they gain fame, not only in our islands but also in the countries that supplied us in the past. C. B. HARLEY.

SUMMARY OF CORRESPONDENCE.

H. W. Allen writes, with reference to the climbing of Glengesh Hill, that his 3½ h.p. Sunbeam, "after being baulked at the first attempt, climbed the hill without apparent effort." He picked up his passenger above the second hairpin.

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Driving from the Sidecar.

I should be very glad if you would tell me if one can be summoned for driving a motor cycle from the sidecar.—K.

We do not think you could be summoned for driving a motor cycle from the sidecar, especially if you could prove that in this position the machine is reasonably under control.

Motor Pacing.

I should be obliged if you would give me information as to the greatest distance ever travelled in one hour on a cycle behind motor pacing, giving date, man's name, and place where the record was put up. Will you please state the make of engine and h.p.?—H.C.O.

The hour motor-paced cycle record is held by Paul Guignard, and is 63 miles 255 yards. This record was made at Munich on September 10th, 1909. The pacing instrument used was a 16 h.p. twin built up specially by the racing man's mechanic from a conglomeration of oddments which could not be possibly designated any individual make.

A Cracked Exhaust Valve Seating.

The exhaust valve seating of my engine has developed a slight crack from top to bottom. Although up to the present this does not seem to have diminished the power very much, I should like a little advice on the matter, as to what is the best course to take. Is welding possible in this case, or will it necessitate a new cylinder? On releasing valves for grinding in last time, I found the exhaust valve very badly burnt. Do you consider the crack to be the cause of this? What I cannot understand is the fact that power and compression do not seem to be affected.—J.E.L.

As to whether welding is possible or not is a matter which can only be decided by the expert to whom you submit the cylinder. If the average welding expert will undertake the job, he will probably see it through satisfactorily, and will give you an estimate. The crack would account for the bad condition of the exhaust valve, and will ultimately result in loss of power. A crack of this kind is almost bound to spread, and when it does so you will soon lose compression and power.

Oval Piston Rings.

I have just had a new top ring made for the piston (which has had the groove skimmed out) of my 2¼ h.p. four-stroke. I had to file a considerable amount out of the gap before the ring would fit the cylinder. Now, when the engine runs, there is practically no compression. Everything else is in order, so I think this must point to ovality of the ring. Please advise.—B.S.B.

It is not improbable that you have filed considerably too much out of the gap of the piston ring. The space between the two ends of the ring when in the cylinder should permit of a $\frac{1}{100}$ feeler to be squeezed between them and no more. To test for ovality, fit a wooden handle for lapping-in the piston, mix some Richford's valve grinding paste and thin oil together, or very fine emery powder and oil, and apply on the piston and rings, insert the piston in the cylinder, and work it up and down the full length of the stroke with a turning movement. This operation will show where the ring is touching, and should be kept up until the ring beds home for its whole surface on the cylinder wall. After which the compression will improve with a short run on the road. Be very careful not to push the piston so far into the cylinder that the ring can expand in the cylinder head and lock the piston in this position.

Loss of Power.

I have trouble with a two-stroke machine, ten months old. I took the cylinder off, as I thought it was time it came off and had a clean out. I thoroughly cleaned the piston and rings, etc., and put them together again with a bit of packing between the cylinder and the crank case. It started up, but will only run on level ground, and requires the throttle wide open then. There is very little compression. I put some oil on the top of the piston, and it improved a little, but only for a time. The mixture of oil and petrol is just the same as usual. I have put the piston the right way in. The timing on the magneto has not slipped. Can you suggest the cause?—SECRETARY.

Examine and clean the carburetter. Check the magneto timing. When timing a two-stroke engine, bring the piston dead on top of the compression stroke, and couple up the sprocket to the armature spindle with the contact breaker fully retarded and the points just breaking on the steel segment. Examine the piston rings. If there is any doubt about the fit of a piston ring in the cylinder, scrap it; and when refitting the new ring set the gap at $\frac{1}{100}$th clearance. Also see that there is no carbon deposit in the piston grooves, and that the new rings may be easily rotated when fitted to the piston. A dead top piston ring on a two-stroke engine means no power. It would perhaps be as well to remove any packing from under the cylinder flange, and replace with a carefully cut thin brown paper washer, soaked in boiled linseed oil. Attention to the above will, we have no doubt, effect a marked improvement in the running of your two-stroke engine.

Uneven Running.

I should be greatly obliged if you would kindly advise me on the following: (1.) I have a rather old 3½ h.p. single-cylinder machine, and recently I noticed that when going up hill the firing became very sharp and loud, and the machine jerked at every explosion. This also happened when I dropped the exhaust valve after slowing down. The machine has, for the last two months, run very smoothly, and the cylinder is quite free from deposit. Could you please tell me the cause of this, and how I could remedy it? (2.) Would a 3½ h.p. machine fitted with a Mabon clutch pull a light wicker sidecar satisfactorily?—F.V.A.

(1.) It is not unlikely that the engine requires a general overhaul. Since the carbon deposit has been removed, it is only necessary to have the valves sand-blasted, the faces reground, new valve guides fitted in the cylinder, and the seatings retrued to the guide. Fit new and stronger valve springs, new piston rings. Drain out all the stale oil from the crank case, and flush out with paraffin. Afterwards inject three fresh charges of oil. Fit a new single-point plug of good make having heavy electrodes. Overhaul and clean the carburetter, check the ignition and valve timing, and trim up square the high tension carbon brush, and clean and readjust the magneto contact breaker points. (2.) The clutch in question would undoubtedly give satisfaction when fitted to a 3½ h.p. machine with a sidecar attached, but it is necessary to fit a two or three-speed gear to a machine if serious touring is contemplated with a sidecar attached.

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TO MEND THAT PUNCTURE OR BURST TUBE

ONLY YOUR HANDS—
A FEW MINUTES—
AND A

Mustikon
"MUST-STICK-ON"

RUBBER
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A VULCANISER, A REPAIR SHOP—
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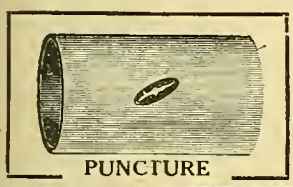
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The "Mustikon" way permanently repairs your tube INSIDE, OUTSIDE & PLUGS UP THE HOLE. "Mustikon" repairs CANNOT CREEP, LEAK OR BLOW-OUT. NO METAL IS USED.

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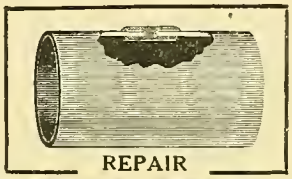
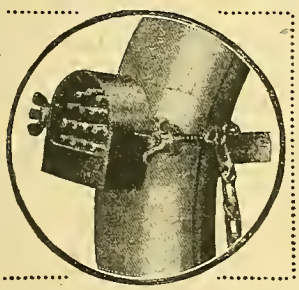

REPAIR



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THE PERFECTION OF AIR-COOLING.

The Harcourt Radiators maintain the full efficiency of engine under the worst conditions: OIL CONSUMPTION HALVED, OVERHEATING ABOLISHED.

WHAT USERS SAY.

MR. F. CONNOLL, 185, Graham Road, Hackney, June 7th, 1915.

"I feel I must write and let you know how satisfied I am with the radiator which I fitted to my Triumph (1914 model). I have just returned from a 1,300 mile tour through Wales with a heavy coach-built sidecar and passenger; and, though the engine in question was very liable to overheat, I did not experience any trouble in this direction."

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Robins & Day, Ltd., The Motor House, Rochester.

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And what greater luxury when motor cycling than a seat on a

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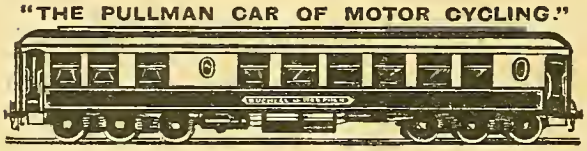
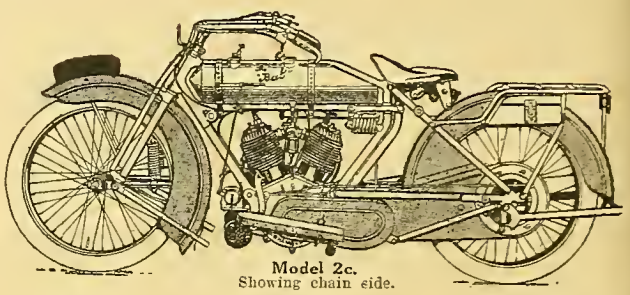
"THE PULLMAN CAR OF MOTOR CYCLING."





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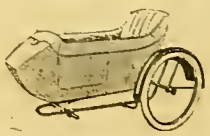

Petrol Blowing Back.

Would you be good enough to tell me the cause of the petrol blowing back at the carburetter? It is a great nuisance, and must be a waste of petrol. My machine is a single-cylinder with automatic valves.—J. McL.

The cause of the trouble is probably owing to too weak an inlet valve spring. You should, therefore, fit a stronger one, and also see that the lift is not too great. This should be approximately three thirty-seconds of an inch.

A Countershaft Pulley.

I am fitting a countershaft pulley to my free engine Rudge, and want to use the pedal bracket to carry the spindle. What would be the best type of bearings to fit? A ⅝in. spindle will be used. It has at present a steel bush right through mounted eccentrically on end plates. Can this be used, as it would be useful to adjust the chain from engine shaft? I am fitting a 7in. adjustable pulley. I presume this will be large enough to give good results. —F.W.

We are of the opinion that a suitable method of fixing a countershaft pulley to the machine would be to fit the countershaft spindle stationary in the bottom bracket and to mount the pulley and chain sprocket together on a ball bearing thereon, thereby retaining the eccentric adjustment for the driving chain. The pulley you propose fitting should prove quite large enough.

A Broken Cylinder and Piston.

Having cleaned the carbon deposit from the cylinder of a 1908 Triumph, I took the machine out for a trial run of about two miles. The machine went well, and nothing seemed wrong. About fifteen minutes after the trial run, and before the engine was cold, I went out again, and just as I had got into the saddle, about a distance of ten yards, there was a sharp crack, and the cylinder and piston broke in pieces. The cylinder broke about an inch above the four holding down nuts, and the piston just across at gudgeon pin. Nothing was amiss that I know about, and I did not prime the engine before starting. I should be obliged if you would give me any explanation for this breakage, and if there would be any likelihood of a similar occurrence when I get a new cylinder and piston fitted.—J.W.

The trouble is that when the machine was reassembled after having been decarbonised the holding down bolts were unevenly tightened. A good many breakages have arisen from this cause. The correct method of reassembling a cylinder is to screw up all the holding down nuts finger tight; then tighten each nut slightly in turn with a spanner, after which slacken off all the crank case bolts just a shade, and then finally tighten up diagonally all four cylinder nuts. The crank case bolts are then tightened up to a cylinder drawn down squarely and firmly on to the case, thus ensuring perfect alignment with no detrimental strains.

Gear Adjustment.

I shall be much obliged if you can help me with the following: The clutch of my Armstrong three-speed Mark II. gear refuses to be taken out, but everything else about it works perfectly. It was recently overhauled, and found in good condition and working order, but now I cannot get free engine since a new sliding push rod has been put in, which is quite free, but will not free the clutch. The old rod and bell crank are lost, but new ones are fitted exactly as the originals.—W.M.S.

We are of opinion that the new push rod is too short, and, consequently, does not free the clutch as it should do.

Bad Running against the Wind.

My machine climbs hills in excellent form, very often with two passengers besides myself, and I very seldom have to change gears, yet on the flat with the least head wind the engine begins to knock, and has no power to pick up. I may say my top gear is 5½ to 1.—C.B.

The symptoms described in your letter are certainly rather curious, as we should have imagined the engine would knock on hills if it did so with a head wind. Apparently the wind affects carburation to some extent. Have you tried closing the air a little and retarding the spark?

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"J.D.L." (Otley). — Omega, New Imperial, and Sun-Vitesse. Reliability, consumption, speed, and hill-climbing.

"H.F.C." (Leamington).—6 h.p. A.J.S. passenger outfit. Petrol consumption, tyre wear, and general reliability.

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Farnborough, Blackwater, Mortimer, Aldermaston, Newbury, Lambourn, Faringdon, Burford, Stow-on-the-Wold, Broadway, Pershore, Worcester, Kidderminster, Bridgnorth, Wellington, Hodnet, Whitchurch, Tarporley, Warrington, Wigan, Chorley, Blackburn. Approximately 230 miles.

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LONDON TO EDINBURGH.—H.W.

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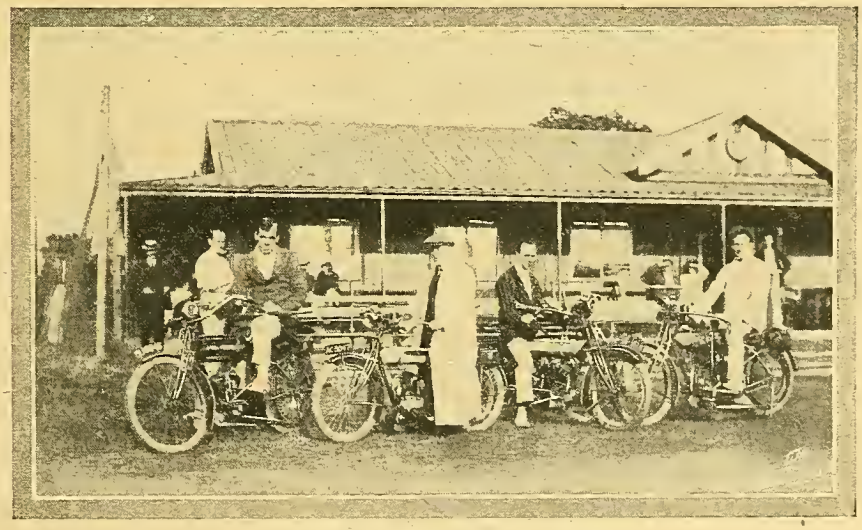
ILFORD TO LLANDUDNO.—H.G.R.

From Ilford follow "blue road" on R.A.C. Official Map of Recommended Routes Round London (obtainable from *The Motor Cycle* Offices, price 1s. 8d. post free), through Woodford Bridge, Woodford Green, Woodford Wells, Chase Side, Barnet, Elstree, Watford, Berkhampsted, Aylesbury, Bicester, Banbury, Stratford-on-Avon, Alcester, Kidderminster, Bridgnorth, Shrewsbury, Ellesmere, Overton, Wrexham, Mold, St. Asaph, Abergele, Colwyn Bay, to Llandudno.



MOTOR CYCLING TO TENNIS.

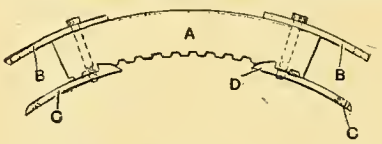
Many a motor cyclist uses his mount for running to and from the tennis courts. A number of motor cyclist engineers engaged on making munitions and other Government work find time for an hour or two on the courts to keep themselves fit.

PATENTS.

By ERIC W. WALFORD

A Belt Fastener.

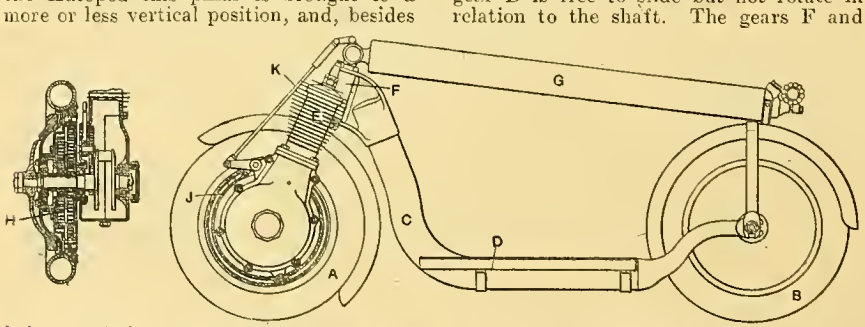
With the object of obviating the gap which exists between the belt ends when an ordinary fastener is used, this inventor proposes to employ a short length of belting A, to each end of which is secured top and bottom plates B and C. These plates are held in position by screws, and the ends of the belt to be joined are inserted between the plates and secured.



To permit of the belt curving round the pulleys the plates are formed with a curve, and for additional security projections D are formed on the lower plates to engage corresponding recesses in the belt length A.—T. R. Eaves and W. Miller, No. 14,396, 1914.

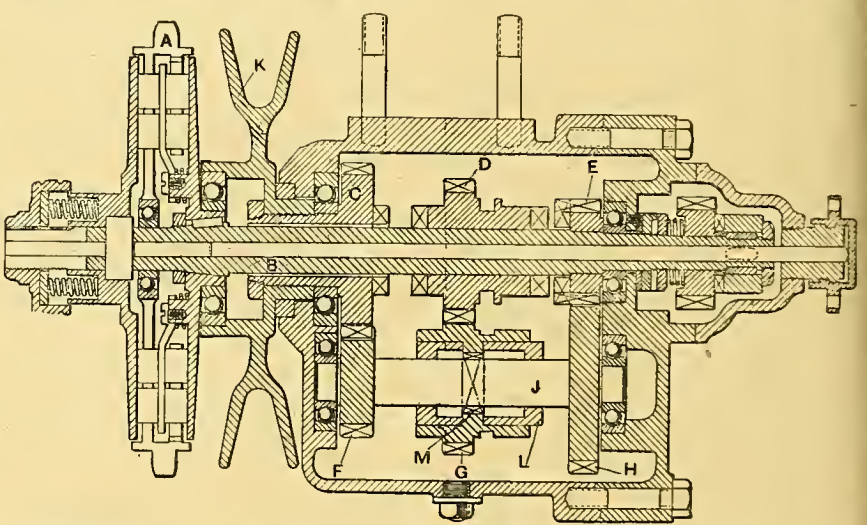
The Autoped.

The object of this interesting American innovation is stated to be "the provision of a new vehicle so totally different from other self-propelled vehicles as in many respects to take the place of walking, by affording a motor propelled platform on which a person usually will stand, although a seat may also be provided, and at the same time having a construction so compact, light, simple, and inexpensive to make and operate, that it will accomplish a purpose in the economic life of individuals which is not afforded by any self-propelled vehicle to-day," and so on. The wheels A and B are mounted upon a member C, which carries a footplate D. The front wheel A carries the engine E, and is steered about the pivot F. The pillar G is shown folded down out of use, but when it is desired to use the Autoped this pillar is brought to a more or less vertical position, and, besides being used for steering, it affords some lateral support to the rider. This pillar also is formed hollow to carry the fuel. Between the engine-shaft and the wheel hub is arranged an epicyclic reducing gear H, one member of which is acted upon by a brake band J connected by a rod K with the pillar G. This connection is such that by moving the pillar through a slight angle the engine may be caused to drive the wheel, a free engine provided, and finally a brake applied.—The Autoped Co. of America, No. 2,099, 1914.



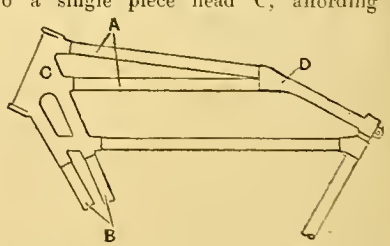
The New Hudson Gear Box.

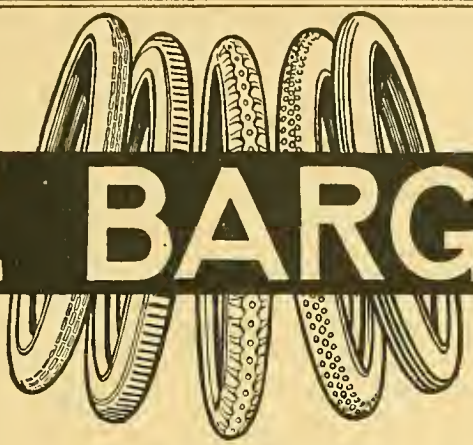
The chain wheel A is driven from the engine and communicates its motion to the gearshaft B through friction clutch mechanism. On the shaft B are mounted three spur gears C, D, E, which engage corresponding gears F, G, H, on a layshaft J. The spur gear C is formed with a sleeve to which is secured the belt pulley K. The gears C and E are normally free on the shaft, whilst the gear D is free to slide but not rotate in relation to the shaft. The gears F and H are fixed upon the layshaft, whilst the gear G is carried on a sleeve L which is provided with internal clutch teeth M so that the gear G may be clutched to the layshaft when required. The gears D and G are constantly in mesh and slide together, being moved by a double forked lever (not shown). On moving the central elements to the left the clutch dogs on the gear D engage those on the gear C, and the drive is direct. On moving the parts to the right, that is, into the position illustrated, the drive is from D to G through the clutch connection M to the layshaft and thence by the gears F and C. This is the second gear. The lowest gear is provided by moving the central members over to the right, so as to engage the right-hand dogs on the gear D with those on E. The drive is now doubly reduced through the gears EH and FC.—The New Hudson Cycle Co., Ltd., and T. A. Tisdell, No. 4,875, 1914.



A Rigid Frame Construction.

From the drawing it will be seen that the top tube A and front down tube B are duplicated and connected at the front to a single piece head C, affording a strong and substantial construction. At the rear the top tube members converge, and are joined to a dropped member D, allowing of a low saddle position.—W. A. Foster, No. 10,472, 1914.





TYRE BARGAINS

We guarantee all these goods to be quite new and not damaged or repaired.

All goods sent on 7 days approval against remittance. Carriage forward unless postage is sent.

SPECIAL CLEARANCE LINES.

GIVEN AWAY, 3/- OUTFIT TO ALL PURCHASERS OF GOODS TO THE VALUE OF £1 AND OVER.

COVERS.

		Our Price.	Usual Price.
CONTINENTAL—			
Ribbed	26×2¼	12/6	15/-
Standard	26×2	14/-	19/6
„	26×2¼	14/6	22/6
T.T. Basket Pattern	26×2	16/9	23/3
„ „	26×2¼	19/-	26/6
„ „	26×2⅜×2¼	20/-	28/-
„ „	26×2½	20/9	28/9
„ „	26×2½×2¼	20/9	28/9
Basket Pattern Heavy	26×2	20/9	29/9
„ „	26×2¼	24/6	34/-
„ „	26×2½	27/-	37/6
„ „	26×3	29/9	42/3
„ „	28×3	35/-	48/3
Combination	26×2¼	36/-	50/-
„	26×2½	39/6	54/6
„	26×3	45/-	62/9
„	28×3	49/6	66/3
Autobi Basket Pattern	650×65	29/9	39/6
Autobi Rubber-studded	650×75	31/6	44/3
KEMPSHALL—			
26×2½ heavy anti-skid		26/-	38/6
BEST ENGLISH MAKE (1913 Pattern)—			
26×2½ W/O rubber studded		20/-	42/-
26×2⅜ W/O ribbed		18/6	37/6

COVERS.

	Our Price.	Usual Price.
BEST ENGLISH MAKE (1913 Pattern)—		
26×2 W/O rubber studded	16/-	30/-
650×65 Pilion	18/-	50/-
STELASTIC— 26 x 2½ extra heavy	27/6	50/9
HUTCHINSON (1913 Pattern)—		
26×2½ Passenger	25/-	41/3
28×2½ „	32/6	43/6
CLINCHER—		
26×2½ (for 2¼) Dreadnought	31/6	47/3
26×2½ Dreadnought	32/6	50/10
26×2½ de Luxe	25/6	30/9
26×2⅜ (for 2½) de Luxe	23/6	41/-
26×2¼ A Won, wired-on, Ribbed	18/-	—
26×2¼ de Luxe, wired-on, R/S.	21/-	—
26×2 De Luxe, B.E.	12/6	18/6
26×2½ ribbed	13/6	
26×2½ rubber studded	15/6	
26×2¼ „ „	21/-	35/-
26×2½ „ „	22/6	37/6
26×2 A Woo, B.E.	18/6	30/6
26×2⅜ „ „	22/6	36/6

COVERS.

	Our Price.	Usual Price.
GOODYEAR—		
26×2¼ heavy rubber studded	19/-	32/3
26×2⅜ for 2½ heavy rubber studded	23/-	40/9

TUBES.

	Our Price.	Usual Price.	
CONTINENTAL—			
26 × 2	5/3	7/3	Butt ends 1/6 extra.
26 × 2¼	6/-	7/9	
26 × 2⅜	6/6	8/6	
26 × 2⅜ × 2¼	6/9	8/9	
26 × 2½	6/9	8/9	
26 × 3	8/9	10/6	
650 ×65	7/9	11/6	
650× 75	10/-	14/-	
ELITE BEST QUALITY (guaranteed)—			
26 × 2	4/6	—	Butted 1/3 ex.
26 × 2¼	4/9		
26 × 2½	6/-		
26 × 3	7/3		
28 × 2½	7/3		
28 × 3	8/3		

BELTS.

		Our Price.	Usual Price.
CONTINENTAL—			
1¼in. section	foot	1/4	2/6
1 in. „	„	1/3	2/2
⅞in. „	„	1/-	1/11
¾in. „	„	11d.	1/7
CLINCHER FLEXIS—			
15/16in. (for ⅞in. pullevs)	„	1/-	2/2
SHAMROCK-GLORIA—			
1¼in. section (7ft. 6in. only)	foot	1/3	2/6
⅞in. „	„	1/-	1/11
¾in. „	„	11d.	1/7

BELTS.

		Our Price.	Usa Price
AVON 1914 PATTERN—			
⅝in. Section	foot	10d.	1/3
¾in. „	„	11d.	1/6
⅞in. „	„	1/2	1/9
1⅛in. „ (7ft. 6in. only)	„	1/6	2/6

RETREADING.

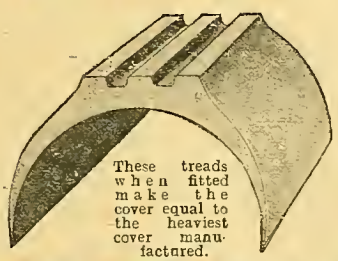
SPECIAL HEAVY - - - - - - 15/-

HEAVY - - - - - - - - - - 12/6

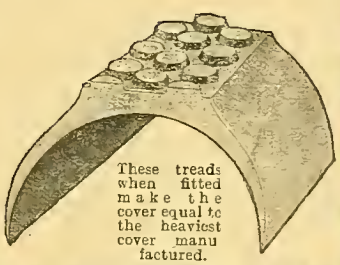
MEDIUM - - - - - - - - - 10/-

ALL MAKES OF TYRES IN STOCK.

15% allowance made for old covers, clearance lines excepted.



These treads when fitted make the cover equal to the heaviest cover manufactured.



These treads when fitted make the cover equal to the heaviest cover manufactured.

ELITE RUBBER Co.,

TUDOR WORKS,
266, Vauxhall Bridge Road, Victoria, S.W.
One minute from Victoria Station.
'PHONE: VICTORIA 6553.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle" Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, 2d. will be charged for registration, and three stamped and addressed envelopes must be sent for forwarding replies. Only the number will appear in the advertisement. Replies should be addressed, "No. 000, c/o 'The Motor Cycle,' Coventry"; or if "London" is added to the address, then to the number given, c/o "The Motor Cycle," 20, Tudor Street, E.C.

☞DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

Abingdon.

1913½ Abingdon King Dick, 3½h.p., 2 speeds, hand clutch, suitable for sidecar; price £33.—Redfearn, 111, High Rd., Chiswick. 'Phone: 787. [8432

A.J.S.

1914 2¾h.p. A.J.S., 3-speed, all accessories; £46.—53, Brownhill Rd., Catford. [8477

A.J.S. 1915 6h.p. Combination in stock.—Cyril Williams, Chapel Ash Depot, Wolverhampton. [X1192

A.J.S., 1913, 6h.p., 3 speeds, sidecar, Cowey, lamps, horn; £58; appointment.—Walker, 8, Sloane St., S.W. [8492

6h.p. 1913 A.J.S. Combination, thoroughly overhauled, 50 gns., big bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X9961

A.J.S., 1913, 6h.p., Millford Corvette coachbuilt sidecar, perfect; £50.—W. Heemondhalgh, 119, Gt. Moor St., Bolton. [X1082

A.J.S., sidecar, and accessories, in first-rate order, 1914 model; 70 gns.; can be seen any time.—Meddine, 49, High St., Buxton. [X1195

A.J.S. 4h.p. Combination, 1915, screen, mechanical horn, Lucas lamps, speedometer, run 1,215, unpunctured.—Davison, Chemist, Nuneaton. [X1241

LATEST 2¾h.p. A.J.S., 3-speed, with all extras; cost £56, bargain, £46; only used 250 miles, condition as new; no offers.—Mr. Newbold, c/o Timberlake, Wigan. [X0981

WAUCHOPE'S

THE HOUSE FOR THE MOST SATISFACTORY SELECTION, PRICE, TERMS, AND DELIVERY,

Invite your inspection of Britain's largest stock of best makes, new and second-hand, at lowest prices for cash, easy terms, or exchange, all ready for immediate delivery, and fully guaranteed. Write for to-day's list, which includes these:

9656.	2¾	h.p. twin **N.S.U.**	£17 10
9660.	3½	h.p. 1915 **RUDGE** Multi	£52 10
9663.	7-9	h.p. 1914 **EXCELSIOR** and Sc..	£55 0
9664.	3½	h.p. 1910 **TRIUMPH**	£22 10
9671.	4	h.p. 1914 3-sp. **TRIUMPH** & Sc.	£65 0
9675.	4½	h.p. 1914 **JAMES** and Sidecar..	£60 0
9677.	3½	h.p. 1913 3-sp. **TRIUMPH**	£35 0
9303.	3½	h.p. 1908 **TRIUMPH**	£22 10
9423.	5-6	h.p. **AUTO-CARRIER**	£37 10
9429.	7	h.p. 1913 **PREMIER** and Sidecar	£57 10
9446.	1	h.p. lady's **MOTOSACOCHE**	£10 10
9448.	2¾	h.p. **FAIRY**	£10 10
9449.	8	h.p. 1915 2-seater **SUPER** Car..	£65 0
9539.	6	h.p. 1913 2-sp. **ENFIELD**	—
9542.	2¾	h.p. 1915 2-sp. **SUN VITESSE** and Sidecar	£42 10
9565.	6	h.p. 1912 **CLYNO** and Sidecar..	—
9631.	2¾	h.p. 1911 2-sp. **ENFIELD** & Sc.	£27 10
9633.	2½	h.p. 1912 **PREMIER**, vari. gear.	£18 10
9641.	3½	h.p. 1913 3-sp. **HUMBER** & Sc.	£42 10
9617.	3½	h.p. 1913 2-sp. twin **N.S.U.**	£28 10
9597.	6	h.p. 1911 **ZENITH** and Sidecar.	£37 10
9584.	8	h.p. 1914 2-sp. water-cooled **WILLIAMSON** and 2-seater Sidecar	£87 10
6343.	8	h.p. 1911 3-sp. **CHATER-LEA** and Sidecar	£50 0
6421.	3½	h.p. 1908 **MINERVA**	£15 0
6842.	3½	h.p. 1912 F.E. **RUDGE**	£27 10
6863.	3½	h.p. 1910 **BAT**	£20 0
7521.	5-6	h.p. 1911 4-cyl. **F.N.** and Sidecar	£22 10
7589.	3½	h.p. 1910 **N.S.U.**	£16 0
7708.	3½	h.p. 1908 **N.S.U.**	£15 0
7992.	3½	h.p. 2-sp. **FAFNIR** and coach-built Sidecar	£22 10
8165.	6	h.p. **BAT** and Sidecar	£22 10
8175.	6	h.p. 1913 2-sp. **N.S.U.**	£40 0
8197.	3½	h.p. 1911 **N.S.U.**	£20 0
8277.	6	h.p. 2-sp. **N.S.U.** and Sidecar ..	£25 0
8320.	3½	h.p. 1911 **ARIEL**, variable gear.	£20 0
8504.	5-6	h.p. 1909 2-sp. **REX** and Sidecar	£28 10
8561.	3½	h.p. **VINDEC** and Sidecar	£17 10
8654.	3½	h.p. 1910 standard **TRIUMPH**..	£22 10
8682.	6	h.p. 1913 2-sp. **V.S.-J.A.P.** & Sc.	£45 0
8718.	3½	h.p. 2-sp. **FAFNIR** and Sidecar.	£22 10
8741.	3½	h.p. 1912 **TRUMP-J.A.P.**	£30 0
8785.	6	h.p. 1912 2-sp. **ENFIELD** & Sc.	£47 10
8832.	1½	h.p. 1909 **MOTOSACOCHE**	£9 0
9076.	5	h.p. 1907 F.E. **ROC**	£20 0
9155.	1½	h.p. 1910 **MOTOSACOCHE**	£10 10

9, SHOE LANE, FLEET ST., LONDON, E.C.

'Phone: 6777 Holborn. Wires: "Opificer, London."

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S., 1914, 2¾h.p., 3 speeds, and clutch, Cowl speedometer, lamp, and horn, perfect condition 40 gns.—C. Cornish, Pipe Lane, Victoria St., Bristol. [X0767

A.J.S.'s.—6h.p. Combination, 4h.p. combination, 2½ h.p. 2-speed, and 2¾h.p. 3-speed actually in stock; first cheque at full list price secures any model.—A.J.S. Specialists, The Walsall Garage, Walsall. [X1211

1915 A.J.S., 6h.p., and sidecar, complete with all spares, 3 Lucas lamps, central generator, Lucas horn and mirror, Stewart speedometer; £87, cost £108. —Apply by letter, A. J. Parkes, R.E. Mess, Aldershot. [X1144

6h.p. 1914 A.J.S., 3-speed model, and chain drive fitted with A.J.S. highest grade sidecar, handy box for luggage, speedometer, separate generator lamp, side car lamp, Lucas horn, rear light, full complement of tools; machine as good as new in every detail; price £80, first cheque secures.—Wauchope's, 9, Shoe Lane, London. [X1168

Alldays.

1913, 2-speed gear, Alldays and Onions, 4h.p., £18.—Attwood, Garage, Eccleshall. [X1220

ALLDAYS Allon 2-stroke; £31/10 each, or fifth down 2½% on balance.—Referee Cycle Co., 332, High Holborn, W.C. [2778

ALLDAYS Allon and Matchless in stock; £80; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow. [8459

FOR Sale, 1915 Alldays Allon Motor, 2 speeds, mileage 150, complete, lamps, horn, unscratched, perfect condition.—Write Scholes Royal Mint St., E. [8407

LATE 1913 Alldays Matchless, 3½h.p., 2-speed, new piston, new 12 gn. Coronet sidecar, wind screen, good tyres and belt, will take 3 up; £35, no offers.—Simpson, 27, Alexander Rd., Upper Holloway, N. [2429

American Excelsior.

1914 7h.p. American Excelsior and sidecar, lamps, spares, etc.; £50; new last April; too fast for owner; bargain.—Mr. Hawkins, 8-9, Gt. Chapel St., Oxford St., W. [8588

Antoine.

5-6h.p. Twin Antoine, B. and B. carburetter; seen running; £8/10 for quick sale.—602, King's Rd., Fulham, S.W. [8617

Ariel.

ARIEL, 3½ and 5-6h.p., counter-shaft models in stock.—Jones, Broadway, Muswell Hill. [7635

ARIELS, 3½h.p. and 5-6h.p. combinations in stock, all black finish no extra; deferred payments.—Lamb's, 151, High St., Walthamstow. [8461

A.S.L.

A.S.L., 3¾h.p., Sturmey-Archer 3-speed, coachbuilt sidecar to match; £50; all brand new.—Holloway, Upper Holland Rd., Sutton Coldfield. [X1193

Auto.

3½h.p. Auto, mag., B. and B., will do 50 miles per hour.—155, Drummond St., Hampstead Rd. [8683

Auto-Wheels.

1914 Auto-Wheel, used 100 miles only; £9/10.—Bertram, Gorebridge, Scotland. [X1157

WALL Auto-Wheel; £14/14 cash, or 26/8 down and 26/8 monthly.—Seen at 248, Bishopsgate, London, E.C. [1712

AUTO-WHEEL and Specially built cycle, cost £23 last August, splendid condition; £12.—Hall, 40, Pearl St., Bristol. [X1165

AUTO-WHEEL for sale, good condition, 2-speed gear, free engine; £10.—J. Fry, jun., Crookham Common, Newbury, Berks. [X1067

AUTO-WHEEL, B.S.A., excellent condition; owner bought cycle and sidecar; £10.—F. Hollington, 5, Franklyn Villas, Ordnance Rd., Enfield Lock. [8619

AUTO-WHEEL Attached to invalid tricycle, with Hucklebridge attachment, new, actually in stock; 35 gns.—Hucklebridge, 133, Sloane St., London. [X1255

FOR Sale, Auto-Wheel, nearly new, can be seen in excellent running order; £10.—Apply, Albert Swan, Golspie, Marlborough Rd., St. Albans, Herts. [X1298

Bat.

4h.p. Bat-Jap, spring frame, variable gear, as good as new; £22/10.—Murphy, Green View, Trafalgar. [X0452

8h.p. Bat-Jap Combination, very fast and powerful; any trial; £50.—French, Officers' Mess, 35th Divisional Troin, Masham, Yorks. [8435

8h.p. Bat, nearly new, coachbuilt sidecar, 2-speed, free, h.s., 3in. tyres, speedometer; £40, or exchange 2-seater car.—20, Milkwood Rd., Herne Hill. [X1328

Halifax Motor Exchange

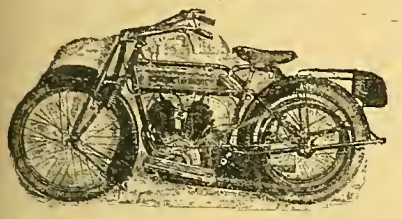
68, HORTON ST., HALIFAX.

'Phone: 766. Telegrams: "Perfection."

1915 BRADBURYS

4 h.p., 3-speed countershaft, chain drive .. £60 0
6 h.p., 3-speed countershaft, chain drive .. £73 10
DELIVERIES FROM STOCK. Exchanges Quoted.

WHY PAY 5% EXTRA



When we can offer you a Brand New (just delivered from makers) **£65 6 h.p. 2-speed REX,** or a **£72 10s. 6 h.p. 3-speed Chain Drive REX** at 10% discount? If you have no customer for your present machine, we give you this discount in addition to a liberal exchange allowance. With Rex Coach-built Sidecar, **£12 10s.** extra.

LIGHT CARS.

1915 de Luxe **MORGAN,** M.A.G. engine.. **£114 10**
1915 10 h.p. **DOUGLAS,** electric lighting set **£200 0**
1915 4-cylinder **CALTHORPE** Minor..... **180 gns.**
1915 Grand Duke Michael **CALTHORPE**.. **190 gns.**
1915 **G.W.K.,** 2-seater. NEW..... **170 gns.**
1915 **WILLIAMSON** CY-CL-CA..... from **£113 8**
New **VICTOR-PRECISION,** 8 h.p., W.-C. **£100 0**
SABELLA-J.A.P., 8 h.p..... **£42 10**
BEDELIA, 8-10 h.p., twin, 2-seater **£36 10**
1914 W.-C. **CROUCH** Carette, 3-seater **£97 10**
1914 8 h.p. Sporting **VICTOR,** single-seater **£59 10**

SHOP-SOILED. 5 per cent. Cash Discount.
8 h.p. **WILLIAMSON** W.C. Combination.. **£99 5**
VICTOR 2-seater Car, hood, screen, etc.... **£100 0**
BRAMBLE Coach-built Sidecar **£14 14**
GLORIA Coach-built Sidecar..... **£15 15**
Keen Exchanges quoted. Delivery from Stock.

SOLO MACHINES.

1915 2½ h.p. 2-speed (New) **RYDER-J.A.P..** **32 gns.**
1915 2½ h.p. **ROYAL RUBY** (New) **£26 5**
1915 2½ h.p. 2-speed **ROYAL RUBY** (New) **£31 5**
1914 2¾ h.p. 3-speed **CONNAUGHT** **£29 10**
1913 8 h.p. 2-speed **V.S.**..... **£39 10**
1913 6 h.p. **ZENITH-GRADUA** **£42 10**
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1913 Lightweight 2-speed F.N., 1913 model, with accessories, all in splendid condition.—Thorp and Co., Southampton St., Reading. [X1092

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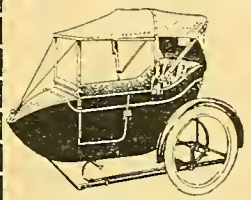

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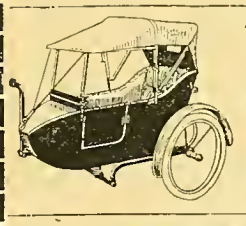

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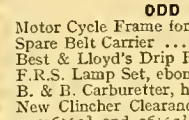

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HUMBER, 2h.p., splendid condition; £18.—Mays, 172, Woodhouse Lane, Leeds. [X1285

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HUMBER, 3½h.p., 2-speed, free engine, handle starting, just been thoroughly overhauled, re-enamelled, and plated, tyres and belt nearly new; £23, or exchange for 2-stroke lightweight.—Taplin, 16, Lordship Park, London, N. [8303

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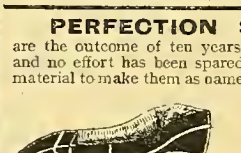

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INDIAN, Hendee Special, 1914½, 7-9h.p., 2-speed, coachbuilt sidecar, electric starter, 3 electric lamps, electric horn, in splendid condition, just been thoroughly overhauled; £65.—Ball, 1, Castledown Terrace, Hastings. [X1207

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INDIAN, 1915, 3 speeds, clutch, complete with lamp, Stewart warning signal, speedometer, only done 800 miles, guaranteed to do 60; a bargain, £58; owner buying sidecar combination.—Ellum, Eastchurch, Kent. [8609

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JAMES Combination, 1914, 4½h.p., 3-speed, Lucas lamps, Jones, Sensspray, splendid condition, not 3,000 miles; £57/10.—Seen by appointment, 57, Hilldrop Rd., N. [8163

JAMES 4½h.p. Combination, 3-speed countershaft, chain drive, gorgeous upholstered sidecar; the combination £76 13; exchange or easy terms.—Wanehope's, 9, Shoe Lane, London. [X1171

3½h.p. James, 1914, with Canoelet sidecar, 3-speed, chain drive, complete with lamps, Stewart speedometer, and all accessories; price £45.—The Unbreakable Pulley Co., West Gorton, Manchester. [X0769

JAMES, 1915, 4½h.p., 3-speed countershaft gear, clutch and kick-starter, chain drive, Canoelet sidecar, with Lucas electric lighting outfit, Lucas electric horn; £90/15.—Colmore Depot, 261, Deansgate, Manchester. [0674

MOTOR CYCLES FOR SALE.

Rôver.

ER, late 1914, 3½h.p., T.T. model, complete with ccessories, spare belt, and tyre, very fast; £38. 8,055, *The Motor Cycle* Offices, Coventry. [X1204

ER, 3½h.p., 3-speed. 1913, and Millford sider, all in splendid condition, accessories included; .—Colmore Depot, 31, Colmore Row, Birmingham. [X1067

3 3-speed Rover, in perfect order and condition, carefully used, lamp, all accessories, also wicker , Montgomery; what offers?—Bett, North Rd., . [X1324

ER, 1915, 3½h.p. T.T. model, with h.c. Philipon pulley, delivery from stock, £52/10; counter-3-speed models 10 days, £63; exchanges or exterms arranged.—Elce and Co., 15, Bishopsgate amomile St., E.C. [0491

ERS in stock for immediate delivery; 3½h.p. speed counter-shaft, coachbuilt de luxe combina-280; 3½h.p. sporting coachbuilt combination, 68 olo, 3½h.p., with counter-shaft gear, kick starter, rds, etc., 60 gns.; 3½h.p. sporting solo machine, hilipson pulley, 50 gns.—P. J. Evans, sole Birm am and District Agent, John Bright St. [8484

Royal Ruby.

4 Royal Ruby, 2-speed, 2½h.p., excellent condition; accept £24.—Newnham, 223, Hammer-Rd., W. [8639

AL Ruby, 1914, 2-stroke, ridden 800 miles, owey speedometer, lamps, horn, tools; £23, no —Howes, 28, Bagleys Lane, Fulham. [8532

AL Ruby, 3½-4h.p. J.A.P., 70×64½ twin, side lves, ball bearing to pulley side, Sturmey-Archer hub gear, price £42; one ditto, with overhead and Jardine 2-speed counter-shaft gear, chain lt drive, price £48.—The Royal Ruby Cycle Co., ester. [0704

Rudge.

5 3½h.p. Rudge Multi, new, in stock; £58/15.—Gray's Garage, Watford. [X1162

2-13 Rudge Multi, Montgomery sidecar, recently overhauled; £34.—21, Dunlace Rd., Clapton. [X1189

EDIATE Delivery, new condition, Rudge Multi, ½h.p., with sidecar; £45.—Abbey Garage, Ply. [X0051

3 3½h.p. Rudge Multi, with new back tyre, and completely overhauled; £30.—Walker, Fishburn, Hill. [X1283

GE Multi, 1913, with spring wheel coach sidear, condition as new; £38.—69, Hanbury St., elds, E. [8580

4 3½h.p. Rudge Multi, hand-controlled clutch, and new Watsonian sidecar; £46/10.—38, ille St., Grimsby. [X1211

GE Multi, 1914, 3½h.p., practically unused this ear; £38.—Adelaide Motor Co., 84, Chalk Farm .W. 6058 Hampstead. [8623

5 Rudge, Brooklands model, done about 800, as new, accessories; 40 gns., cash.—Corpl. Gash, ch Rider, Clamorgan Yeomanry, Aylsham. [8628

GE Multi, 1913 model, in perfect order and ondition, had exceptionally careful use, com-with speedometer, horn, lamp, etc.; £40.—The Garages, Oxford. [X1276

3 Rudge Multi, 3½h.p., perfect condition, 1915 Senspray carburetter, 1914 coachbuilt sidecar; a, £36, or near offer; separate, £29, £7.—Robert Electrician, Blaenau Festiniog. [X0768

Scott.

3-14 Scott. Binks carburetter, fast and reliable; £35.—Hubbard, Keighley. [8635

4 3¾h.p. Scott, not ridden 1,000 miles, equal to new; £48.—Attwood, Garage, Eccleshall. [X1220

5 3¾h.p. Scott, new May, accessories, and Cowey, new condition; £62.—12, Brunswick St., City Bristol. (D) [X1120

TT and Canoelet, new Dec. 27th, 1912, 1913 rume, do 40 with passenger, lamps, horn, speed-; best offer £45.—Watson, Haslingfield, Cambs. [X0603

TT, 1914, 3¾h.p., 2 speeds, kick starter, Canoelet oach sidecar, just thoroughly overhauled by makers, etc with accessories; £50.—Elce and Co., 15, psgate Av., Camomile St., E.C. [0552

TT, 1913, 3¾h.p., with handsome 18 gn. coach-built sidecar, fitted wind screen, and all acces-good running condition; must sell; £35, excep-bargain; well worth £50.—J. Graham, 168, The Sheffield. [7786

3 Scott and new Gloria sidecar, all accessories, including 3 lamps, 3 horns, 3 tubes, 2 driving engine recently overhauled, everything in perfect ion; accept 55 gns.; owner enlisted.—Owen, 6, n Grove, Bromley, Kent. [8112

3 Scott and Canoelet de Luxe Sidecar, Lukin automatic carburetter, and improved silencer, nly a few hundred miles, perfectly new condition, F.E. big lamp, and other accessories; apply quickly; gain.—R. N. Lall, Common Room, Gray's Inn, W.C. [8397

Singer.

GER, 1913, clutch model, lightweight; bargain, £25.—Midland Garage, Oxford. [X1249

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WE have a number of New 1915 Models, including the following actually in stock here, or ready at the Manufacturers.

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Model K, 4½ h.p., 3-speed.
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2½ h.p. J.A.P., 2-speed.
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6 h.p., coach-built combination.
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3½ h.p., air-cooled, 3 speeds.
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5 h.p., 3-speed, and clutch.
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2½ h.p. J.A.P. engine, 2-speed.
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3½ h.p., clutch model, Gradua gear.
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Coach-built Sidecars from **12 gns.**
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Coach-built Sidecars from **10 gns.**
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Light Car, 9 h.p., standard model.
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Light Car, 7 h.p. model.

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1911 **RUDGE,** 3½ h.p., clutch model £25
1912 **RUDGE,** 3½ h.p., clutch model £29
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MOTOR CYCLES FOR SALE.

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2h.p. Singer, Druid, Bosch, reliable, smart light-weight; £11.—Toms, Catherine St., Leicester. [X1208a

SINGER, 1912, 3½h.p., 3-speed, kick-start, lamp, etc., new tyres; £30.—Laurel Motor Co., Woodford Green. [8494

SINGER and Co., Ltd., 17, Holborn Viaduct, have only a limited supply of 3½h.p. 3-speed models; prices to clear, £58; 4½h.p. countershaft 2-speed, ideal model for sidecar work, £65.—Write, call, or 'phone 13175. [0667

Sparkbrook.

SPARKBROOK Combination, 1914, 6h.p., complete with lamp, horn, spares, machine and coachbuilt sidecar, in perfect condition, always carefully used, tyres good; owner buying car; £70.—James Moffat, Yeovil. Tel.: 50. [8549

Sun.

SUN-VILLIERS, 1915, 2-stroke, mileage under 100, all accessories; £25.—Write, 12, Thornbury Av., Osterley, Middlesex. [8599

SUN-VILLIERS, 1914, 2½h.p., 2-stroke model, single gear, perfect little mount; £20.—The Morris Garages, Oxford. [X1273

SUN-V.T.S., 1915, 2¾h.p., 2 speeds, clutch, unscratched, sporting model, 2¼in. heavy Dunlops, lamps, knee-grips, and accessories, not done 100 miles; just cost £41, bargain, £34.—12a, Carpenters Rd., Lozells, Birmingham. [X1342

Sunbeam.

SUNBEAM, 3½h.p., 3-speed, actually in stock.—Davies, Garage, Barmouth. [8467

SUNBEAM, 1915, 3½h.p., 3-speed model, in stock for immediate delivery.—The Morris Garages, Oxford. [X1279

SUNBEAM, 2¾h.p., 1914 machine, but only used 300 miles, as new; bargain, £52/10.—Timberlake, King St., Wigan. [X0982

SUNBEAM, 3½h.p., late 1914, perfect; £59 nett; exchange big clutch Zenith.—Advertiser, 26, Roxborough Park, Harrow. [8646

3½h.p. 1914 Sunbeam, 3-speed, in very good condition, new lamp and generator, excellent tyres; £47/10.—Stradling, Newbury. [8375

SUNBEAM, 1913, 2-speed model, purchased 1914, beautiful order; £45; deferred payments; liberal exchanges.—Lamb's, 151, High St., Walthamstow. [8457

SUNBEAM, 1914, 2¾h.p., 2-speed, clutch, lamp, horn, etc., almost as new, only used week ends; take 39 gns.—123, Queen's Rd., Finsbury Park. [X1303

1914 3½h.p. Sunbeam, splendid condition, done 2,000, Lucas lamps, horn, accessories, extra heavy tyres; 55 gns.—54, St. Gabriel's Rd., Cricklewood. [8644

SUNBEAM Agents.—Early deliveries 3½h.p. models; lists on application; exchanges entertained.—Tel.: 388. T.A.: Bicycles.—Robinson's, Garage, Green St., Cambridge. [6866

1914 6h.p. Sunbeam, with No. 5 Gloria sidecar, wind screen, spare new tyre and tube, every accessory, splendid condition; 75 gns.—Turner, 6, Birchwood Rd., St. Anne's Park, Bristol. [X1106

SUNBEAM, 1915, 3½h.p., 3-speed combination, speedometer, lamps, spares, mileage 700; cost nearly £100, accept £78, no offers; London district.—Box 8,054, *The Motor Cycle* Offices, Coventry. [X1235

SUNBEAM, late 1914, 3½h.p., absolutely as new, hand clutch, kick-starter, only done 1,000 miles, with accessories, including Lucas lamp, horn, Brooks's carrier case, mud screen, and spares; £63 complete, owner going in for car.—L. J. Fry, The Grange, Warmley, Bristol. [5200

T.A.C.

T.A.C., 7h.p., 4-cyl., coachbuilt sidecar, 3 speeds, F.E., gear box; must sell; bargain, £25, offers, trial.—Speechley, 45, Church Rd., Acton. [8678

Triumph.

1915 Triumph Junior in stock; £42.—Seal and Ball, Southport. [X1232

TRIUMPH Junior, 1915 model; delivery from stock; £42.—Below.

TRIUMPH, 1914, 4h.p., 3 speeds, and clutch, sound mechanical order; £46.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0490

1913 3½h.p. Triumph Combination, 3-speed; £45.—53, Brownhill Rd., Catford. [8478

TRIUMPH, 1915, not done 10 miles, 3 speeds; £58.—Midland Garage, Oxford. [X1247

DECEMBER (1913) Triumph, 3-speed, new condition, £13 sidecar.—Chaplain, Prison, Hull. [X1160

JUNIOR Triumph, 1915, unused; £44.—Gleawood, Granville Rd., North Finchley. Tel.: 361. [8443

1910 Triumph, in very good condition; £20.—Barraclough, Dalemoor, Thornton, Bradford. [X1115

TRIUMPH, 1914, 4h.p., 3 speeds, new condition; bargain, £44/10.—Stevens, Yexhill, Lincs. [X1072

3½h.p. Triumph, semi T.T., splendid condition throughout; sacrifice £24.—B. B. Ames, Wisbech. [X1265

All letters relating to advertisements should quote the number at the end of each advertisement, and the date of the issue. A35

MOTOR CYCLES FOR SALE.

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HARLEY-DAVIDSON, the ideal sidecar machine, absolutely no vibration, wonderful flexibility; new automatic mechanical oil pump, 3-speed sliding gear transmission, no noise, no stripping. A kick starter that really starts. Price from £82 to £76/13/0 for the Remi-Edison electrical equipped model.—Sole distributers for Lancashire and Cheshire, wholesale and retail, Colmore Depot, 261, Deansgate, Manchester; and 31, Renshaw St., Liverpool. [0675

Hazlewood.

1914 3½h.p. Twin Hazlewood-Jap, 3-speed, clutch, carefully used; £33.—53, Brixton Rd., S.W. [8523

HAZLEWOOD, 1914, 5-6h.p., 3 speeds, in splendid condition, new tyres, with sidecar; £45.—Corkett, Sonlbury, Leighton Buzzard. [X1047

HAZLEWOOD, 1914, 3½h.p., splendid condition, new tyres, spares, etc., £40; new coachbuilt sidecar, £9; together or separate.—Roughton, Boat Inn, Northampton. [8388

Henderson.

HENDERSON, 1914-15, 4 cyls., 8-10h.p., long coachbuilt sidecar, extra spare for child, rear drive, Stewart speedometer, lamps, whistle, spares, only run 2,000 miles; cost £104, price £80; seen any time by appointment.—Westbrook, 37, Priory Rd., Kew. [X1127

Hobart.

1914 Hobart Lightweight, 2¾h.p., N.S.U. 2-speed, free engine, good condition; what offers?—H. Houlton, Lynwood, Malvern. [X1114

Humber.

2¾h.p. Humber, 1912, splendid order; £20.—1, The Broadway, Muswell Hill. [8666

HUMBER, 2h.p., splendid condition; £18.—Mays, 172, Woodhouse Lane, Leeds. [X1285

HUMBER Lightweight, 1913, in nice condition; £16/10.—Percy and Co., 337, Euston Rd., London. [8503

1912 3½h.p. 2-speed Humber, perfect condition; £23.—The Premier Motor Co., Aston Rd., Birmingham. [8671

HUMBER, 1913, 2¾h.p., 3-speed, lamp, etc., in excellent condition; £28.—Harris, Laurel Cottage, Woodford Green. [8493

1913 Humber Lightweight, excellent condition throughout, fast, reliable; £15.—Davies, 18, Paddock St., Llanelly. [X1131

1913¾ Humber, 2¾h.p. twin T.T., clutch, new condition; £30; would exchange for Triumph.—Wright, Grimston, Norfolk. [8565

HUMBER, 2¼h.p., twin, 3-speed gear and clutch, in tip-top order, accessories included; £27.—Colmore Depot, 31, Colmore Row, Birmingham. [X1071

HUMBER, 1912, 3½h.p., and coachbuilt sidecar; 2 speeds, clutch, and handle starter, perfectly sound; £25.—P. J. Evans, John Bright St., Birmingham. [8486

3½h.p. Humber, 1914, S.A. 3-speed, F.R.S. lamp, new Stewart, heavy 26in.×2½in. back wheel, many spares; £45.—The Hut, Pinehurst Av., Farnborough, Hants. [X1035

HUMBER 1913 Coachbuilt Combination, 3½-4h.p., mag., 2 speeds, handle starting complete, lamp, speedometer, horn, almost new; great bargain, 38 gns.—36, Skelbrook St., Earlsfield, S.W. [X1294

HUMBER, 1911, 3½h.p., 2-speed, handle starting, excellent condition, P. and H. lamp, spare belt, 1914 Watsouia light sidecar; £25.—Goldburgh, Railway Hotel, Horsley, near Leatherhead, Surrey. [8419

HUMBER, 3½h.p., 2-speed, free engine, handle starting, just been thoroughly overhauled, re-enamelled, and plated, tyres and belt nearly new; £23, or exchange for 2-stroke lightweight.—Taplin, 16, Lordship Park, London, N. [8303

HUMBER, 3½h.p., 2-speed, Dec., 1912, Harcourt radiators, new Avon Sunstone, 1in. belts., B.S.A. carburetter, in perfect condition, horn, lamp, etc., Canoelet sidecar; £32 net.—Robinson, 39, Catherine St., Salisbury. [8496

NEW 6h.p. 1915 Horizontal Twin Water-cooled Humbers, opposed cyls., countershaft 3-speed gear and free engine; £85; any make of sidecar supplied to fit.—Wanchope's, 9, Shoe Lane, London. Exchange arranged, or extended payments. [X1167

Indian.

1911 Indian and Sidecar, free engine; £25.—1, The Broadway, Muswell Hill. [8668

INDIAN Twin, 5h.p., splendid condition; £25.—F. Delf, 17, Station Rd., Beccles. [8581

INDIAN 5h.p. Twin, 1910, red finish, in good order; any trial; £19.—W., 21, Margaretts Terrace, Chelsea. [X1327

INDIAN, 6h.p., 3-speed, 1913, and sidecar, lamps, complete; cheap for cash.—E. Fish, Owston Ferry, Doncaster. [X1048

5h.p. 3-speed Indian, 1915 model, run 20 miles; £60; intended purchaser gone to war.—Brook, College St., Burnham, Som. [7765

INDIAN, 1914-15, 7-9h.p., mag., 2 speeds, clutch, speedometer, new condition; sacrifice, £52/10.—1, Ebner St., Wandsworth. [X1345

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*1915	3½ h.p. **SUNBEAM**	66 gns.
1915	4 h.p. 3-speed **BRADBURY**	£60 0
1915	6 h.p. 3-speed **BRADBURY**	£73 10
*1915	**ROYAL RUBY,** 2½ h.p., 2-stroke	£26 5
*1915	**ROYAL RUBY,** 2½ h.p., 2-stroke, 2 sp.	£32 5
*1915	**ROYAL RUBY,** 2½ h.p., 2-sp., J.A.P.	£35 8
1915	2½ h.p. **NEW RYDER-J.A.P.**	32 gns.
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1912	3½ h.p. **N.S.U.** and Sidecar	£24 10
1912	3½ h.p. **LINCOLN-ELK**	£19 10
1912	3½ h.p. 2-speed **BRADBURY** and S'car	£32 10
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1911	5-6h.p. 2-speed **REX** and Sidecar	£29 10
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1910	3½ h.p. 2-speed **BRADBURY**	£19 19
1910	3½ h.p. Magneto **TRIUMPH**	£19 19
PEUGEOT, 5-6 h.p., 3 speeds, twin	£24 10	
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P. & M., 3½ h.p., 2-speed, and Sidecar	£24 10	
N.S.U., 2-speed, F.E., twin, spring forks	£13 10	
N.S.U., 3½ h.p., magneto	£10 0	
REX, 5½ h.p., twin, magneto, tourist	£15 10	
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BRAMBLE Coach-built Sidecar, slightly soiled	£12 12	

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MOTOR CYCLES FOR SA[LE].

Indian.

5-6h.p. Indian, splendid condition, engine overhauled by makers, 2-speed, F.E.; £[—] son, Contractor, Runcorn.

INDIAN, 1915, 5h.p., 3-speed, done 1,700 [miles] fect, Stewart speedometer; £55.—Chap[man] bridge St., Waltham Abbey.

1913 Indian, clutch, T.T., delivered Jan[uary] £15 sidecar, done 800 miles; £4[0] Motor Co., Alrewas, Staffordshire.

INDIANS.—Immediate delivery all model[s] in our showrooms; largest stock in th[e] C. McAdams, Ltd., Middlesbrough.

INDIAN, 7h.p., 1914, and sidecar, 2 spe[ed] electric equipment, perfect condition; [a] car; £58, near offer.—W. H. Rodwell, Brew[ery], Herts.

INDIAN.—Delivery of all 1915 models [in] We are large contracting agents [for] machines, and can offer best deliveries.—[The] Garages, Oxford.

1915 5h.p. T.T. Indian, 3-speed, not run [since] May, condition as new, large head [lamp], rear, generator, horn, tools, etc.; £57.—Seen[by] mere Rd., Muswell Hill, N.

INDIAN (Red), 1914, T.T. clutch mod[el], kick starter, in almost new condition, [with] coachbuilt Canoelet sidecar, with all access[ories] bargain.—38, Bancroft Rd., Mile End Rd.,

INDIAN, 1915 models, delivered from sto[ck], 3-speed model C., £73 10; 5h.p. 3-speed [model] £63; 7h.p. road racer, £57; sidecars in sto[ck].—Else and Co., 15, Bishopsgate Av., Camomil[e St.]

INDIAN, Hendee Special, 1914½, 7-9h.p. coachbuilt sidecar, electric starter, 3 ele[ctric] electric horn, in splendid condition, just been overhauled; £65.—Ball, 1, Castledown Terrace

1914 Indian, 7-9h.p., 2-speed, and sidecar [in] lent condition throughout, total mile[age], lamp, horn, etc., 2 spare covers; owner [going] £60, or near offer.—Cresswell, Woodbine Te[rrace], ham.

INDIAN, 1915, 3 speeds, clutch, com[plete] lamp, Stewart warning signal, speedo[meter], done 800 miles, guaranteed to do 60; a bar[gain], owner buying sidecar combination.—Ellum, [Ltd.], Kent.

1914 Indian, 7-9h.p., 2-speed, Milford [and] Indian sidecar, disc wheels, and lu[ggage] just over 3,000 miles, full insurance until [per]fect condition; £68.—Particulars, Hicks, C[ycles], Launceston.

1914 Hendee Special, condition as new, [run]ning order, 18 gn. Milford coach [to] match, new back tyre, electric starter, dyna[mo] set; 66 gns., or exchange for Morgan.—[W.] Gilberthorpe St., Rotherham.

BLUE Indian, 7-9h.p., best Gloria side screen, and luggage carrier, lamps, s[pare] spare tyre, tools, first-class condition, Engl[ish] etter, lever control; owner going in for car; or near offer.—Box 8,027, *The Motor Cy[cle]* Coventry. (D)

INDIANS in stock.—All models for imm[ediate] livery, also sidecars to match; 3½h.p. [model] £63, and 7h.p., electrically equipped, £73 10 [model] 3 speeds and kick starter; also famous 7h.p. [model] road racer, £57.—P. J. Evans, Midland [Cycle] Agent, John Bright St., Birmingham.

Invicta.

INVICTA, 3½h.p., B. and B., spring [forks], been overhauled, stove enamelled, and [tyres] hargain, 20 gns.—S. M. Moore, Southdo[wn], South Godstone, Surrey.

Ixion.

1915 2½h.p. Ixion, 2-stroke, 2-speed, all [chain], not run 1,000 miles; a bargain, £3[5]—[W.] 91, Grange Rd., West Hartlepool.

James.

JAMES, 2¼h.p., 2-stroke, 2-speed, excellent [condition], £26.—Crabb, Broomfield, Essex.

1915 4½h.p. James, 3-speed combination [model], ready for delivery.—Parker and Son, Hunts.

JAMES Combination, 1914, 4½h.p., 3-sp[eed], lamps, Jones, Sensspray, splendid con[dition], 3,000 miles; £57/10.—Seen by appointmen[t], drop Rd., N.

JAMES 4½h.p. Combinations, 3-speed [and] chain drive, gorgeous upholstered sidecar, [com]bination £76/13; exchange or easy terms.—[Cycle] 9, Shoe Lane, London.

3½h.p. James, 1914, with Canoelet sidec[ar], chain drive, complete with lamps, Ste[wart] ometer, and all accessories; price £45.—Th[e] oble Pulley Co., West Gorton, Manchester.

JAMES, 1915, 4½h.p., 3-speed counter [shaft], clutch and kick-starter, chain drive, sidecar, with Lucas electric lighting outfit, [and] tric horn; £90/15.—Colmore Depot, 261, Manchester.

MOTOR CYCLES FOR SALE.

Rover.

ROVER, late 1914, 3½h.p., T.T. model, complete with accessories, spare belt, and tyre, very fast; £38. B X 8,055, *The Motor Cycle* Offices, Coventry. [X1204

ROVER, 3½h.p., 3-speed, 1913, and Millford sidecar, all in splendid condition, accessories included; £45. 10, Colmore Depot, 31, Colmore Row, Birmingham. [X1067

1913 3-speed Rover, in perfect order and condition, carefully used, lamp, all accessories, also wicker sidecar, Montgomery; what offers?—Bett, North Rd., Bourne. [X1324

ROVER, 1915, 3½h.p. T.T. model, with h.c. Phillipson pulley, delivery from stock, £52/10; countershaft 3-speed models 10 days, £63; exchanges or extra terms arranged.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0491

ROVERS in stock for immediate delivery; 3½h.p. 3-sped counter-shaft, coachbuilt de luxe combination, £80; 3½h.p. sporting coachbuilt combination, 68 gns.; solo, 3½h.p., with counter-shaft gear, kick starter, footboards, etc., 60 gns.; 3½h.p. sporting solo machine, with Philipson pulley, 50 gns.—P. J. Evans, sole Birmingham and District Agent, John Bright St. [8484

Royal Ruby.

1914 Royal Ruby, 2-speed, 2½h.p., excellent condition; accept £24.—Newnham, 223, Hammersmith Rd., W. [8639

ROYAL Ruby, 1914, 2-stroke, ridden 800 miles, Cowey speedometer, lamps, horn, tools; £23, no offers.—Howes, 28, Bagleys Lane, Fulham. [8532

ROYAL Ruby, 3½-4h.p. J.A.P., 70×64½ twin, side valves, ball bearing to pulley side, Sturmey-Archer 2-speed hub gear, price £42; one ditto, with overhead valves, and Jardine 2-speed counter-shaft gear, chain and belt drive, price £48.—The Royal Ruby Cycle Co., Manchester. [0704

Rudge.

1915 3½h.p. Rudge Multi, new, in stock; £58/15.—Gner's Garage, Watford. [X1162

1912-13 Rudge Multi, Montgomery sidecar, recently overhauled; £34.—21, Dunlace Rd., Clapton. [X1189

IMMEDIATE Delivery, new condition, Rudge Multi, 3½h.p., with sidecar; £45.—Abbey Garage, Plymouth. [X0051

1913 3½h.p. Rudge Multi, with new back tyre, and completely overhauled; £30.—Walker, Fishburn, Ferry Hill. [X1283

RUDGE Multi, 1913, with spring wheel coach sidecar, condition as new; £38.—69, Hanbury St., Spitalfields, E. [8580

1914 3½h.p. Rudge Multi, hand-controlled clutch, and new Watsonian sidecar; £46/10.—38, Granville St., Grimsby. [X1211

RUDGE Multi, 1914, 3½h.p., practically unused this year; £38.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. 6058 Hampstead [8623

1915 Rudge, Brooklands model, done about 800, as new, accessories; 40 gns., cash.—Corpl. Gash, Despatch Rider, Clamorgan Yeomanry, Aylsham. [8628

RUDGE Multi, 1913 model, in perfect order and condition, had exceptionally careful use, complete with speedometer, horn, lamp, etc.; £40.—The Morris Garages, Oxford. [X1276

1913 Rudge Multi, 3½h.p., perfect condition, 1915 Sun-spray carburetter, 1914 coachbuilt sidecar; bargain, £36, or near offer; separate, £29, £7.—Robert Owen, Electrician, Blaenau Festiniog. [X0768

Scott.

1913-14 Scott, Binks carburetter, fast and reliable; £35.—Hubbard, Keighley. [8635

1914 3½h.p. Scott, not ridden 1,000 miles, equal to new; £48.—Attwood, Garage, Eccleshall. [X1220

1915 3½h.p. Scott, new May, accessories, and Cowey, new condition; £62.—12, Brunswick St., City Rd., Bristol. [X1120

SCOTT and Cancelet, new Dec. 27th, 1912, 1913 frame, do 40 with passenger, lamps, horn, speedometer; best offer £45.—Watson, Haslingfield, Cambs. [X0605

SCOTT, 1914, 3½h.p., 2 speeds, kick starter, Canoelet coach sidecar, just thoroughly overhauled by makers, complete with accessories; £50.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0552

SCOTT, 1913, 3½h.p., with handsome 18 gn. coachbuilt sidecar, fitted wind screen, and all accessories, good running condition; must sell; £35, exceptional bargain; well worth £50.—J. Graham, 168, The Moor, Sheffield. [7786

1913 Scott and new Gloria sidecar, all accessories, including 3 lamps, 3 horns, 3 tubes, 2 driving suits, engine recently overhauled, everything in perfect condition; accept 55 gns.; owner enlisted.—Owen, 6, Weston Grove, Bromley, Kent. [8112

1913 Scott and Canoelet de Luxe Sidecar, Lukin automatic carburetter, and improved silencer, run only a few hundred miles, perfectly new condition, F.R.S. big lamp, and other accessories; apply quickly; a bargain.—R. N. Lall, Common Room, Gray's Inn, W.C. [8397

Singer.

SINGER, 1913, clutch model, lightweight; bargain, £25.—Midland Garage, Oxford. [X1249

IMMEDIATE DELIVERY

WE have a number of New 1915 Models, including the following actually in stock here, or ready at the Manufacturers.

B.S.A.
Model K, 4½ h.p., 3-speed.
CALTHORPE.
2-stroke, 2¾ h.p., 2-speed.
2½ h.p. J.A.P., 2-speed.
ENFIELD.
2-stroke, 2¾ h.p., 2-speed.
Model 140, 3 h.p., 2-speed.
6 h.p., coach-built combination.
HUMBER.
3½ h.p., air-cooled, 3 speeds.
INDIAN.
3½ h.p., 3-speed, and clutch.
5 h.p., 3-speed, and clutch.
7 h.p., 3-speed, and clutch.
NEW IMPERIAL.
2½ h.p. J.A.P. engine, 2-speed.
ZENITH.
3½ h.p., clutch model, Gradua gear.
4-5h.p., clutch model, Gradua gear.
6 h.p., clutch model, Gradua gear.
CANOELET.
Coach-built Sidecars from **12 gns.**
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1914 **TRIUMPH,** 4 h.p., 3-speed, and Pinnace coach-built sidecar **£55**
1911 **RUDGE,** 3½ h.p., clutch model **£25**
1912 **RUDGE,** 3½ h.p., clutch model **£29**
1912 **HOBART,** 2½ h.p., lady's model, 3-sp., and clutch **£21**
1913 **P. and M.,** 3½ h.p., and nearly new **Godiva Sidecar,** coach-built **£45**
1914 **INDIAN,** 7 h.p., clutch model, and **Flying Middleton Sidecar** **£50**
1914 **NEW HUDSON** 6 h.p. Combination, coach-built, 3 speeds and clutch, speedometer, lamps, and horn **£63**
1914 **AUTO-WHEEL,** 1 h.p., standard mod. **£10**
1912 **ROYAL ENFIELD,** 2¾ h.p., 2 speeds.. **£25**
1914 **JAMES,** 4 h.p., 3-speed, speedometer, lamps and horn, and Canoelet sidecar .. **£55**
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MOTOR CYCLES FOR SALE.

Singer.

2h.p. Singer, Druids, Bosch, reliable, smart lightweight; £11.—Toms, Catherine St., Leicester. [X1208a

SINGER, 1912, 3½h.p., 3-speed, kick-start, lamp, etc., new tyres; £30.—Laurel Motor Co., Woodford Green. [8494

SINGER and Co., Ltd., 17, Holborn Viaduct, have only a limited supply of 3½h.p. 3-speed models; prices to clear, £58; 4½h.p. countershaft 2-speed, ideal model for sidecar work, £65.—Write, call, or 'phone 13175. [0667

Sparkbrook.

SPARKBROOK Combination, 1914, 6h.p., complete with lamp, horn, spares, machine and coachbuilt sidecar, in perfect condition, always carefully used, tyres good; owner buying car; £70.—James Moffat, Yeovil. Tel.: 50. [8543

Sun.

SUN-VILLIERS, 1915, 2-stroke, mileage under 100, all accessories; £25.—Write, 12, Thornbury Av., Osterley, Middlesex. [8599

SUN-VILLIERS, 1914, 2½h.p., 2-stroke model, single gear, perfect little mount; £20.—The Morris Garages, Oxford. [X1273

SUN-V.T.S., 1915, 2¾h.p., 2 speeds, clutch, unscratched, sporting model, 2¼in. heavy Dunlops, lamps, knee-grips, and accessories, not done 100 miles; just cost £41, bargain, £34.—12a, Carpenters Rd., Lozells, Birmingham. [X1342

Sunbeam.

SUNBEAM, 3½h.p., 3-speed, actually in stock.—Davies, Garage, Barmouth. [8467

SUNBEAM, 1915, 3½h.p., 3-speed model, in stock for immediate delivery.—The Morris Garages, Oxford. [X1279

SUNBEAM, 2¾h.p., 1914 machine, but only used 300 miles, as new; bargain, £52/10.—Timberlake, King St., Wigan. [X0982

SUNBEAM, 3½h.p., late 1914, perfect; £59 nett; exchange big clutch Zenith.—Advertiser, 26, Roxborough Park, Harrow. [8646

3½h.p. 1914 Sunbeam, 3-speed, in very good condition, new lamp and generator, excellent tyres; £47/10.—Stradling, Newbury. [8375

SUNBEAM 1913, 2-speed model, purchased 1914, beautiful order; £45; deferred payments; liberal exchanges.—Lamb's, 151, High St., Walthamstow. [8457

SUNBEAM, 1914, 2¾h.p., 2-speed, clutch, lamp, horn, etc., almost as new, only used week ends; take 39 gns.—123, Queen's Rd., Finsbury Park. [X1303

1914 3½h.p. Sunbeam, splendid condition, done 2,000, Lucas lamps, horn, accessories, extra heavy tyres; 55 gns.—54, St. Gabriel's Rd., Cricklewood. [8644

SUNBEAM Agents.—Early deliveries 3½h.p. models; lists on application; exchanges entertained.—Tel.: 388. T.A.: Bicycles.—Robinson's, Garage, Green St., Cambridge. [6366

1914 6h.p. Sunbeam, with No. 5 Gloria sidecar, wind screen, spare new tyre and tube, every accessory, splendid condition; 75 gns.—Turner, 6, Birchwood Rd., St. Anne's Park, Bristol. [X1106

SUNBEAM, 1915, 3½h.p., 3-speed combination, speedometer, lamps, spares, mileage 700; cost nearly £100, accept £78, no offers; London district.—Box 8,054, *The Motor Cycle* Offices, Coventry. [X1235

SUNBEAM, late 1914, 3½h.p., absolutely as new, hand clutch, kick-starter, only done 1,000 miles, with accessories, including Lucas lamp, horn, Brooks's carrier case, mud screen, and spares; £63 complete, owner going in for car.—L. J. Fry, The Grange, Warmley, Bristol. [5200

T.A.C.

T.A.C., 7h.p., 4-cyl., coachbuilt sidecar, 3 speeds, F.E., gear box; must sell; bargain, £25, offers, trial.—Speechley, 45, Church Rd., Acton. [8678

Triumph.

1915 Triumph Junior in stock; £42.—Seal and Bull, Southport. [X1232

TRIUMPH Junior, 1915 model; delivery from stock; £42.—Below.

TRIUMPH, 1914, 4h.p., 3 speeds, and clutch, sound mechanical order; £46.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0430

1913 3½h.p. Triumph Combination, 3-speed; £45—53, Brownhill Rd., Catford. [8478

TRIUMPH, 1915, not done 10 miles, 3 speeds; £58.—Midland Garage, Oxford. [X1247

DECEMBER (1913) Triumph, 3-speed, new condition, £13 sidecar.—Chaplain, Prison, Hull. [X1160

JUNIOR Triumph, 1915, unused; £44.—Glenwood, Granville Rd., North Finchley. Tel.: 361. [8443

1910 Triumph, in very good condition; £20.—Barraclough, Dalemoor, Thornton, Bradford. [X1115

TRIUMPH, 1914, 4h.p., 3 speeds, new condition; bargain, £44/10.—Stevens, Yexhill, Lincs. [X1072

3½h.p. Triumph, semi T.T., splendid condition throughout; sacrifice £24.—B. B. Ames, Wisbech. [X1265

MOTOR CYCLES FOR SALE.

Triumph.

TRIUMPH, 3h.p. (1906), new Splitdorf mag., recently enamelled; photo; £10.—248, Bentley Rd., Doncaster. [X1271

TRIUMPH, 1911-12, 2-speed, excellent condition throughout; £34.—Harrison, 53, Meersbrook Rd., Sheffield. [X1246

TRIUMPH 1913 T.T. Roadster, type E, Cowey, new, 1,643 miles, cost £61.—Merrick, 130, Doncaster Rd., W. [8624

TRIUMPH, 1912½, free engine, clutch model, Cowey speedometer; £30, offers wanted.—21, Packington St., Islington, N. [8552

TRIUMPH, 1914, 4h.p., and Gloria coachbuilt sidecar; £55.—Baines, 592a, Liverpool Rd., Irlam, near Manchester. [8535

TRIUMPH, 1912, 3½h.p., clutch, Philipson pulley, lamps, etc., good; £30.—Gray, Laurel Cottage, Woodford Green. [8495

TRIUMPH Junior, immediate delivery, no premium. —Adelaide Motor Co., 84, Chalk Farm Rd., N.W. 6058 Hampstead. [8622

3-SPEED Triumph and Sidecar, cost £80 August 13, little used; £48; beautiful lot.—Leighton's, Wood Green Station. [8529

TRIUMPH, 1914, 4h.p., 3-speed, Gloria coachbuilt sidecar, done 2,000; £62.—G. E. Strawbridge, 74, High St., Wealdstone. [8589

1911 Triumph, clutch, speedometer, lamp, horn, wicker sidecar, good condition; £28.—Grisby, London Rd., Kingston, Surrey. [8551

TRIUMPH, 1911, clutch, waterproof mag., T.T. Roadster handle-bars, topping condition; £24.—"Elliswicke," Aylsham, Norfolk. [X1301

TRIUMPH, 1913½, 3-speed gear and clutch, with cane sidecar, speedometer, and lamps, fine order; £42. —Collyer, 313, High Rd., Wood Green, N. [X1043

TRIUMPH, 3½h.p., 3-speed gear and clutch, £12/12 Bramble sidecar, accessories included; £37.—Colmore Depot, 31, Colmore Row, Birmingham. [X1070

1914½ Triumph, 4h.p., Gloria cane sidecar, 3-speed, cyclometer, lamps, spares, splendid condition.—Osborne, 177, New Park Rd., Brixton. [8525

TRIUMPH, semi T.T., 3½h.p., late 1913, F.E., done 2,500 miles, lamp, horn, Jones speedometer, condition, new; £40.—Yardley, Rowington, near Warwick. [X1176

TRIUMPH, 2½h.p., mag., B. and B., tyres and tubes sound condition, first-class running order; for immediate sale £16/10.—Holyoake, 92, Battersea Rise, S.W. [X1149

1910 F.E. Triumph and Sidecar, 2 speeds, decompressor, automatic lubricator, speedometer, just overhauled; £28.—Embroidery Works, Letchworth, Herts. [8610

TRIUMPH, 1913, standard model, with Brampton 2-speed gear, tyres almost new, perfect condition, lamp, horn, etc.; £30.—The Morris Garages, Oxford. [X1275

1911¾ 3½h.p. Triumph, N.S.U., 2-speed, perfect condition, splendid sidecar machine; sell £28, or exchange 1912 Scott.—Renshaw, 229, Rochdale Rd., Oldham. [X1289

1909 Triumph, 3½h.p., overhauled, re-bushed, re-magnetised, splendid condition, Whittle, nearly new Avon back; £20.—Holt, Albert St., Brierfield, Burnley. [X1223

1914½ 4h.p. Triumph, clutch, 3-speed model, with coachbuilt sidecar, done 1,800 miles, new condition, not scratched.—7, Turner St., Higher Broughton, Manchester. [X1045

1913¾ Clutch Triumph, almost as new, excellent condition, very little used, accessories; exceptional bargain, £37, or near offer.—A. Sealey, 88, Princes Av., Watford. [X1210

TRIUMPH, late 1914, clutch model, as new, been stored since Xmas; owner wounded, perfectly tuned, lamp, tools, etc.; £45 cash.—Box 8,053, *The Motor Cycle* Offices, Coventry. [X1243

1914 Triumph, 4h.p., 3-speed, Kempshall tyres, Brooks saddle, condition engine and gear guaranteed perfect, £44; with Mills-Fulford sidecar, £51.—Robinson's Garage, Green St., Cambridge. [6864

3½h.p. Triumph, fitted with 1915 engine in June, new Helsby tyre on back, front tyre good, new belt, not ridden since new engine fitted; £35.—Box L905, *The Motor Cycle* Offices, 20, Tudor St., E.C. [8398

TRIUMPH, 1912, 3½h.p., Millford wicker, converted to Sturmey 3-speed July 23rd, 1914, J.S. hub, all back new, including tyre, Pedley, Dunlop inner, cost £15/19; take £38.—Wood, Hairdresser, Wilmslow. [X1036

1914 Triumph, 4h.p., 3-speed, 1914 Millford Empress sidecar, new P. and H. lamp set, Lucas rear and horn, 2½ Stelastic back tyre, perfect condition, enamel and plating as new; £55.—Lieut.-Commander Kiddle, R.N. Barracks, Devonport. [8431

TRIUMPH, 1911¾, free engine clutch, standard model, just overhauled, new Stelastic back, Palmer front, all spares, with Hutchinson cover, tube, and belt, all new, with wicker sidecar, all in splendid condition; any trial; bargain.—Bransby, 2, Swetenham Place, Plumstead, Kent. [8468

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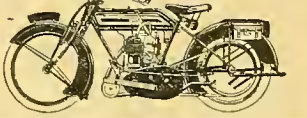

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Enfield, 3 h.p., 2-speed, lightweight	50 gns.
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A.J.S., 6 h.p., 3-speed, twin	£79 5
A.J.S., 6 h.p., 3-speed, twin, and Sc.	£96 15
Norton, 3½h.p., T.T. Special	£50 0
Norton, 4 h.p., 3-sp., coach Combin.	£80 0
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Triumph, 2¾h.p., 2-speed, 2-stroke.	£42 0
Calthorpe, 2¾h.p. J.A.P., 2-speed	£34 13
James, 2¼h.p., 2-speed, 2-stroke	£36 15
James, 3½h.p., 3-speed, twin	£63 0
James, 4¼h.p., 3-speed, Big Single.	£63 0
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VELOCETTE.—New 1915 models in stock: Model A £27; model D, 2-speed, chain drive, £35 10 model DL (special open frame, lady's), £36-10, the most economical lightweight.—The Premier Motor Co., Aston Rd., Birmingham. [8

Victoria.

1913 3¾h.p. Victoria, fixed gear, new back tyre, completely overhauled; £26.—Walker, Fi-bbar Ferryhill. [X12

Vindec.

VINDEC Special, 5-6h.p., sidecar; exchange light weight and cash; £22/10.—Shipley, Fochaber [842

Werner.

2¾h.p. Werner, mag., just overhauled, guaranteed order; £12, or exchange for Auto-Wheel with cash adjustment.—18, Bellevue Gardens, Clapham Rd., S.W. [X125

Williamson.

8h.p. Williamson, Douglas engine, Canoelet sidecar hood, wind screen; £39/10, bargain.—9, Waldecra Rd., Teddington. [85

WILLIAMSON New 1914 Sidecar Combination, late delivery; reduced price £94; exchanges quoted.—Motories, 68, Horton St., Halifax. [0

WILLIAMSON, 8h.p., late 1913, w.c., clutch, speed, Douglas engine, just overhauled by maker coach sidecar, lamp, spares, tools; too powerful owner; £55, bargain.—Kirkby, 3, Moreton St., Strangways, Manchester. [X10

White and Poppe.

3½h.p. White and Poppe and sidecar, Bosch mag., and B. carburetter, Millennium 2-speed grand puller, engine thoroughly overhauled recently £20.—Clark, Garage, Long Melford, Suffolk. [84

Win-Precision.

WIN-PRECISION (Dec., 1912), 4½h.p., Millford sidecar, free engine, Roc 2-speed, £10 spent overhauling; £27/10.—Seen, Mylan, Station Approach Streatham. [86

Wolf.

1915 Wolf Combination; £35; fully equipped. Winifred Gowder, 895, Fulham Rd., S.W. [83

WOLF, 1914, 3½h.p., brand new, 3-speed hand handle starting, chain drive; a sacrifice, £43 Midland Garage, Oxford. [X12

WOLF-J.A.P., 2½h.p., 2-speed gear, hand clutch kick starter, actually in stock; 34 gns.—Hunt bridge, 133, Sloane St., London. [X12

Wooler.

1915 Wooler, 2-stroke; £35.—Westend Garage Hereford. [X12

Yale.

YALE Motor Cycle in stock, 6h.p., 2-speed, kick start £59/10.—Jones, The Broadway, Muswell Hill Sole agent for N. London, trade and retail. 'Phone Hornsey 2562. [76

Zedel.

2¼h.p. Zedel Lightweight, brand new, ridden about 100 miles, splendid machine, climb any hill cost £32 without accessories; sell all on £24.—4 Whitehorse Rd., Thornton Heath. [82

Zenith.

ZENITH 1913 Combination, 8h.p. twin, mag.; quick sale, £45.—1, Ebner St., Wandsworth. [X1

ZENITH Gradua, 3½h.p., 1912, wicker sidecar, excellent condition; £30.—Morris, Loddon Vicarage Norwich. [X1

ZENITH, 1912, 3½h.p. J.A.P., Gradua gear, excellent condition throughout.—P. J. Evans, 87 Bright St., Birmingham. [8

1913¾ 6h.p. Zenith, coach sidecar, £48; 1914 slightly soiled 7h.p. 3-speed F.N., £68.—Brighouse Motor Agency, Bailiffe Bridge. [X0

ZENITH-GRADUA, 1913, in absolutely spotless condition; 38 gns., very great bargain.—Julian, 81 St., Reading. 'Phone: 1024. [0

ZENITH-GRADUA, 1913, 3½h.p., very powerful fast, faultless condition, accessories; £35.—Johnston, 58, Park Rd., Colliers Wood, Merton. [8

1914 Zenith, Gradua gear, 3¾h.p. w.c. Green precision, exceptionally fast, and in splendid condition; £40.—Lister, Lazenby, Eston, Yorks. [X1

ZENITH-GRADUA, 1914, 6h.p., new condition, underslung sidecar; £45, bargain; trial, seen time.—29, St. Leonards St., Bow, near Bow Bridge [8

3½h.p. Zenith-Gradua, 1913, with sidecar, all accessories, carefully used, in exceptionally good condition; £40, nearest.—Harris, Lexden Gardens, Fitzhall Vue, Shrewsbury. [X1

ZENITH, 1914, 4-5h.p., model D., clutch, with Gradua torpedo sidecar, 3 fine lamps, speedometer, mach in perfect order; £60; French grey finish.—C. Alder Watchmaker, Shrewsbury. [X1

ZENITH, 1912¾, 8h.p., Gradua gear, in perfect order, new Kempshall back cover and tube, complete with accessories; £37/10; owner on active service.—4, Crownstone Rd., Brixton. [

THE MOTOR CYCLE
ESTABLISHED IN 1903
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Experienced Men on Home Defence.

DURING our experiences in recruiting motor cyclists, we find that there is much discontent among practical men attached to home battalions, by reason of the fact that novices with little or no military experience are sent to the Front. We publish a letter in this issue which is typical of many we are constantly receiving, but which, unfortunately, we are unable to deal with. Another complaint is from men who have been on active service since the beginning of the war, and who as the months flit by see less and less chance of being sent to the Front. Some of the complaints come from men attached to foreign battalions, a number of which are on coast defence.

Now there is some reasonable ground for discontent among experienced men, many of whom have given their time, even previous to the outbreak of war, to making themselves proficient military motor cyclists, and yet are forestalled by men who possibly have only decided to join the Colours since Christmas. But the matter is too momentous to be considered individually. It would upset the whole army scheme were a reorganisation, as some suggest, to come into effect. In our brief experience as recruiting agents it has been only too clear to us that some men expect their personal preferences to have consideration. Many, for instance, specifically ask for positions on home defence; others go out of the way to enquire if they are likely to be in any point of danger at any time; others admit that they are too nervous to stand the racket of constant gun fire, yet on the other hand we have men on home defence bemoaning their fate that they cannot get to the Front. And these are the men, who, by reason of their willingness, nay keenness, are likely to make the best soldiers. It is obviously impossible to interrogate every soldier singly as to whether he would like to stay at home or go to the Front, and break up a battalion to form a foreign service regiment. Therefore, we appeal to those patriotic motor cyclists, sportsmen as they are, to bear their fate with equanimity, supported by the knowledge that they are serving their King and Country no matter where they chance to be.

Complete Motor Cycles.

A FEW years ago a campaign was launched in the English press on the desirability of marketing cars complete and ready for the road, *i.e.*, equipped with all the necessary adjuncts which it becomes a nuisance to the new owner to be continually providing. Of late it has been regular practice in the car world to supply vehicles fitted up complete with lamps, horn, tools, and all other necessary impedimenta for a tour of any length. Such a policy in connection with motor cycles has been urged in this journal on divers occasions, and a good number of firms have been quick enough to realise the wisdom of offering a completely equipped machine to a prospective buyer. But many manufacturers do not seem to realise that when a sale has been effected the owner is doubly thankful to have been relieved of the petty worries and expenses connected with selecting suitable articles for attachment to his machine. This is only natural, as accessories offered for sale are usually of standard design, and it is obvious that they cannot be applied to any make of mount with the same ease and grace, and the man who should know the best size, design, and shape of fittings to be applied to a machine is the designer of the machine itself. Why should a buyer have to disturb his front wheel to fit a speedometer, and scratch the plating by fitting a lamp and horn which ten to one do not fit without special padding? If manufacturers were to pay a little more attention to this recommendation of complete machines, they would be bound to benefit, and we should see less of the unsightly horns and lamps fitted in a place for which they were never intended and altogether out of proportion to the mount on which they are used.

An index to the advertisements in this issue will be found on the page facing the back cover.

RACING IN NEW ZEALAND.

Results of Recent Meetings in Various Parts of the Dominion.

Manawatu Motor Cycle Club.

THE Manawatu Club's race meeting was conducted at Woodville on April 28th, but rain curtailed the programme to three races, which resulted :

OPEN HANDICAP, FIVE MILES.—P. Coleman (7 Indian).

OPEN HANDICAP, SEVEN MILES.—Osgood (2¾ Douglas).

OPEN HANDICAP, TEN MILES.—R. Jones (2¾ Matchless).

Marton and Rangitikei Motor Cycle Sports Club.

The above-mentioned club held a race meeting at Marton on April 15th, when there was a large attendance of spectators. The events, which were run off on a grass track, resulted as follows :

NOVICE HANDICAP, FIVE MILES.—Franche (7 Indian).

OPEN HANDICAP, TEN MILES.—P. Coleman (7 Indian), scratch.

350 C.C. CHAMPIONSHIP, FIVE MILES.—J. Dawber (2¾ Douglas).

OPEN HANDICAP, FIFTEEN MILES.—P. Coleman (7 Indian).

LIGHTWEIGHT CHAMPIONSHIP, FIVE MILES.—J. Dawber (2¾ Douglas).

3½ H.P. CHAMPIONSHIP, TEN MILES.—R. Jones (3½ Rudge).

Times are not given, as it is stated that the times of some of the events were taken wrongly. In other respects the meeting was carried out very efficiently.

Wanganui Motor Cycling Club.

The Wanganui Club held a race meeting at Wanganui on April 22nd, when several events were run off. Results :

SIDECAR RACE, THREE MILES.—Townsend (6 Royal Enfield), scratch. Time, 5m. 16s.

PRIVATE OWNERS' HANDICAP, FIVE MILES.—Cunningham (7 Indian). Time, 6m. 49⅕s.

NOVICE HANDICAP, FIVE MILES.—V. Creswell (2¾ Douglas). Time, 8m. 49s.

OPEN HANDICAP, TEN MILES.—V. Creswell (2¾ Douglas). Time, 12m. 7⅗s.

LIGHTWEIGHT CHAMPIONSHIP, FIVE MILES.—Healey (2¼ New Hudson), 150s. Time, 7m. 14⅕s.

WANGANUI 3½ H.P. CHAMPIONSHIP, TEN MILES. — A. Anderson (3½ Triumph). Time, 10m. 52⅕s.

CONSOLATION HANDICAP.—Goldsmith (3½ Royal Ruby).

The surprise of the day was the winner of the Novice Handicap and the Ten Miles event—V. Creswell (2¾ Douglas). This rider was only sixteen years of age and these were his first races.

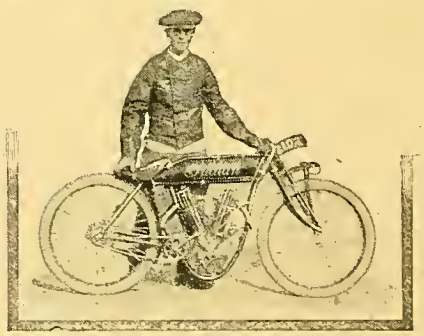
Napier Motor Cycle Club.

A very successful meeting was conducted by this club at Napier on Easter Monday on the racecourse, which was in good order and free from ruts. There was a large attendance, and the gathering was a decided success in every way. Results :

NOVICE HANDICAP, FIVE LAPS.—Limbrick (7 Indian), scratch. Time, 8m. 14⅗s.

OPEN HANDICAP, FIVE MILES.—R. Jones (2¾ Matchless), 65s. Time, 6m. 30s.

LIGHTWEIGHT CHAMPIONSHIP, FIVE MILES.—R. Jones (2¾ Matchless). Time, 6m.



Jack Booth, the Australian rider, whose name is nearly as familiar, by reason of his speed achievements, at home as in Australia where his records are made. His latest and best performance is that of covering half a mile on his 7 h.p. Indian at a speed of 83.33 m.p.h. This is claimed to be the fastest time ever achieved by any form of motor vehicle south of the Equator.

HANDICAP, TEN LAPS, FOR 4 H.P. AND UNDER.—A. Nash (2¾ Douglas), 200s. Time, 14m. 57s.

HEAVYWEIGHT HANDICAP, FIFTEEN MILES.—P. Coleman (7 Indian), scratch. Time, 15m. 42⅗s.

OPEN HANDICAP, FIFTEEN LAPS.—R. Jones (2¾ Matchless), 240s.

SIDECAR HANDICAP, TWO LAPS.—L. Limbrick (3½ B.S.A.), 10s. Time, 4m. 4s.

OPEN HANDICAP, EIGHT LAPS.—S. Mason (2¾ Douglas), 250s. Time, 12m. 11s.

SIDECAR HANDICAP, EIGHT LAPS.—Boag (7 Matchless), 60s. Time 14m. 8s.

3½ H.P. CHAMPIONSHIP, TEN MILES.—R. Jones (3½ Rudge). Time, 10m. 46s.

SIDECAR HANDICAP, FIVE LAPS.—Arnold (4¼ James). Time, 9m. 15s.

CONSOLATION HANDICAP, FIVE LAPS.—J. Boucher (3½ Rudge), 35s. Time, 7m. 26s.

The Pioneer Motor and Sports Club.

This club held two races on New Brighton Beach on May 22nd. Results :

OPEN HANDICAP, EIGHT MILES, SOLO.—G. Moffatt (3½ Triumph), 1m. Time, 8m. 27s. Fastest time was made by G. B. Brown (4 Triumph) in 8m. 25s.

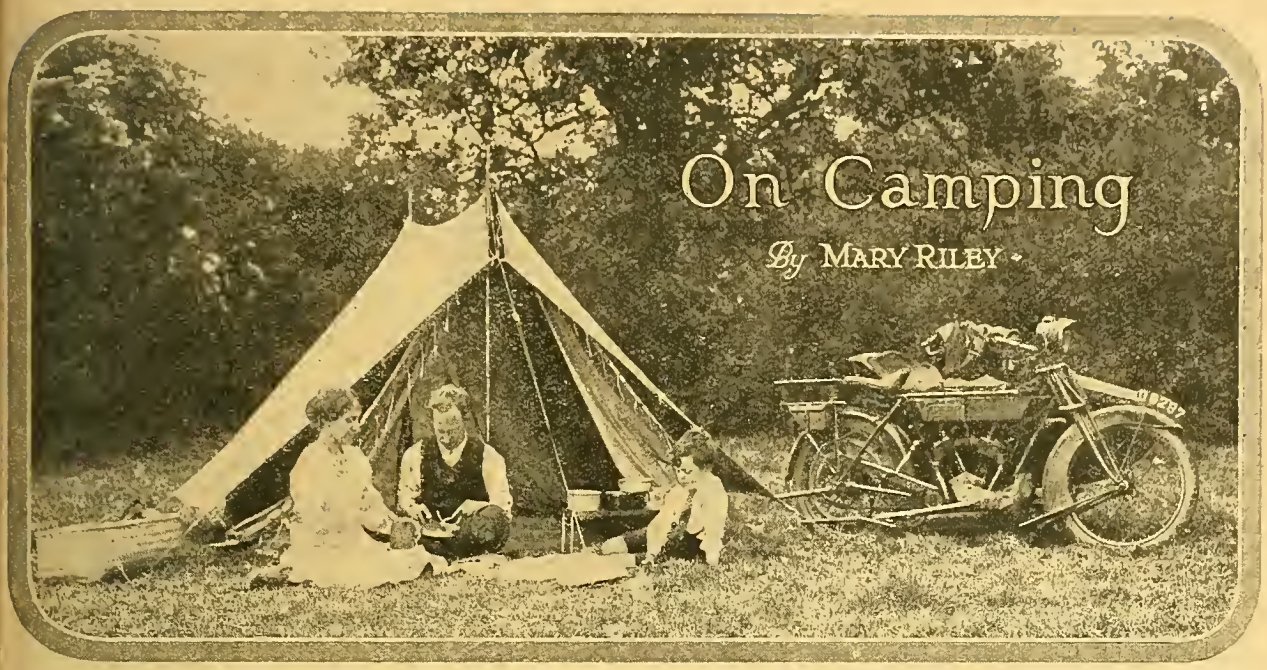
OPEN HANDICAP, SIXTEEN MILES, FOR SIDECAR.—F. Thomas (3½ B.S.A.), 2m.

Christchurch Riders aid Charity.

At a big carnival held at Christchurch during April in aid of the British and Belgian Relief Funds the Pioneer Motor and Sports Club held a tilting-at-the-ring event, which was won by A. Woodham (2¾ Douglas) in 17⅖s. Several decorated sidecar outfits took part in the procession and excited much admiration, a decorated Triumph outfit as a schooner coming in for particular mention. Several members of the club treated the public to short spins in their sidecars at sixpence a head, the proceeds being in aid of the fund.

HAMPSTEAD VOLUNTEER RESERVE.

MOTOR cyclists residing in Hampstead and neighbourhood, who being ineligible for military service have not yet been able to find scope for their patriotic energies, might do worse than place themselves and their machines at the disposal of the Hampstead Volunteer Reserve forming part of the Hampstead Battalion of the North London Volunteer Regiment. The corps has some 400 active members, and excellent headquarters at the Drill Hall, Hollybush Vale, opposite the Hampstead Tube Station. By permission of the Grand Duke Michael it makes use of the grounds of Kenwood for field practice, and the range of the Mansfield Rifle Club. Motor cyclists who are under nineteen years of age, or who, if of military age, can show sufficient reason for not enlisting in the regular forces, are invited to qualify themselves for assisting the corps in mobilising on emergency. Full particulars can be obtained from Adjutant Mr. Thomas Hancock Nunn, the Drill Hall, Hollybush Vale, Hampstead, N.W.



On Camping

By MARY RILEY.

THERE are many things to be considered with reference to camping, but the main requirements of the outfit are simplicity and lightness. Do not burden yourself with unnecessary luggage, have all cooking utensils made of aluminium, and to nest as far as possible. For instance, the plates and frying pan fit on to the bottom of the saucepans, while the saucepans in their turn nest into one another, and the Primus stove, being detachable, goes nicely into the top saucepan. The spanner for the stove also makes a handle for all the saucepans and frying pans. The enamel cups may have their handles sawn through at the bottom, which enables them to nest nicely, and enamel is much better for hot drinks, as aluminium holds the heat to a remarkable degree and burns one's mouth very easily. Do not carry a teapot—use an aluminium tea infuser and make your tea in the saucepan.

Sleeping Arrangements.

Many campers are lost to the sport because they do not understand how to sleep at night. The most miserable thing I know of in camp life is to be cold at night—it is impossible to sleep when cold—many people think if it is nice warm weather anything will do for covering at night time. This is a great mistake; you may make many shifts during the day, but you must have sufficient and proper clothing for the night. After ten years' experience we find sleeping bags made of pyreenese the warmest. Some campers do not undress, but this is a practice to be condemned—it is neither restful nor healthy. Undress and use a warm sleeping suit of light texture. Next get into your sleeping bag; a blanket and eider-down quilt for covering will, I think, be found quite enough. Be sure and have blanket and quilt well pegged down at the corners, then your partner will not rob you in the night. The quilt supplied by the Camping Club is made with a 12in. valance for that purpose.

If they follow out these suggestions I am sure intending campers will have restful nights (after the first one).

The whole outfit costs about £5, and may be purchased from the Amateur Camping Club, 4, New Union Street, Moorgate Street, London, E.C., or may be made by oneself. It is, however, advisable to join the club in any case.

Asking the farmer for permission to camp—a request readily granted. The picture incidentally shows how the complete kit is carried on the sidecar grid.

On Camping.—

The cost of the kit will not be excessive when one considers the pleasure derived from camping and the cheapness of it. It is possible to save the cost of the outfit on your first holiday. As an instance, my husband, little boy, and myself went for a camping tour in Scotland. We met with the greatest hospitality everywhere, but, unfortunately, we were one night late getting a suitable camp site, so decided we would get a bed if possible. This, with a plate of porridge each but no breakfast, cost us 10s. Now when you consider that charge and our ten day tour which cost us only £5, including petrol and lubricating oil, camping certainly shows to advantage.

When on tour we find no difficulty in packing the whole outfit for three people in a basket, which is strapped on the carrier of the Enfield combination. For a tour where clean clothes are necessary a smaller basket put lengthways in the sidecar makes a suitable seat for the boy, and is well away from all dust.

Our tent was designed by my husband and made by myself at a cost of 38s. It is 7ft. long, 5ft. 9in. high, and 6ft. wide, with 12in. eaves and 10in. porch at either end. These tents are very light; ours weighs 5 lb. It is necessary to pitch on the leeward side of the hedge, and always choose a good thick one.

The cuisine. Mrs. Riley is holding three plates, three frying pans, four saucepans, and a Primus stove. There is a milk can on her left arm, and wash basin and three-gallon bucket on the ground in front. At the back is the range, which keeps three pots boiling at the same time. The whole packs flat, and weighs very little indeed.

What to Avoid.

Remember not to pitch under trees. It is very nice in fine weather, but when it rains one gets all the droppings, which often keep one awake after the rain has ceased. And do not pitch in the same field as cattle for, if there is a horse grazing, no matter how large the field, he will want the bit of grass nearest the tent and he generally chooses the middle of the night in which to graze round about. Calves also are most inquisitive; they will come very cautiously up to your tent, look seriously at you with their big eyes, and if left alone will chew at the guy lines and uproot the pegs, and the whole thing will collapse. They are most persistent; no matter how many times you drive them away back they come, and you do not want to stay up all night driving cattle away. But the worst offenders are pigs. They neither eat the grass around nor go in one door and out the other as sane animals ought to, but go straight through the sides, tearing and spoiling everything.

Unwelcome Visitors.

Once I camped where they had litter at large on the farm. I had no doubts about those little pigs, and told the farmer so, but he said he did not think they would come near us. As we were going out for a short spin before lunch, I decided to leave both ends of the tent open, so that in the event of a visit they would go in one end and out the other if they chose. I carefully put all eatables in the baskets and closed them down. What I did not bargain for was that they first chewed the baskets away and got at all the food, and I can assure you they did not leave much, and their behaviour was truly pig fashion, for they went straight through the side of the tent, making a complete wreck of it, and on their way out found the soap and ate every bit (if lately the bacon of any motor cyclist has tasted

Afternoon callers—two varieties.

On Camping.—

not soapy he will now know the cause). They had gone when I got back, but they paid me another visit in the afternoon while I was resting. What fun those pigs had with me when I drove them away! They just squealed and careered around the field, coming back again and again.

To conclude, I must tell you a little story of what happened to some friends of ours. These friends had had a fixed camp all the summer, the husband going to business every day and returning at night. When they at last returned home late in the fall and slept in a bed, of course it was all very strange. The husband woke in the night and cautiously felt around: put his hand out of bed; he could not feel any ground. Then he woke his wife and whispered in a very low tone, "Maggie, dear, don't move; we have camped on the edge of a precipice."

The Simplest Form of Electric Lighting.

Low Candle Power Electric Head Lights from Primary Batteries.

THE production of an ample illumination from primary batteries in an electric head light of the low candle power variety, and its upkeep on an inexpensive basis, depend upon four main factors: The efficiency of the bulb and its power, the battery and its capacity, the actual type of the head light itself, and, in relation to the design of the lamp, the extent to which projection, focus, and reflection are utilised.

The power and the efficiency of the bulb constitute two of the chief agencies in the production of a brilliant light, and need to be considered closely in conjunction with the second factor, the battery capacity. As dry batteries of even heavy capacity are not capable of giving reasonably long life if the discharge rate exceeds 0.4 amp., it follows that a bulb for use with such a battery should have an efficiency at not more than one to one and a half watts. The well-known pocket lamp screw bulb of 2½, or 3½ volts, with the S-shaped metal filaments arranged at right angles to the plane of the bulb cap, consumes on an average approximately .25 to .3 amp., so that it is easily possible to obtain with these bulbs a light intensity of one candle power from a two-cell battery, and almost twice that intensity with a three-cell battery. For all ordinary purposes a bulb of this type in the 2½ volt .3 amp. series will, therefore, be quite suitable, and for night country riding the light from one of 3½ volts will be found ample if a suitable projecting lens is used.

Dry Batteries.

The necessity for keeping all accessories within limits somewhat restricts the capacity of a dry battery. Here it should be pointed out that, with the same current consumption, the greater the number of cells and higher electro-motive force, the stronger will be the current and greater the light, but the smaller will be the actual capacity. It is, therefore, desirable to use a battery with the least number of cells consistent with a sufficiency of light.

The small pocket lamp batteries are very useful as spares, etc., but otherwise are unsuitable.

Experience with several kinds of dry batteries has proved that, for all round excellence, those used for hand lamp refills are ideal for the purpose. Among these may be mentioned those of the Volex series and the somewhat larger Hellesen Flash. The writer had in use for over five months a 2½ volt Volex Rear-light battery, which gave about 70-75 hours' light before becoming exhausted. In the 4-volt class of the same size is the Volex Handy, but having three cells its capacity is somewhat less, although it is capable of generating a stronger current. The Hellesen Flash and the Volex Giant and Aero are of still heavier capacity, but when fresh, and where there is much vibration, they should be used with a strong (preferably 4-4½ volt) bulb.

Focussing the Beam.

The actual design of the head light is to a great extent in the hands of the manufacturer, and is practically limited to the types placed on the market. The construction of a good lamp, however, should embody perfect insulation in respect of the machine and lamp, good projection and focus, and should allow for as much reflecting surface as is possible to obtain for its size. A very successful experiment was that in which an old oil lamp of the King of the Road pattern was employed. The reflector was replaced by a china screw lamp holder, fixed so that the plane of the bulb filaments was vertical, and the wick holder was removed to allow of a small vulcanite switch-board, on a rubber plug, being inserted in the oil well. The switch was thus invisible, and the point of illumination was found to be in correct focus with the lens—one of the ordinary double convex form common in these lamps.

The body of the lamp itself can be made to form its own reflector, if parabolic in shape, and will, to a great extent, act as a projector. In some cases advantage can be obtained by enamelling the inside of the lamp a glossy white, but, whatever be the form, a good clear front lens is a distinct improvement on the front of plain glass.

Focus is entirely a matter for experiment, so that it is extremely useful to have some ready form of adjusting the focus. It should be remembered that the nearer the point of illumination to the focus of the lens, the longer and narrower will be the ray of light produced, and *vice versâ*. Care should be taken to ensure that the light is fixed exactly in the focal plane of the lens, *i.e.*, in a line with the centre of its thickest part.

A good waterproof conductor, enabling the battery to be carried anywhere on the machine, can be quickly made by stripping a piece of ordinary flexible insulated electric light cable of its silk covering; and the portion of the battery case which is touched by the terminals can be lined with a piece of old cycle tyre, which will materially assist in the prevention of leakage through wet.

H.W.H.

Quality in Two-strokes.

I remarked some months ago that the quality of various makes of baby two-strokes differs more than the general public suspect, and hinted that a trial run of two or three fancied makes was essential as a preliminary to purchase in this class, unless very reliable evidence can first be secured from a friend. I have owned and driven a good many brands, and not long ago I tumbled into a pitfall, and bought a dud. Its principal defects were violent vibration, ascribable in equal proportions to an ill-balanced engine and a badly designed frame, and rapid wear of the engine bushes, due to a crude oiling system.

Slow Running on Free Engine.

The huge popularity of the sidecar and the universality of free engines and variable gears have led the average motor cyclist to feel a little dissatisfied with the slow running of his engine. Whereas a car engine can be throttled down to tick over without vibration or noise when the vehicle is stationary, the slowest speed of the average motor cycle engine is distinctly on the high side; it is accompanied by a good deal of noise and not a little vibration, the result being that riders do not run their machine on free engine for a second longer than is inevitable. In part, this slow running coarseness is intentional on the part of responsible designers. They realise that, if a single-cylinder motor cycle engine could ape the running of a Rolls-Royce on free engine, users would let the engine run for five minutes at a time, and that this usage would be disastrous for an air-cooled engine fitted to a stationary machine. In part, too, the motor cycle approximates rather to the sporting or semi-racing type of car engine than to the roadster type; it is designed for a very high power output in proportion to its cubical capacity, and there is a consequent sacrifice of refinement; the engines of the majority of sporting cars cannot run very smoothly, inaudibly, or slowly, when throttled down.

The Future.

Nevertheless, we are entering a new era in the history of the sport and industry. Only a small percentage of modern owners clamour for super-efficient engines; the general public want a refined engine of medium efficiency and great durability, depending on an emergency bottom gear ratio for stunt hill-climbs, and they neither desire nor expect 60 m.p.h. all out on top gear. Moreover, riders are becoming more intelligent. Only a fool is likely to run an air-cooled engine with the machine stationary for more than a moment or two, and, if the fool is still with us, he is in the minority, and the trade can at last afford to deal faithfully with him and charge him for repairs necessitated by his criminal idiocy. So the slow running problem can be tackled. It is intolerable that the starting-up of our engines should annoy everybody within 200 yards: that we shoul have to hustle with red and shamed faces to scrambl aboard and get the noxious disturber of the peac removed from the locality as swiftly as possible. have a vision. I see the air-cooled sidecar outfit o say, 1917 A.D. It has a proper automobile carbu etter, equipped with a wee auxiliary vaporiser—ca it pilot jet, by-pass, or what you will—on which th engine ticks over at less than 100 r.p.m. It is s excellently balanced that the engine can run wit perfect steadiness at this speed—perhaps there ar two horizontally-opposed cylinders and an externa flywheel of large diameter. It is sufficiently we silenced to prevent the exhaust of the whiffs of ga inhaled *via* the pilot jet from resounding thunderousl over a tenth part of the area of the town; I do no mean that it is silenced to death, for a good sportin car will run silently on its pilot jet with an absolute open exhaust, provided the clearance passages ar large enough. It is accurately lubricated, so that even at very low engine speeds, oil films are main tained throughout the engine. It has improve cooling, possibly by the use of Harcourt radiators As a consequence of these advances, the starting up of a sidecar engine creates no more excitemen in a public street than the pull-up of the starting-handl of a six-cylinder car; people do not stop, stand, an stare for a quarter of a mile in each direction; n windows are flung up by nervous spinsters; no childre rush tearfully to their mammies. The rider does no blush and scramble. He dons his gloves in leisurel fashion, and eventually mounts the saddle withou creating the impression that he is a public nuisanc detected in an ungentlemanly action.

Fixed Carburetter Adjustments.

During the current year I have received compara tively few complaints of bad delivery tune; when suc letters have been received they have usually ha reference to the carburetter setting. I think the trad is now spending more pains on this very vita adjustment. Until the last year or so it was stupidl taken for granted that all the engines of a batch wer identical, and that perfect carburetter adjustmen could be attained by selecting a given size of jet an choke tube (if any) for all the carburetters. It wa a silly notion, for the trade was well aware that ever now and then the bench tester or a road tester woul send word in to the running shed manager, "Engin No. 9697 is a particular hot 'un: may we fit anothe to Mr. X——'s machine, and keep 9697 for the T.T or the Six Days," as the case might be; and the olde hands can hardly have forgotten how one or two firm measured the 2¾ h.p. De Dion with micromete gauges, analysed most of its parts, and unblushingl copied it as closely as they could without procurin the same efficiency. A vital element in the varyin

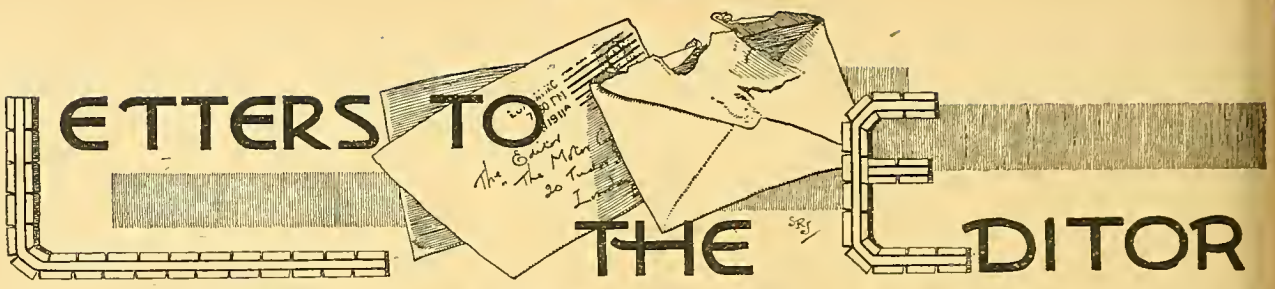
ccasional Comments.—

fficiency of apparently similar engines is the degree f air leakage past the valve stems; and there are any other details in which "must go" and "must ot go" gauges permit slight variations. Maximum nd minimum gauges are not always used on the repe- ition parts turned out by the thousand for carbu- etters: even when they are used, divergences are in- vitable. The sum total of all these minute diver- encies in engines and in carburetters suffices to render standard jet size, choke tube size, and petrol level bsolutely unsatisfactory; so the modern maker mploys the personal factor, and instructs his road esters to put the finishing touches to the setting by ctual experiment on the roads surrounding the fac- ory (less frequently, the bench testers essay the job). Here he is up against a fresh difficulty. Expert esters were not numerous in peace time, and the ream of that noble army is now in Flanders. So the rivate user can hardly wonder if the carburetter djustment of his new machine is not always supremely erfect.

Toolbag Sizes.

I believe the time has come for manufacturers to ncrease the size of their toolbags a little. I know ny friends are rather inclined to jeer at the amount f kit I carry—"what's your latest pantechnicon?" s a salutation my cronies often hurl at me; but, as a ournalist on whose shoulders the report of an event nay often hang, I must make sure of getting there, nd so I never stint my outfit. As our machines be- ome more complex they gradually clamour for a arger stock of spares. Last week, for example, I ondered which of two machines should carry me ver a 750 miles jaunt, and I was unwilling to strap nore kit on to the carrier than was inevitable; it is lways desirable to squeeze the mechanical outfit into the pannier bags, leaving the carrier top free for lug- gage. I began operations on machine No. 1. The offside pannier only just held the tool roll. Into the near pannier I wished to compress a tyre repair outfit, two spare plugs, a spare chain, spare bulbs for the head and tail lamps, one exhaust valve complete, and about ¼lb. of assorted bits, dictated by past experi- ence of the machine's nut-shedding propensities (this is no extravagant insurance against hold-ups with a three-chain twin); but, of course, they wouldn't go in. I had to house the chain, the bulbs, and the valve amongst my pyjamas on top of the carrier, and whenever I ride this machine light I have to choose between jamming these impedimenta in my pockets, or tying them on to the carrier. The case of the other machine is even worse, as its construction compels the driver to carry two or three extra tools and odds and ends in addition to the kit outlined above. Nobody likes carrying a few spares wrapped up in brown paper and tied with string on to various parts of the machine; but the only alternative is to wear out the lining of one's pockets, or to carry a carrier case of absurdly large dimensions as an economy on buying two carrier cases, one for luggage and bits, the other for bits only, according to the nature of a projected ride. It may be questioned whether the standard pannier bags were ever large enough for a prudent rider's needs on long-distance work, but now that spare chains (which must be carried under cover) and electric bulbs (which must be stored in bulky wooden cases) have been added to our impedimenta, the aver- age pannier is quite absurdly too small. I am willing to hang a coiled belt on the carrier stays, and to lash the spare inner tube round the handle-bar, but I draw the line at carrying 3ft. of Hans Renold as a watch chain, or at floating my spare bulb case in the petrol tank.

Start at Groningen of the Dutch trial described on page 65 of our last issue.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

A Partly Open Cut-out.

Sir,—Perhaps you will allow me to warn motor cyclists to be very careful in the East Riding of Yorkshire. I was recently fined there (with a dozen or so others) for having a cut-out on a 1912 Singer. This cut-out was partly open and had no control attached. It had been like this ever since I had had the machine, and I had never been warned before, so you see that the machine could not have been unduly noisy.

J. BACKHOUSE.

Single v. Twin.

Sir,—I have read your very excellent paper for some years now, and during the last two or three years I have noticed in it many contributions and much correspondence derogatory to the 3½ h.p. single and praising the small twin. In the year 1913 many people predicted the 3½ h.p. single would be dead in two or three years. The sweeping victory in the 1914 T.T. race, both Junior and Senior classes, however, gave a fillip to its jaded popularity, and the War Office decree against the twin set people thinking.

Having ridden nothing else but small twins and two-strokes for the past three years, I decided to try a 3½ h.p. single this year, and I must say it has been a revelation to me. My machine is a 1915 3½ h.p. Norton single gear of 3 15/16 to 1, and the way it glides along at 28 m.p.h. without any fuss or effort has to be experienced to be appreciated. I can get the engine running regularly down to 4 m.p.h., and have done 73 m.p.h. on the level without any alteration or adjustment.

As for acceleration, the small twin accelerates well on low gear, but on top gear, accelerating from a speed of, say, 15 m.p.h., I easily beat a friend of mine who rides a 3½ h.p. T.T. twin of well-known make geared 5 to 1.

From a point of view of long life, the slow speed 3½ h.p. single must be better than the high-speed twin.

I have no connection with the Norton motors except the bonds of satisfaction, and enclose my card. R.E.B.

Motor Volunteers.

Sir,—Doubtless there are many motor cyclists who, like myself, have read of the splendid work being done by the Motor Volunteers, but are themselves unable to join, due to the lack of a suitable corps

With the organisation at present existing in the many district Volunteer Training Corps it should not be a difficult matter to form a motor squadron, provided a sufficient number of motorists express their willingness to join.

With this object in view, I should be pleased to hear from any motorists in Dulwich, Streatham, Tooting, or any other neighbouring district willing to be enrolled, and if a sufficient number is forthcoming, I would undertake the necessary arrangements for attachment to one of the local volunteer units.

It must be remembered that Volunteer Training Corps exist only for those who give a valid reason for not enlisting, such as (1) age, (2) Government contracts, (3) Government or municipal employment where permission is refused, (4) physical disabilities which would involve rejection by the Army, (5) where enlistment would involve serious dislocation of business, and throw men out of employment. There are other genuine reasons which cannot be classified, and if a man has a genuine reason he need not hesitate to come forward and give it. If the reason is good and valid the commandant will accept it. J. BENNETT.

[Letters addressed c/o the Editor will be forwarded.—Ed.]

A Curious Loss of Power.

Sir,—An experience of loss of power which my machine recently experienced, and its remedy, may interest others.

The machine, which is furnished with a reducing gear, commenced to fail gradually, so that it became more and more necessary to engage the low gear in order to surmount a hill or travel against the wind. All the customary investigations were made, to no purpose. Timing, compression, carburation, connections, valves, belt, and silencer were all examined; the piston and cylinder were cleaned, the bell-crank lever fibre levelled, and the platinum points filed. Still the machine would not climb a hill right out.

At last it was noticed that the platinum points separated with a sort of double motion not smartly, as they ought. So the magneto (an Eisemann) was removed, the armature taken out, and the cam filed to a sharper lift. Result: The power was completely restored. Reason: Wear through dust—a gradual process, taking many months. W.L.B.

Does an Engine Run Better at Dusk?

Sir,—Perhaps, in company with many of your readers, you may have observed that, at dusk and thereabout, motors and motor cycles appear to gain in speed and power, although the setting of the throttle and spark remains the same as previously.

An explanation of this might be forthcoming due to the fact that plants, flowers, etc., give out at dusk a considerable quantity of carbonic acid gas, this being sufficient to augment the speed and power of the motor referred to.

I have reason to believe that an experiment was carried out, by a private individual, in connection with this. It was as follows: A cylinder of the gas was attached in front of the carburetter, in such a position as to allow a lead from the cylinder to inject the gas into the air inlet of the carburetter. The engine was that of a motor cycle in the usual running order. The machine was started and run in the usual way, and after a short interval the gas was turned on. Coincident with this an increase of speed was noticed, the control levers remaining untouched. G.P.G.K.

A Motor Cyclist's Duties.

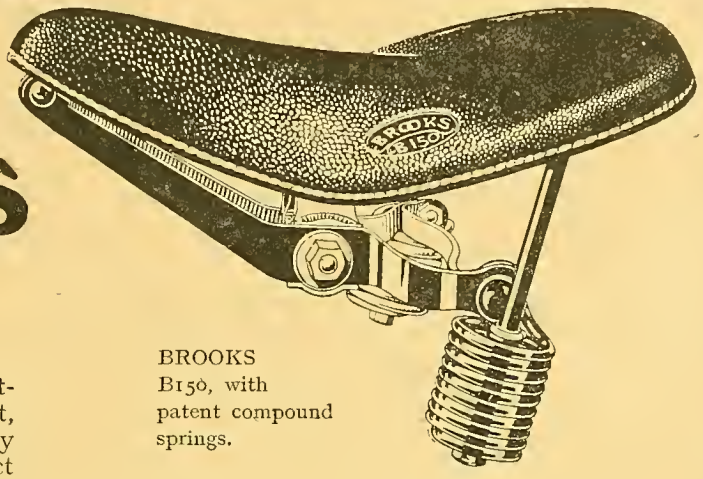
Sir,—A letter under this heading in your issue dated July 8th from Mr. John Hibberd disgusts me, and, I hope, all right thinking people, in no small manner. Presumably his son is aware that he is now a soldier, and a soldier is expected to do what is required of him, and to do it willingly, especially at a time like this, when every man ought to surrender himself unconditionally for service to his country. Where then can complaint arise when he is asked temporarily to perform his duties on a push cycle instead of on a motor cycle? And is not Mr. Hibberd *ashamed* to air a grievance so comparatively slight as that? When his son comes to France (or the Dardanelles, or anywhere where he may encounter active service) he will find many stranger duties expected of him than the one his father deems so "unjust."

I am indignant, because it shows there are some few men at home who still seem to lack the right spirit, without which we shall be unable to conclude the war satisfactorily.

Nor am I speaking in ignorance of a motor cyclist's duties at the Front, since I happen to have been despatch riding for eleven months with one of the first four divisions which landed in France the third week in August, and my work has by no means always been associated with a motor bicycle, or to my own advantage and enjoyment. Please, therefore, forgive my indignation. SERGT. 28056, R.E.

You riders of Lightweights—

you cannot afford to overlook the saddle question—it is also the question of your comfort.



BROOKS B150, with patent compound springs.

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has been designed especially for lightweight machines. It is light, neat, compact, and, at the same time, roomy and beautifully sprung. Also, its perfect finish makes it an addition to any machine.

J. B. BROOKS & CO., LTD.,
49, Criterion Works, Birmingham.

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"COUNTRY LIFE"

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(MEDIUM STRENGTH)

PURE VIRGINIA TOBACCO

10 for 2½d.

50 for 1/-

For Wounded British Soldiers and Sailors in Military Hospitals at Home and for the Front at Duty Free Rates.

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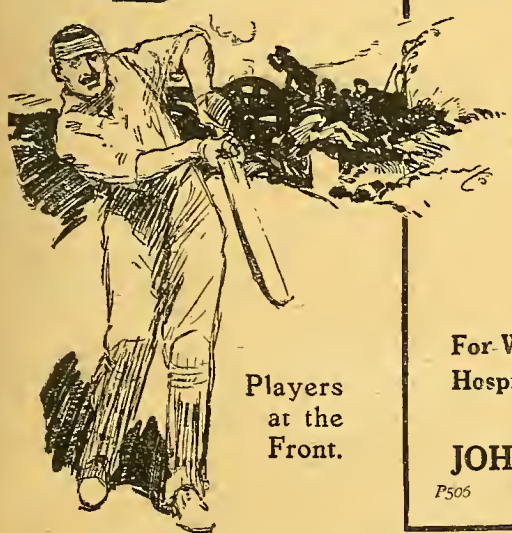


Players at the Front.

We told you so—

— For months we have been pointing out the sterling qualities of the HARLEY-DAVIDSON.

— The HARLEY-DAVIDSON is not "a new line" with us—right back at the beginning of the year we were appointed SOLE MIDLAND DISTRIBUTORS of this wonderful machine.

— Other Agents are now awakening to its capabilities, and there is a HARLEY-DAVIDSON boom.

— But before placing your Order, just remember that the Distributor has to adjust and tune up each machine—the results you will obtain depend greatly upon this "tuning-up."

— Then place your Order with us—the acknowledged HARLEY-DAVIDSON EXPERTS.

HARLEY-DAVIDSON

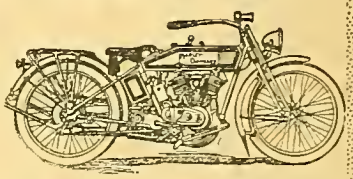
SOLE MIDLAND DISTRIBUTORS for the Counties of Warwicks., Worcs., Staffs., Salop, and Hereford:

The Premier Motor Company,

ASTON ROAD, BIRMINGHAM.

Telegrams—"PRIMUS," B'ham. 'Phone—Central 4310.

IMMEDIATE DELIVERY of all Models.



Model 11J, 7-9 h.p., 3-speed, electric dynamo lighting equipment, **£76 13 0**

Model 11F, 7-9 h.p., 3-speed, chain drive, kick starter, **£68 5 0**

Model 11C, 4¼ h.p., single-cylinder, 2-speed **£58 0 0**

Special GLORIA & CANOELET Sidecars in stock—chassis and body painted HARLEY-DAVIDSON Grey, 28 x 3 inch Dunlop heavy R.S. tyre, from **£15** to **£27.**

TRIAL RUN and TUITION FREE. EXCHANGES or EASY PAYMENTS

JOHN PIGGOTT'S JULY SALE

THE MARK OF MERIT.

The "J.P." Tourist Overall Motor Suit. Strong and Waterproof. Made of extra stout untearable Fawn Twill. Write for pattern and full particulars.

Usual Price 40/- **SALE PRICE 30/6**

The "J.P." Ideal Waterproof Motor Overall Suit. Double Texture Fawn Paramatta. Complete with leggings.

Usual Price 29/6 **SALE PRICE 24/-**

SPECIAL CLEARANCE LINE.

PETER UNION MOTOR CYCLE COVERS

LEATHER & STEEL STUDDED.		RIBBED PATTERN.		RUBBER STUDDED.	
26in. x 2¼in.	Usual Price 50/- SALE PRICE 40/-	Usual Price 31/9	SALE PRICE 26/3	Usual Price 36/-	SALE PRICE 28/9
26in. x 2½in.	,, 53/- ,, 42/-	,, 34/3	,, 27/6	,, 38/-	,, 31/-

WRITE FOR 68 PAGE CATALOGUE POST FREE.

JOHN PIGGOTT, LTD.,
117 & 118, CHEAPSIDE & MILK STREET BUILDINGS,
LONDON, E.C.

In answering these advertisements it is desirable to mention "The Motor Cycle."

The Cost of Running a Motor Cycle.

Sir,—Having been a constant reader of your valuable paper for the last three years, I am sending you particulars of my expenses during 1914 of my 1912 free engine Triumph, which I bought for £32 in November, 1913. The machine has been ridden solely by myself up to the middle of August, 1914, when I parted with it. I have ridden it 2,554 miles solo and 940 miles with a passenger on the carrier. These expenses have been accurately kept, and I have not left anything out. The running costs were as follow:

Total mileage covered = 3,494. Total expenses = £14 5s. 7d. Running costs per mile = .980d.

Petrol, 20 gallons	£1	13	4
Benzole, 21 gallons	1	7	5
Oil (lubricating), 2¼ gallons...		10	1
Carbide		3	0
Repairs to engine and machine	1	11	11
Lamp (second-hand)	1	0	0
Tyres (two) and tube	3	7	6
Sundries	1	2	4
Registration, licence, and revenue ...	1	10	0
Depreciation	2	0	0
Total	£14	5	7

The original belt that was on the machine when I bought it stood the whole time. It was a 1in. Dunlop. I have ridden many hundreds of miles on the canvas, and have not had the slightest trouble with belt slip.

I had two new tyres—a Hutchinson (Brooklands) tyre and a Clincher (Dreadnought) tyre—and one Dunlop tube. I have had £30 for machine in part payment for a new one, so this accounts for the depreciation being so small.

The petrol consumption is rather high, owing to using the machine for carrier riding, this type of passenger carrying being quite safe when the roads are dry, but not advisable when wet and slimy. The average petrol consumption was about 85 m.p.g.

BERTRAM WESTALL.

How to get to the Front.

Sir,—I should be greatly obliged if any of your military readers can inform me what steps I can take to obtain a commission in the A.S.C. (M.T.). [Apply to the Secretary, War Office, Whitehall, S.W.—Ed.]

I am at present a lance-corporal motor cyclist in a "foreign service" cyclist battalion now on coast defence. I was serving with this battalion some considerable time prior to the outbreak of war, and therefore it hardly seems fair to me that experienced men who gave their time and often money in peace-time to make themselves efficient military motor cyclists should be passed over whilst novices with little or no military experience are sent to the Front.

Transfers, I am informed, cannot be obtained unless one is willing to waive all claims as to the particular branch of the service one desires, otherwise getting into the R.E. or A.S.C. as a despatch rider would satisfy me.

I understand that motor cyclists under motor cyclist officers are used as convoys in the A.S.C. (M.T.); is this correct? If so, that is the commission I desire.

OILCAN.

[This letter from a lance-corporal is typical of dozens we are constantly receiving. The main grievance is that soldiers are kept at home whilst others, less experienced, are soon sent to the Front. We deal with the subject editorially.—Ed.]

Despatch Riders' Work.

Sir,—I have read in last week's issue of *The Motor Cycle* the letter from Corporal Sawtell in reply to the letter from Corporal O'Connor. As one of the first men to join the despatch riders at the very beginning of the war, and as one who has trained nearly every man who has gone out from Aldershot, may I say how sorry I am to read Corporal Sawtell's letter. I think that his letter might have ended in a much pleasanter manner than using the Army slang word "windy." I take it that Corporal O'Connor would not have written as he did unless he had good grounds for doing so. Surely our letters to *The Motor Cycle* are for the benefit of its readers, to let them know how things are at the Front, and not to court publicity. Therefore, let us by all means try and help each other, and not pull each other to pieces. There is a nice way of disagreeing with our friends besides being personal.

F. C. SCHOFIELD, Sergeant R.E.

Stone Throwing.

Sir,—I notice that an old pastime is being revived in some places on the Southend Road. It is that indulged in by small children, and consists in throwing stones at passing motorists.

These children wait at the roadside and take deliberate aim at passing motor cycles and cars, evidently secure in the belief that, no matter what damage may result, the motorist will not stop. When I see a suspicious look of anticipation on the faces of children as they watch me approach, I make it a point to slow down and fix my eye on them until I have passed. This usually has the desired effect, but in one case a girl of perhaps six or seven years took deliberate and expert aim, striking the tank amidships. I was going at about 8 m.p.h. at the time, and you may be sure it did not take long to pull up. On asking the child her name and address, the only reply was, "Don't know, sir!" "Where do you live?" I next asked. "That way, sir!" and she deliberately pointed in the opposite direction to where her home was, as I discovered on questioning some other children who came up. I sternly cautioned her not to be caught again, and intimated that a summons would follow in due course. She got frightened, burst into tears, and ran away—in the opposite direction to where she lived. The artfulness of it!

However, I am of opinion that if all motorists, car as well as cycle, were to make a point of stopping on being aimed at, whether hit or not, these petty offenders would soon realise that the foundation of their security—the belief that the motorist will not trouble to stop—is a false one, and the nuisance would pass away.

FRANCIS G. L. EVANS.

[A Number of Interesting Letters are unavoidably held over.—Ed.]

MIDLAND MOTOR CYCLISTS' VOLUNTEERS.
An outpost party reconnoitring.

"THE MOTOR CYCLE" RECRUITING SECTION.

More Men Wanted for the New Motor Machine Gun Batteries now being Formed.

RECRUITING for the new batteries of the Motor Machine Gun Service is proceeding satisfactorily. Among the recruits attested in Coventry last week are the following:

R. Hughes (Stamford).
E. W. Davis (Gravelly Hill).
P. Moss (Coventry).
H. Whaley (Wigan).
E. D. L. Walton (North Muskham, near Newark).
W. H. Scurlock (Pembroke Dock).
S. Cogan (Newington, Hull).
H. Barlow (Pelsey, near Chesterfield).
H. J. Edwards (Mossat, Aberdeenshire).
C. Green (Coventry).
B. G. Cook (Harrogate).
C. G. Richardson (Ashbourne).
A. J. Squire (Weston-super-Mare).
D. T. Jones (Bloomsbury).
A. D. Emsley (Salford).
R. McFadden (Bexhill-on-Sea).
W. Naylor (Bacup).
S. J. Conder (Cambridge).

More motor cyclists are required, preferably with sidecar experience, and a limited number of expert cyclists of good physique can also be accepted. An inspection is held in Coventry every Wednesday afternoon at the Recruiting Office, Masonic Buildings. Those accepted are billeted out for the night and leave for their training centre by first train on Thursday.

Candidates living at a distance will receive a free railway warrant to attend the next inspection on application to Mr. Geoffrey Smith, Editor, *The Motor Cycle*, 19, Hertford Street, Coventry.

Over fifty readers had notified Mr. Smith of their intention to attend the inspection yesterday (Wednesday).

It is not known how long recruiting will remain open. Naturally, there is a limited accommodation at the training centre, and when a sufficient number of men have been obtained recruiting will cease until the War Office sanctions the formation of further batteries.

5-6 h.p. Clyno and 6 h.p. Enfield sidecars are the machines in use at present. Other new patterns are constantly being tested.

A certain number of experienced motor cycle workshop mechanics and car drivers at 6s. per day are also wanted at the moment. Two references should accompany applications for these positions. The makes of cars used vary, but the present type is the 20 h.p. Studebaker.

We paid a visit to the training camp last week and found training proceeding briskly. The men looked very fit. Some were busy flag-signalling, others dissecting machine guns to get thoroughly acquainted with their mechanism, whilst others were enjoying the somewhat novel experience of being taught to drive a sidecar. There are a number of Scotch cyclists in training who have never handled a motor cycle previously. We found one or two of them wanted more than their fair share of the road. They proved very willing pupils, however.

How to Join.

The general particulars for service in the M.M.G.S. are as under:

AGE.—19 to 38.

HEIGHT.—Not important so long as applicant is physically sound and well developed.

CHEST MEASUREMENT.—Expanded bare, 34¼in. for age 19.

ENLISTMENT.—For duration of war.

EYESIGHT.—Glasses do not necessarily debar men from service, provided they can see quite well with them.

PAY.—1s. 2½d. per day; all found; usual separation allowance.

Readers who cut out and fill in the form below will, provided that the particulars are in order, receive a free railway warrant to attend the next inspection in Coventry.

Name .....

Address .....

.....

Age ..... *Height* .....

Chest measurement .....

How long have you been a motor cyclist .....

Can you do running repairs .....

Have you had any previous military training, and, if so, when .....

.....

Are you medically fit .....

Occupation .....

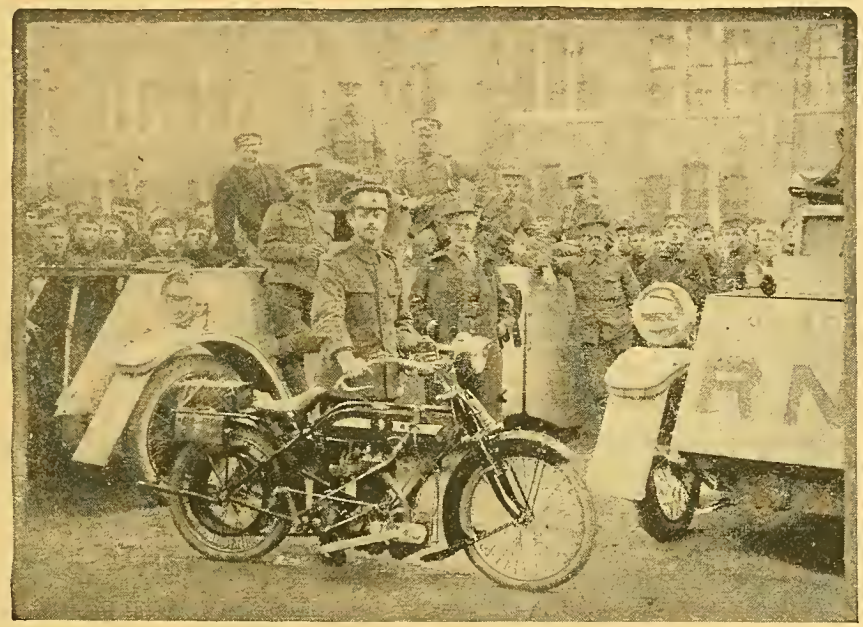
When free .....

Date .....

After filling in the above particulars return to:

MR. GEOFFREY SMITH,
Inspecting Officer, R.E.,
South Midland Divisional Area,
19, Hertford Street,
COVENTRY.

B.S.A. on War Service



Pte. S. Haylett, of the Royal Naval Brigade, with his B.S.A. Motor Bicycle, with which he did good service between Antwerp and Ghent.

The brilliant successes achieved by B.S.A. Motor Bicycles at the Front are eloquent testimony to the quality and endurance of B.S.A. material and workmanship. By standing the racket of modern warfare, B.S.A. machines have enhanced their already world-wide reputation for reliability.

RIDE A

B.S.A. Motor Bicycle

Fitted with

B.S.A. COUNTERSHAFT THREE-SPEED GEAR.

Write for Latest B.S.A. Catalogue

showing all models in colours.

The Birmingham Small Arms Co. Ltd., 13, Small Heath, Birmingham.

Special Souvenir Booklet, "On War Service," sent post free for 1d. stamp.

Norton

SUPERIORITY IN OPEN COMPETITION

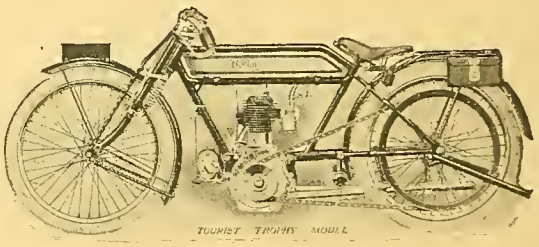
ULSTER HILL CLIMB.

J. W. Shaw, 3½ h.p. NORTON, made fastest time of the day.

J. Corry, 3½ h.p. NORTON, made second fastest time of the day.

Don't forget the 3½ h.p. NORTON holds the 50 Miles Championship of Ireland—further proof of its

SPEED, POWER, and RELIABILITY.



Write for Illustrated Catalogue:

Norton Motors, Ltd., Sampson Road North, BIRMINGHAM. London: **Bartlett & Co.,** The Parade, KILBURN

AUSTRALIAN

GRAND PRIX

WON WITH PEDLEY BELT

SECOND YEAR IN SUCCESSION.

This year's race was won by James Millar on a "Matchless."

The Melbourne-Sydney Reliability Trial in December-January last was won by "Douglas" Team, using Pedley Belts, against all comers.

J. PEDLEY & SON, LTD., Great Charles St., BIRMINGHAM.

LONDON:
30, Holywell Lane, E.C.

Harman.

HIGH SPEEDS AT STYLE COP.

Wolverhampton M.C.C. Open Hill-climb in aid of the British Red Cross Society.

STYLE COP was the scene of considerable animation on the afternoon of Saturday last, when the Wolverhampton M.C.C. held their annual open hill-climb there and ran off seven classes, each being divided into two sections—A, expert; B, general (or expert barred). Mr. A. E. Ryder, the trials hon. sec., officiated as chief marshal, Mr. J. Urry as timekeeper, while the judges included Mr. Alfred Bird, M.P., president of the club, and other names well-known in motor cycling circles. The programme was carried out without hitch until the last event, but the intervals were often unnecessarily long, and the competition occupied nearly five hours.

The hill is found by taking the Hednesford Road from Rugeley for rather more than a mile, and then turning to the left. Viewed from the road the hill appears to be steeper than it really is. The gradient was said to be 1 in 8, but this is, we think, an exaggeration. The rise is very gradual for the first half and the surface perfect; it then becomes slightly steeper and rougher, and towards the close of the meeting was a little loose in places, but always good. Style Cop is surmounted by a beech coppice, thick with bracken as high as a man's head, and the view is very fine in all directions. In the south-east the three spires of Lichfield Cathedral were clearly visible, to the north was Rugeley with its fine church spire, while in front to the west lay the broad expanse of Cannock Chase.

The morning broke wet after a very stormy night, but the rain blew off later, and the afternoon turned out bright and pleasant, with a very strong wind blowing up the hill, which was of assistance to the competitors, but very much the reverse to those who had charge of the timing sheets.

The Competition.

With the help of the following wind the times were for the most part very good; in fact, the gradient was as nothing to the more powerful machines. The fastest time of the day was made by T. Simister (8 Dot-Jap), whose speed was not much less than 60 m.p.h.; but perhaps the most remarkable performance was that of J. E. Greenwood, whose Sunbeam, fitted with a 4 h.p. single-cylinder engine, 85 × 105 mm. bore and stroke (596 c.c.), accomplished the climb with a sidecar and passenger in less than one minute, or at a speed of something like 45 m.p.h., and it must be noted that the times were taken from a standing start. The formula used was that recommended by *The Motor Cycle*, $\frac{C \times t^2}{W}$ (smallest figure wins).

CLASS I. (one or two cylinders not exceeding 300 c.c.)—This class proved a veritable triumph for the Levis two-stroke machines, which showed a wonderful turn of speed, and swept the board in both sections, though W. Chinn (2½ Burman) also did well. The awards were on formula. Results:

Other pictures of the Style Cop Hill-climb will be found on the centre pages (86 and 87) of this issue.

	Time. m. s.
A—1. H. Newey (2¼ Levis, 60×70)	1 8.6
2. C. Tindall, jun. (1.9 Levis, 60×70)	1 12
3. W. Butterfield (2¼ Levis, 60×70)	1 12.6
B—1. W. Butterfield (Levis)	1 8.8
2. C. Tindall, jun. (Levis)	1 11.8
3. G. E. Kuhn (Levis)	1 9.2

CLASS II. (one or two cylinders not exceeding 350 c.c.)—The times in this class showed a marked improvement in comparison with Class I, but the engines were larger and the following wind had become stronger. In the expert section the A.J.S. carried all before it, but the Sunbeam made fastest time in the general section. As H. Newey (2¾ Levis) came up, it was seen that he was keeping his right leg well away from the machine, and that a spray of petrol was issuing from the tank. This was caused by the petrol union having come unsoldered from the bottom of the tank. It was rather curious that he was able under the circumstances to reach the summit at all. Awards on time and formula. Results:

A—TIME.	secs.
1. F. H. Giles (2¾ A.J.S., 74×81)	52.2
2. W. Heaton (2¾ A.J.S., 74×81)	54
3. G. Dance (2¾ Sunbeam, 75×79)	54.4
B—TIME.	secs.
1. G. Dance (2¾ Sunbeam, 75×79)	54.4
2. N. Heath (2½ A.J.S., 66½×86)	58.2
3. J. H. Mason (2¾ A.J.S., 74×81)	61

CLASS III. (one and two cylinders not exceeding 500 c.c.)—The times in this class were very consistent, only one rider exceeding the minute, while 52s. was the fastest time recorded. Awards on time and formula. Results:

A—TIME.	secs.
1. C. Smethurst (3½ Norton, 79×100)	52
2. J. L. Mitchell (2¾ A.J.S., 74×81)	52.4
3. G. Dance (2¾ Sunbeam, 75×79)	53
B—TIME.	
1. G. Dance (3½ Sunbeam, 85×88)	53c.
2. H. Petty (3½ Norton, 79×100)	53.2
3. G. Dance (2¾ Sunbeam, 75×79)	54.2

W. Heaton (2¾ h.p. A.J.S.), second on time and third on formula in Class II.

Besides those mentioned, W. Heaton (2¾ A.J.S.), Lieut. A. Lindsay (3½ Norton), who came from Farnborough for the climb, H. Petty (3½ Norton), K. Holden (3½ B.S.A.), J. Smith (3½ Triumph), T. Slingsby (3½ Norton), and Gooding (3½ Brough) rode well. The speed of the 2¾ machines was remarkable.

CLASS IV. (one or more cylinders unlimited capacity).—The fastest time of the day was, as might have been expected, made in this class. T. Simister (8 Dot-Jap) in his first attempt in the expert section was timed at 47.6s., but he had to cut out for a moment near the top of the hill because two spectators crossed the road at this instant. His second ascent was made in 45s., which is said to equal the record for the hill. Awards on time and formula. Results:

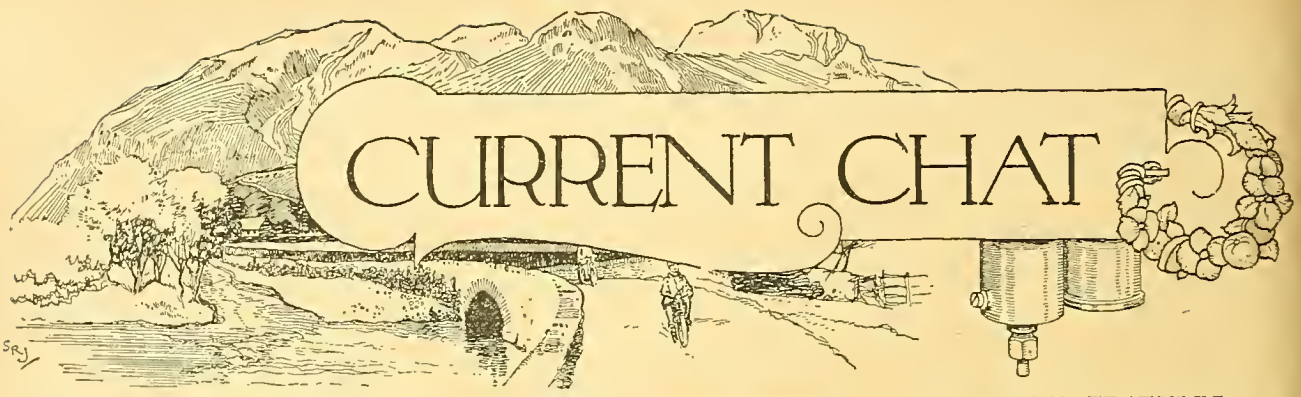
A—TIME.	secs.
1. T. Simister (8 Dot-Jap, 90×77½)	47.6
2. T. Heath (6 Sunbeam, 76×85)	49.8
3. W. Heaton (2¾ A.J.S., 74×81)	25.8
B—TIME.	secs.
1. T. Simister (8 Dot-Jap, 90×77½)	45
2. — Gooding (3½ Brough, 70×64½)	33
3. {H. Petty (3½ Norton, 79×100) / W. Dance (2¾ Sunbeam, 75×79}	

CLASS V. (sidecars not exceeding 600 c.c. Adult passengers). CLASS VI. (sidecars unlimited capacity).—The two sidecar classes were remarkable for the performance of the new big single Sunbeam, already mentioned, which made fastest time in each class. Another new machine to do well was the horizontal twin-cylinder two-stroke Levis driven by W. H. Butterfield, but the speed of the sidecar machines generally was very good.

In CLASS V. the awards were on time and formula; in CLASS VI. on time only. Results:

CLASS V. A—TIME.	m. s.
1. J. E. Greenwood (4 Sunbeam, 85×105)	1 0.2
2. D. R. O'Donovan (3½ Norton, 79×100)	1 2
3. W. Heaton (2¾ A.J.S., 74×81)	1 5.6
B—TIME.	m. s.
1. J. Smith (3½ Triumph, 85×88) (the only competitor)	1 10
CLASS VI. A—TIME.	
1. J. E. Greenwood (4 Sunbeam, 85×105)	58.8
2. T. Heath (6 Sunbeam, 76×85)	1 0.8
3. D. R. O'Donovan (3½ Norton, 79×100)	1 2.8
B—TIME.	
1. W. H. Butterfield (Levis, 75×79)	1 6
2. A. Haskett (6 A.J.S., 74×87) (the only competitors)	1 43.4

CLASS VII. (cycle cars, A.C.U. definition).—There were but two competitors in this class, and, owing to a mistake of the officials, only one of these, H. R. S. Birkin (G. P. Morgan), was timed. He ascended the hill in 1m. 48.6s. H. W. Wolverson, also driving a Morgan, seemed to us to be considerably faster, and we understand that he will lodge a protest.



TIMES TO LIGHT LAMPS.

July 22	...	...	9.2 p.m.
,, 24	...	...	8.59 ,,
,, 26	...	...	8.57 ,,
,, 28	...	...	8.54 ,,

Firms and the War Loan.

We notice that the Shell motor spirit interests have subscribed £500,000 to the War Loan.

The Second-hand Market.

The demand for good second-hand motor cycles is as pronounced as ever, and with the continued shortage of new British-made machines, second-hands are likely to continue to fetch good prices.

Motor Cyclist Officers.

The number of officers who are motor cyclists is amazing. One meets them whatever route is chosen. Even on the stations one frequently sees an officer followed by a porter wheeling a motor cycle and another with baggage.

All-khaki Racing at Brooklands.

Arrangements are now completed for the officer motor cyclists' race meeting to be held on the Brooklands track, and the programme and other details will be found on page 91 of this issue. The meeting will be held on Saturday, August 7th.

Demonstrations by the Motor Machine Gun Service.

There is a possibility of one of the motor machine gun batteries visiting thickly populated districts in order to give a demonstration to assist recruiting.

Week-end Accidents.

Last week-end we saw the result of two accidents in which motor cyclists were involved. In one case a motor cyclist had emerged from a side lane, and collided with a car; and in the other case a passenger suddenly stepped from a motor 'bus as a motor cyclist came by, and both were brought down heavily.

Solder the Lamp to the Bracket.

The Auto Cycle Union has been in communication with the Home Office and the Commissioner of Police of the Metropolis with reference to the interpretation of that part of the Order in Council of June 10th, 1915, amending the Defence of the Realm Act which affects the use of motor cycle lamps attached to the lamp brackets by an adjustable fitting, permitting the lamp to be readily moved.

The Auto Cycle Union is authorised to state that the use of such lamps is considered to be a contravention of the Order, and to advise all owners to render their lamps incapable of any swivelling movement by some permanent mechanical means, such as soldering the lamp to the bracket.

THE IRISH "END TO END." E. J. Jack (3½ h.p. Rover), F. L. Dooly (4¼ h.p. B.S.A.), and R. Jones (4¼ h.p. B.S.A.) outside a typical Irish thatched cottage.

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SPECIAL FEATURES.

A HILL-CLIMB FOR RED CROSS FUNDS.
ON CAMPING.
THE IRISH END-TO-END TRIAL (Illus.)

Second-hand Prices.

We give below the average prices of the various second-hand models offered for sale in the last issue of *The Motor Cycle*, and also the average prices for the last eight weeks.

Make.	Year.	H.P.	Last week's average.	Average for past 8 weeks.
A.J.S.	1914	6 3-sp. sidecar ..	£78	£73
,, ...	1914	2¾ 3-speed	£44	£43
,, ...	1913	6 3-sp. sidecar ..	£54	£57
Auto-wheel .	1914	1	£10	£10
Bat	1914	6 3-sp. sidecar ..	£65	£65
,, ...	1913	6 2-sp. sidecar ..	£48	£52
Bradbury ..	1914	4 2-sp. sidecar ..	£45	£45
B.S.A.	1914	4¼ 3-speed	£47	£48
,, ...	1913	4¼ 3-sp. sidecar ..	£45	£44
Calthorpe ..	1914	2 2-speed	£20	£22
Chater-Lea .	1914	8 3-sp. sidecar ..	£75	£73
Clyno	1914	6 3-sp. sidecar ..	£77	£69
,, ...	1913	6 3-sp. sidecar ..	£55	£54
Connaught .	1914	2½ 2-speed	£22	£22
Douglas ...	1914	3½ 2-sp. sidecar ..	£52	£54
,, ...	1914	2¾ 2-sp. kick start	£43	£44
,, ...	1914	2¾ 2-sp. T.T.	£40	£40
,, ...	1913	2¾ 2-speed	£39	£37
Enfield	1914	6 2-sp. sidecar ..	£63	£63
,, ...	1913	6 2-sp. sidecar ..	£52	£53
Excelsior ..	1914	4½ 3-speed	£45	£45
Hazlewood .	1914	6 3-speed	£45	£45
,, .	1914	3½ 3-sp. sidecar ..	£49	£49
Henderson..	1914	8 2-sp. sidecar ..	£80	£80
Humber ...	1914	3½ 3-speed	£45	£45
,, ...	1913	3½ 2-sp. sidecar ..	£40	£40
Indian	1914	7 2-sp. sidecar ..	£65	£64
,, ...	1914	7 2-speed	£53	£51
,, ...	1913	7 2-sp. sidecar ..	£43	£49
James	1914	4¼ 3-sp. sidecar ..	£58	£54
,, ...	1914	2¾ 2-speed	£26	£26
Lea-Francis.	1913	3½ 2-speed	£49	£48
Levis	1914	2½ 2-speed	£32	£32
,, ...	1914	2½	£23	£23
L.M.C.	1914	4½ 3-sp. sidecar ..	£42	£42
Matchless ..	1914	7 3-s . sidecar ..	£75	£74
,, ..	1913	7 3-sp. sidecar ..	£59	£54
New Hudson	1914	6 3-sp. sidecar ..	£58	£59
,,	1913	4 3-sp. sidecar ..	£40	£40
N.U.T.	1914	6 3-sp. sidecar ..	£60	£64
Premier ...	1914	3½ 3-sp. sidecar ..	£60	£53
Quadrant ..	1914	4½ 3-sp. sidecar ..	£40	£45
Rex	1914	6 3-sp. sidecar ..	£55	£58
Rover	1914	3½ 3-sp. sidecar ..	£60	£53
,, ...	1914	3½ 3-speed	£40	£45
,, ...	1913	3½ 3-sp. sidecar ..	£46	£44
Royal Ruby	1914	3½ 2-speed	£44	£45
,,	1914	2½ 2-speed	£24	£24
Rudge	1914	3½ Multi sidecar..	£40	£51
,, ...	1913	3½ Multi sidecar..	£38	£37
Scott	1914	3¾ 2-sp. sidecar ..	£50	£56
,, ...	1914	3¾ 2-speed	£48	£47
,, ...	1913	3¾ 2-sp. sidecar ..	£50	£45
Sparkbrook.	1914	6 3-sp. sidecar ..	£70	£70
Sun	1914	2½	£20	£20
Sunbeam ..	1914	6 3-sp. sidecar ..	£78	£75
,, ..	1914	3½ 3-speed	£55	£58
,, ..	1914	2¾ 3-speed	£53	£49
Triumph ...	1914	4 3-sp. sidecar ..	£56	£54
,, ...	1914	4 3-speed	£45	£44
,, ...	1913	3½ 3-sp. sidecar ..	£45	£43
,, ...	1913	3½ T.E.	£38	£37
Williamson .	1913	8 2-sp. sidecar ..	£55	£52
Zenith	1914	6 Gradua sidecar	£52	£58
,, ...	1913	6 Gradua sidecar	£45	£48
,, ...	1913	3½ Gradua	£35	£35

This Week's Issue.

This issue of *The Motor Cycle* contains a fully illustrated report with complete results of the Wolverhampton M.C.C. hill-climb at Style Cop. The centre pages are devoted to illustrations of the event. The Irish End-to end trial is also fully dealt with.

Despatch Riders Wanted in Scotland.

We hear that the Lowland Divisional Signal Company R.E. (T) has vacancies for seven motor cyclist despatch riders. The first line Signal Company is at present abroad, and the second line Signal Company is at present in training. Motor cyclists are required for drafts for these companies. The pay is from 10s. 8d. rising to 28s. per week when fully trained. Application should be made for full particulars to the O.C. Depot, Lowland Divisional Signal Company, R.E. (T), Drill Hall, Rutherglen.

Echoes from Style Cop.

Style Cop hill-climb did not go off with the smoothness which one has become accustomed to expect, but this was not due to the lack of officials (there were sixty-two names on the programme). The spectators, amongst whom were many working men, frequently trespassed on the course at inconvenient moments. H. W. Wolverson had a rather unusual experience, for he won the Cycle Car Class on formula without being timed up the hill!

Motor Cycle Lamps.

On the previous page the opinion is expressed that the usual motor cycle lamp fixed, for adjustment purposes, by thumbscrews at the side contravenes the new regulations. However, at the South Western Police Court on the 16th inst., when G. B. Creed was summoned for having such a lamp, the magistrate, Mr. Lister Drummond, having examined the lamp in Court, advised the police to withdraw the summons, as he was of opinion that the lamp was not illegal.

Sidecar Outings for Convalescent Soldiers.

Although the idea of sidecar runs for wounded soldiers has met with opposition in certain quarters, the commendable practice continues to grow throughout the country, and nearly every day we hear of motor cyclists arranging plans to give our gallant soldiers a run into the country. From experience gained on the Brighton outing which we organised a few weeks ago, we can say that the men thoroughly enjoy a run in a good sidecar outfit, and, provided they are well wrapped up and carefully driven, no harm can possibly result; in fact, the very reverse is the case.

A Motor Cycle Traffic Census.

Our sister journal, *Motor Traction*, has just published its annual Putney Bridge traffic census. This is the tenth year this has been done, and the following information relating to motor cycles is of interest. In 1906 129 motor cycles crossed the bridge between the hours of 9 a.m. and 9 p.m., in 1911 the number was 193, in 1912 347, in 1913 358, in 1914 653, and in 1915 (on Sunday, June 27th) 413 crossed. It will be seen from these figures how the ranks of motor cyclists are steadily on the increase, ignoring, of course, the war time census.

From Overseas to Enlist.

Noticing the photograph that appeared in our last issue of a rider who travelled from California to enlist, a sergeant in the 37th Signal Company writes to the effect that in his section of despatch riders they have six men who came from overseas to serve. Two came from the Argentine, and one each from Ceylon, Egypt, South Africa, and Canada. Can any section beat this record?

Clubs and the War Loan.

The Bristol M.C.C. has decided to invest £50 in the War Loan. The club intends to hold a picnic on Saturday next and a speed-judging competition on August 28th, the winner of which will hold Mr. J. King's silver cup for twelve months.

After the War Loan had closed the M.C.C. Committee met and decided, if possible, to invest £400 of its funds in the loan. This is the fourth motor cycling body which has adopted the recommendation in *The Motor Cycle*.

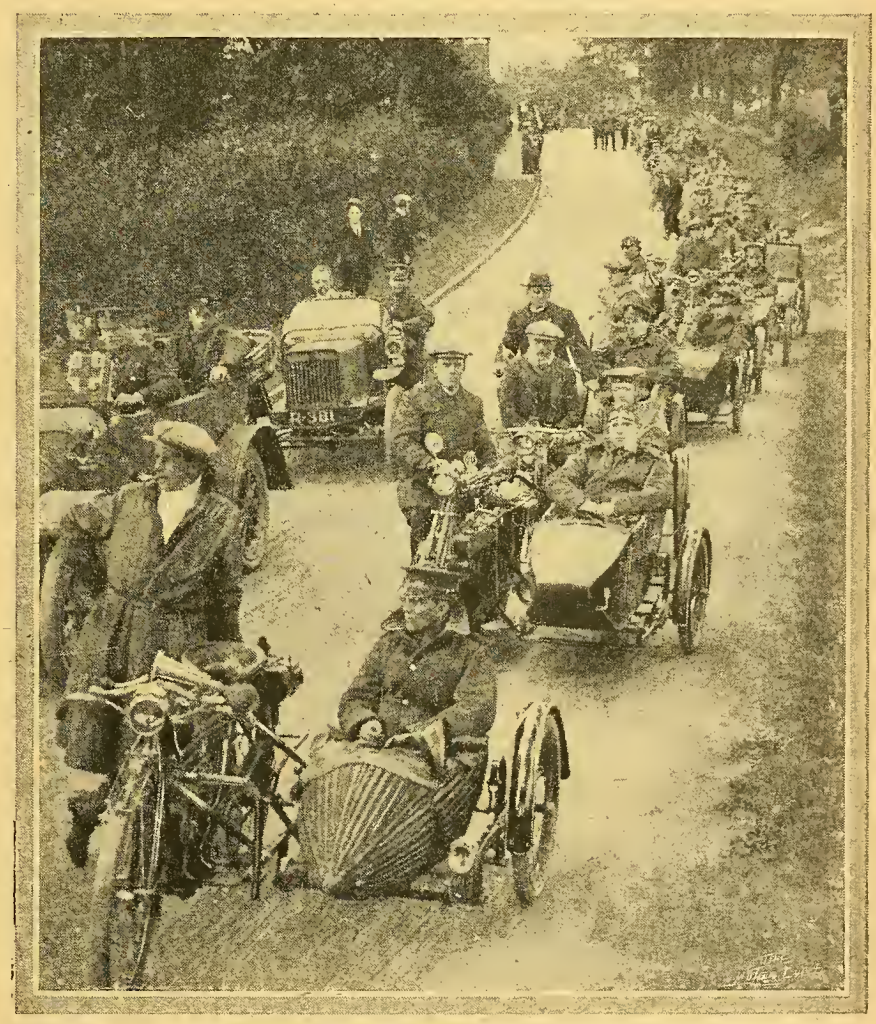
The War Funds.

Subscriptions continue to roll into the principal war funds, as the following figures (those of last Tuesday) indicate:

The Times Fund for Sick and Wounded	£1,550,335
Daily Telegraph Belgian Relief Fund	148,989
The Queen's Work for Women Fund	162,579
Indian Soldiers' Fund ...	142,935

Motor Cyclists and Recruiting.

The recruiting officers at Barrow-in-Furness, Birmingham, Sheffield, and Bristol last week referred recruits to the Editor of this journal respecting different motor cycle sections about which enquiries had been made. This is pleasing to us, as we have cause to know that originally prospective recruits were turned away without advice if they mentioned a branch of the Army with which the recruiting officer was not acquainted.



SIDECAR RUNS FOR WOUNDED SOLDIERS.

A snapshot of some of the sidecar outfits (and their gallant occupants) used in a trip made by a party of Manchester motor cyclists from the Stretford Hospital to Herridge, Macclesfield, on Sunday last. There are about twenty-five machines in the picture, and it is probably the largest outing of its kind seen so far, though it may not long remain unbeaten.

The Style Co

Wolverhampton M

The RED CROS

(1) A. W. Thrush (T.T. Triumph) on the seates.
(2) Mr. Alfred Bird, M.P., president of the Wolverhampton M.C.
(4) Members of the Midland Motor Cyclists' Volunteer Corps besiege the Red Cross flag sellers
(5) In full flight. C. Smethurst (3½ h.p. Nor

p Hill Climb

C. Event in aid of s Funds.

3

6

..., talking to assistant trials hon. secretary J. T. Ireland
n), who accomplished fastest time in Class III

(3) F. H. Jones (2½ h.p Hockley two-stroke) starting.
(6) H. W. Wolverson (Morgan) ready to start. Though not timed, he was awarded first place.

ENTRIES FOR THE ALL-KHAKI RACE MEETING.

AT the time of going to press, the following entries have been received :

Sec.-Lieut. T. H. Blake (3½ T.T. Rudge-Multi).
Lieut. J. H. C. Lindsay (3½ T.T. Rudge-Multi).
Sec.-Lieut. F. M. C. Houghton (3½ T.T. Rudge-Multi).
Captain G. L. Andrew (2¾ T.T. Douglas).
Lieut. G. H. Walker (3 Enfield).
Sec.-Lieut. J. F. Blyth.
Sec.-Lieut. C. E. H. Medhurst.
Sec.-Lieut. E. C. Kemp.
Sec.-Lieut. J. A. Barraclough.
Assistant-Paymaster C. P. Marcel, R.N.R. (7-9 Indian).
Corporal O. M. Baldwin.

Entries close on July 31st, and the should be addressed to Mr. T. W. Loug borough, c/o the Auto Cycle Union, 8 Pall Mall, S.W. A list of the events be held and other particulars will l found on page 91 of this issue. Frien accompanying competitors will be a mitted to the track on payment of o shilling for each person.

STYLE COP HILL-CLIMB SPECIAL AWARDS.

The following are the results on formula and special awards of the open hill-climb described on page 83 :

Class I.		
A—1.	H. Newey (Levis, 60×70) ..	3025
2.	C. Lindall (ditto)	3091
3.	W. H. Butterfield (ditto) ..	3388
B—1.	W. H. Butterfield (ditto) ..	3042
2.	C. Lindall (ditto)	3074
3.	G. E. Kuhn (ditto)	3359
Class II.		
A—1.	O. Wade (A.J.S., 74×81) ..	2840
2.	F. H. Giles (ditto)	2917
3.	W. Heaton (ditto)	2924
B—1.	G. Dance (Sunbeam, 75×79) ..	3011
Class III.		
A—1.	J. L. Mitchell (A.J.S., 74×81	2676
2.	O. Wade (ditto)	2819
3.	G. Dance (Sunbeam, 75×79) ..	2858
B—1.	G. Dance (Sunbeam, 75×79) ..	2989
2.	N. Heath (A.J.S., 66½×86) ..	3290
3.	B. Haddock (Diamond, 75×79)	3405
Class IV.		
A—1.	G. Dance (Sunbeam, 75×79) ..	2620
2.	W. Heaton (A.J.S., 74×81) ..	2795
3.	O. Wade (ditto)	2860
B—1.	O. Wade (A.J.S., 74×81) ..	2720
2.	G. Dance (Sunbeam, 75×79) ..	3033
3.	N. Heath (A.J.S., 66½×86) ..	3131
Class V.		
A—1.	W. Heaton (A.J.S., 74×81) ..	2708
2.	F. H. Giles (ditto)	3093
3.	J. E. Greenwood (Sunbeam, 88×105)	3495

Class VII.

1. H. W. Wolverson (Morgan Runabout, 85×85).

Special Awards.

SUNBEAM GOLD MEDAL (for fastest time of the day).—T. Simister (8 Dot-Jap).

ALFRED BIRD CUP (for best performance on formula by a member).—G. Dance (2¾ Sunbeam).

A. J. STEVENS GOLD MEDAL (for best aggregate performance).—G. Dance (2¾ Sunbeam).

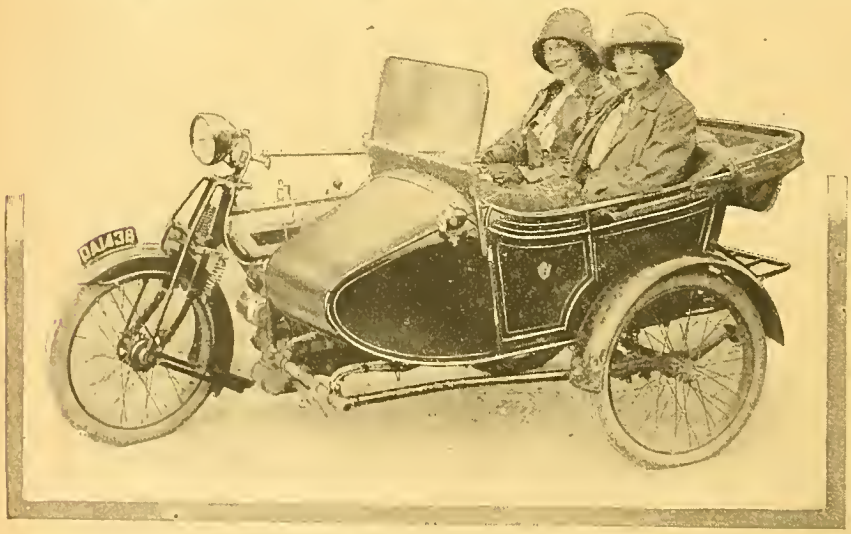
AVON CUP (for best performance on formula in Class II. B. by a member).—G. Dance (2¾ Sunbeam).

CLYNO CHALLENGE CUP (for best performance on formula in sidecar classes).—W. Heaton (2¾ A.J.S.)

DIAMOND GOLD MEDAL (for fastest time by a member in Class II. B.)—G. Dance (2¾ Sunbeam).

WOLVERHAMPTON MOTOR SERVICES CHALLENGE SHIELD (for best amateur performance by a member).—G. Dance (2¾ Sunbeam).

Rodolfo Cardenal (3½ h.p twin-cylinder Indian), winner of the Spanish road race referred to on page 37 of our issue of July 8th.



THE SOCIABLE SIDECAR.
Miss Daisy Stevens and a friend arrive at the Style Cop hill-climb in a double-seated side-by-side sidecar attached to a 6 h.p. A.J.S.

IMPORTS OF PETROL.

12,662,635 gallons of petrol were imported into this country last month. In June of last year the figure was 13,993,003, and in May, 1915, it was 8,190,910 gallons. Thus, although there is a drop in the latest figures when compared with the corresponding period of last year, there is a decided increase over the May, 1915, figures. The value of the 12,662,635 gallons received last June is £443,344.

WELL KNOWN MOTOR CYCLIST WITH THE COLOURS.

In Oxford Street, London, last week we encountered A. Mackenzie Cott, the erstwhile enthusiastic big twin user, who has many times accomplished fastest time at open hill-climbs. Lieutenant Cott obtained a commission in the Royal Flying Corps in the winter, and is now in charge of a section. He was wending his way to the Royal Aircraft Factory on a 20 h.p. Crossley, and hailed with joy the prospect of meeting a late member of our staff who is now an instructor at the R.A.F.

THE MIDLAND MOTOR CYCLISTS' VOLUNTEERS AT LITTLE PACKINGTON.

ON Sunday the corps turned out for a field day in the vicinity of Little Packington for observation duties. This parade commenced the second stage of the corps training.

On reaching Little Packington a section was detailed off, its instructions being to place itself against backgrounds of woods, trees, etc., not actually under cover, but sufficiently exposed for the men to detect their presence at a distance.

The troops were then sent out to locate the section from a distance, judge the distance, and also report on the ground covered.

A party was next taken to a trench with a slope, which was presumed to be a fire trench. The others had from a distance to give information as to the number seen, and report on any attempt made to leave the trench.

The corps was then taken to the flooded fields, and was exercised in endeavouring to get through with its machines. The chief trouble was caused by water getting into the silencers.

On Sunday next the corps will hold a field day near Great Alne prior to going into camp.

THE IRISH END-TO-END TRIAL.

Large Proportion of Finishers in the Big Event of the Irish Competition Programme.

Some of the competitors outside the control at Banbridge.

THE End-to-end of Ireland reliability trial of the Ulster Centre of the Motor Cycle Union of Ireland, which is annually held during the period known in the North of Ireland as "the twelfth" holidays, has come to be regarded as the leading event of the year in Irish motor cycling circles. Last year it was recognised by the Cycle and Motor Cycle Manufacturers' Union as one of the "selected" events, but even without that recognition it has attained an importance greater than any other trial in the Emerald Isle, and has for some years past attracted entries from the leading competition riders of the United Kingdom. This year the most notable feature of the competition, which was held on Tuesday and Wednesday of last week, was the fact that the entry was purely Irish. The title of the trial is rather a misnomer, for while it started from Mizen Head and went to Fair Head—the points of Ireland furthest apart—it did not end at the northern point, the men being taken back to Belfast, and in the South a detour was made to bring in the mountainous parts of Co. Kerry. The making of the event a two-day run—an innovation which was made for the first time last year—made the event less of a scramble, though hardly less strenuous a test than when the trial was a straight-away affair. The first day's run was 299 miles, terminating in Dublin; and the second was 213, terminating in Belfast. As there was but an hour's stop each day for luncheon, and as the conditions made a strict adherence to schedule time absolutely necessary, it was a genuine test of the reliability of the machines and the ability of their riders to keep to schedule.

Mr. and Mrs. A. W. Mooney (6 h.p. Bradbury and sidecar) appreciate a second breakfast in the open air at the Drogheda control.

The Conditions of the Trial.

Generally speaking, the conditions may be described as of the customary character. The course was divided into fifteen sections, to each of which ten marks were allotted, and one mark per minute was lost for being more than a minute early or more than three minutes late at any of the open controls at the end of each section. In addition, secret checks were provided, and a competitor found to be ten minutes in advance of schedule time at any point was disqualified. A hill failure was penalised by the loss of ten marks, and an average speed of twenty miles an hour had to be observed.

Experience having shown that the likelihood of several men tying under such conditions was probable, a flexibility test was held in the mountainous country round Cushendall on the afternoon of the second day to ensure a winner being found for the Palmer Tyre trophy. As a fact, twelve got full marks at all controls. After a non-stop run from the foot of the hill at Cushendun, penalised at ten marks per stop, the flexibility test was held on Iscar Hill.

Out of an entry of twenty-one, nineteen competitors came to the start. Five of these were on sidecar combinations and fourteen on singles.

The start took place on Tuesday morning at four o'clock from Rock Island coastguard station, the nearest point by road to Mizen Head and three miles south of Goleen, where most of the competitors spent the night—in the street. The men were sent away at one minute intervals by Mr. W. E. Good, of the Palmer Tyre, Ltd., and as it was generally assumed—and correctly as things turned out—that there would be no secret checks in the first few hours of the journey, there was a good deal of hurrying over the first section of the course. Indeed it is pretty safe to say that had a secret check been found in any portion of the first fifty-three miles to Kenmare the whole field would have been disqualified. It was generally agreed, amongst competitors at any rate, that a greater margin of grace might have been allowed without the object of the trial being defeated, and it certainly is an

The Irish End-to-end Trial.—

anomaly that the extreme penalty should be enforced against a technical breach of not running to schedule, while a competitor could be hours late at every check on the route of 512 miles and yet win a silver medal, provided he was not more than an hour late at the last control on each of the two days.

The First Observed Hill.

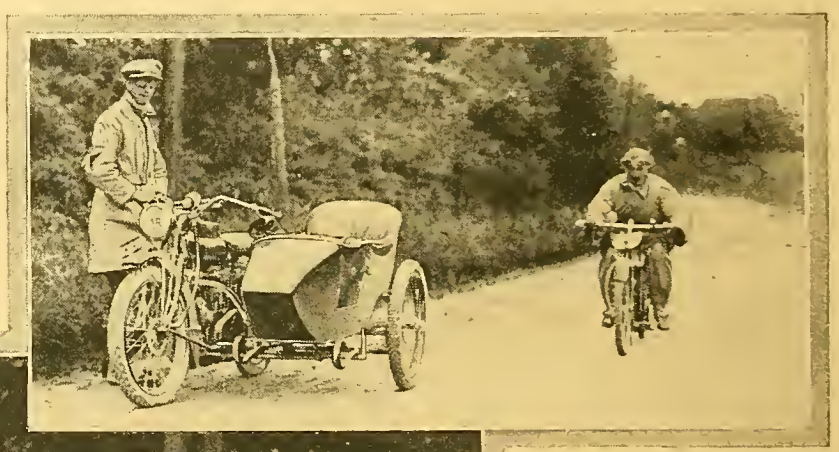
Observers were looked for in vain, as the long ascent of the mountains from Glengarriff was made in a heavy mist; but, as a fact, there was no failure to make a clean ascent, as the improved surface, coupled with the manner in which the road is engineered, has reduced the one-time terrors of the climb.

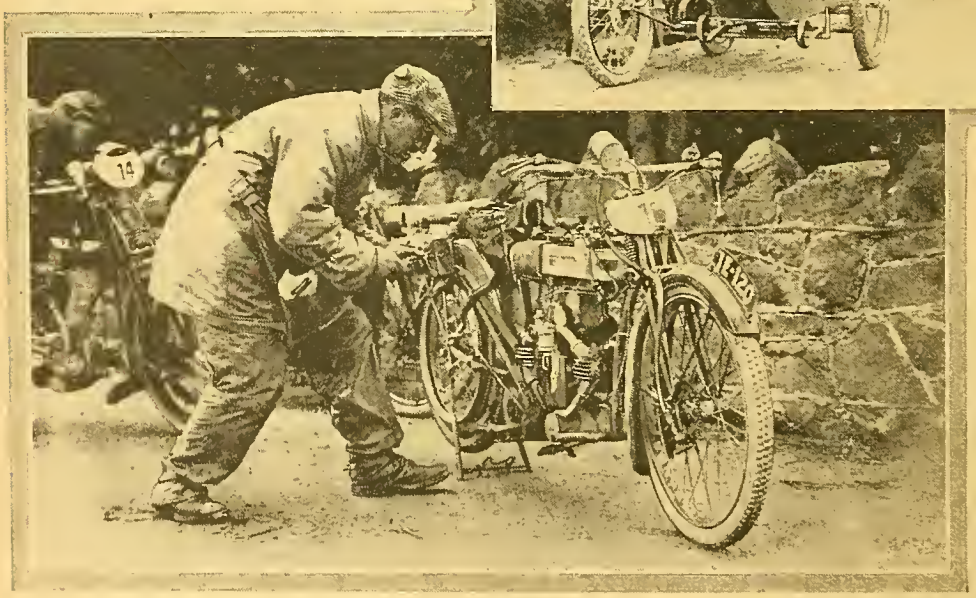
Technically, every hill on the route was an observed hill, and failure to make a clean ascent on the first attempt rendered the competitor liable to penalty, but practically the only hill on the first day's run that was observed was Gowlane Hill on the old coach road to Killarney. A hill that deserved observation was Ballaghabeama Pass between Kenmare and Killarney. Gowlane was included in the End-to-end route last year, and was also in the Cork twenty-four hours trial. It is a straightaway ascent across the mountains, engineered after the manner of the Romans. Its surface is roughish, but it is not of the impassable class. Summerfield (2¾ New Hudson) found his power too low for the climb, and Chambers (4¼ B.S.A.) had the misfortune to blow out a plug. Jack (3½ Rover) missed the turn at the top after making a clean ascent of the whole hill and was penalised, and Farren (5 Indian) registered ten marks against the Indian team and himself by stopping to chat to some friends while in the non-stop section.

Only one man (Summerfield) failed to make a clean ascent of Ballaghabeama Pass.

The observation of Gowlane was entrusted to the members of the Cork club, and, presumably, they were also responsible for the marking of the route through Kerry. On the result they may be congratulated, as even the stranger found little difficulty in following the intricate course from the foot of the pass to Glencar, Beaufort, and Killarney, where, with a hundred miles covered, the second check was taken.

The Killarney to Limerick section led through Castleisland, Abbeyfeale, Newcastlewest, Rathkeale, and Adare, and except for the ascent into the mountains from Castleisland, it did not present any difficulties, and the sixty-five miles run was not marked by any incident. At Limerick there was the one and only stop of the day, an hour being allowed for lunch, and, as at Killarney, all were on time, except Summerfield, who was just outside the three minutes grace.





(Upper) C. B. Franklin stops his Indian and sidecar to allow the photographer, who was his passenger, to take a snapshot.
(Lower) "Sou'-wester," who, by the way, wore a cap, makes a few adjustments to his Douglas.

The direct road to Dublin was lengthened by taking the competitors to Tipperary, and thence to Cashel. The only secret check of the day was south of Cashel, but no one was found in advance of time.

The Second Day's Run.

When the second stage began on Wednesday all the starters were still in the running. The machines were in control overnight in Mr. F. A. Wallen's garage in St Andrew's Street, and at 6.30 the first man was sent away. The day's run was considerably shorter than that of the previous day, and there was nothing in the earlier stages of the route to cause any anxiety. In fact, it was generally regarded as a joy ride until Iscar Hill was reached in the afternoon for the flexibility test, and as this was looked on as the deciding factor in the competition, there was a general determination not to do any unnecessary speed work, so as to bring the engines to the foot of the hill in nice tune.

The northward journey followed the main Dublin to Belfast road by Swords, Babriggan, Drogheda, Dunbar, Dundalk, and Newry to Banbridge, checks being taken at three points. The cross-country cut from Banbridge to the Belfast-Portrush road at Antrim was looked forward to with a certain amount of trepidation, owing to its winding and intricate nature, but, thanks to the good offices of the police, who acted as living signposts all along the route, coupled with the plentiful scattering of arrows, there was little difficulty in following the official course, and Antrim was reached for lunch in good time by all save Summerfield, whose handlebar broke at Moira, compelling his retirement.

After luncheon a broad main road was followed to Ballymena, where the riders left the direct End-to-end course which they had followed from Cashel and crossed the mountains in a north-easterly direction to the coast at Cushendun, where a check was taken before entering on the observed hill and flexibility test. The two hills produced more trouble than any other part of the route, but the percentage of clean ascents was greater than in any competition held on the hill. Henderson (7 Harley-Davidson sc.) was stopped by the first sharp rise and lost his clean certificate. Jack (3½ Rover) fell in going down one of the dips. The wheel of the 6 Bradbury sc. ridden by Ladd failed to bite, and he actually slipped down the hill while his engine was running. Doleman (3½ Rover) lost his com-

The Irish End-to-end Trial.—

pression tap, and Wood (4¼ B.S.A.) broke a chain at the start of the flexibility test, but before actually entering it. He repaired the chain, and made a clean ascent, and will probably not be penalised.

After Ballyvoy it was plain sailing to the finish. The ascent from Iscar was followed by a grand run down to Cushendall, and then the coast road of Antrim was followed to the finish. Eighteen of the nineteen starters checked in on time at Fortwilliam Park.

Quite a number of men having scored full marks at all the open and secret controls, it was necessary to take into consideration their performances in the flexibility test to award the prizes.

The Awards.

W. H. Freeman (7-9 Indian) was adjudged to have made the best performance and was awarded the Palmer Trophy, the second and third prizes going to J. Doleman (3½ Rover) and R. S. Russell (2¾ Douglas) respectively. For the fourth prize there was a tie between C. B. Franklin (7 Indian sc.) and J. Stewart (2¾ Douglas).

The prize for the best unplaced sidecar performance was won by A. W. Mooney (6 Bradbury), and the team prize by the Douglas team, consisting of J. Stewart, R. S. Russell, and "Sou'-wester." All of these men were awarded gold medals in addition to the prizes.

The following also secured gold medals: T. Toole (4¼ B.S.A.), J. Dwyer (4 Triumph), and F. L. Dooly (4¼ B.S.A.)

Silver medals were awarded to the following: J. Farren (5 Indian), W. J. Henderson (7-9 Harley-Davidson sc.), W. J. Chambers (4¼ B.S.A. sc.), J. Browne (3½ Rover), T. W. Ladd (6 Bradbury sc.), E. G. Jack (3½ Rover), R. Jones (4¼ B.S.A.), and J. T. Woods (4¼ B.S.A.)

The All-Khaki Race Meeting at Brooklands.

Officials Appointed. Event to be held Saturday, August 7th.

SINCE our last issue went to press, considerable progress has been made in the organisation of a race meeting for officer motor cyclists. Together with Mr. T. W. Loughborough, secretary of the A.C.U., we have inspected the track. The road into Brooklands leading into the park, adjacent to the flying ground, was in process of being laid with Tarmac, and in a very short time will be in fine condition. The paddock will be put into repair by the time this meeting is held (Saturday, August 7th). The amount of track available, namely, about one and a half miles along the railway straight, will be put into sufficiently good order to enable half mile sprint races to be held.

The actual organisation of the event will be undertaken by the British Motor Cycle Racing Club, and entries should therefore be sent to the secretary, Mr. T. W. Loughborough, c/o The Auto Cycle Union, 83, Pall Mall, S.W. The cost of entry is 2s. 6d., and there will be an additional *deposit* of 2s. 6d., which must be enclosed, for the privilege of using the B.M.C.R.C. number plates.

As regards officials, the following have consented to act: The joint secretaries of the meeting will be Mr. T. W. Loughborough and Second-Lieutenant F. M. C. Houghton. The stewards will be Major D. F. Nicholl, D.S.O., R.A., D.A.A., and Q.M.G., Dr. A. M. Low, Second-Lieutenant, R.F.C., and Captain A. H. Loughborough, R.G.A. Timekeepers, Messrs. A. V. Ebblewhite and A. G. Reynolds.

A preliminary programme has been drawn up, which we reproduce herewith. As July 31st was considered to allow insufficient time to get in entries, the date of the meeting has been arranged one week later.

THE ALL-KHAKI MOTOR CYCLE RACE MEETING.

(Under the auspices of the B.M.C.R.C.)

Open to members of the British Army or Navy, or the Allied Forces (in uniform), beginning at 2 p.m. Saturday, August 7th.

EVENT 1.—The Lightweight Half-mile Sprint Race for motor cycles fitted with engines not exceeding 270 c.c.

EVENT 2.—The Douglas Motor Cycle Sprint Race. Open to all riders of Douglas machines.

EVENT 3.—Medium-weight Half-mile Sprint Race for motor cycles fitted with engines not exceeding 550 c.c.

EVENT 4.—Unlimited Half-mile Sprint Race for motor cycles fitted with engines not exceeding 1,000 c.c.

EVENT 5.—The Passenger Half-mile Sprint Race for sidecar outfits fitted with engines not exceeding 1,000 c.c., and cycle cars not exceeding 1,100 c.c.

EVENT 6.—Two gymkhana events.

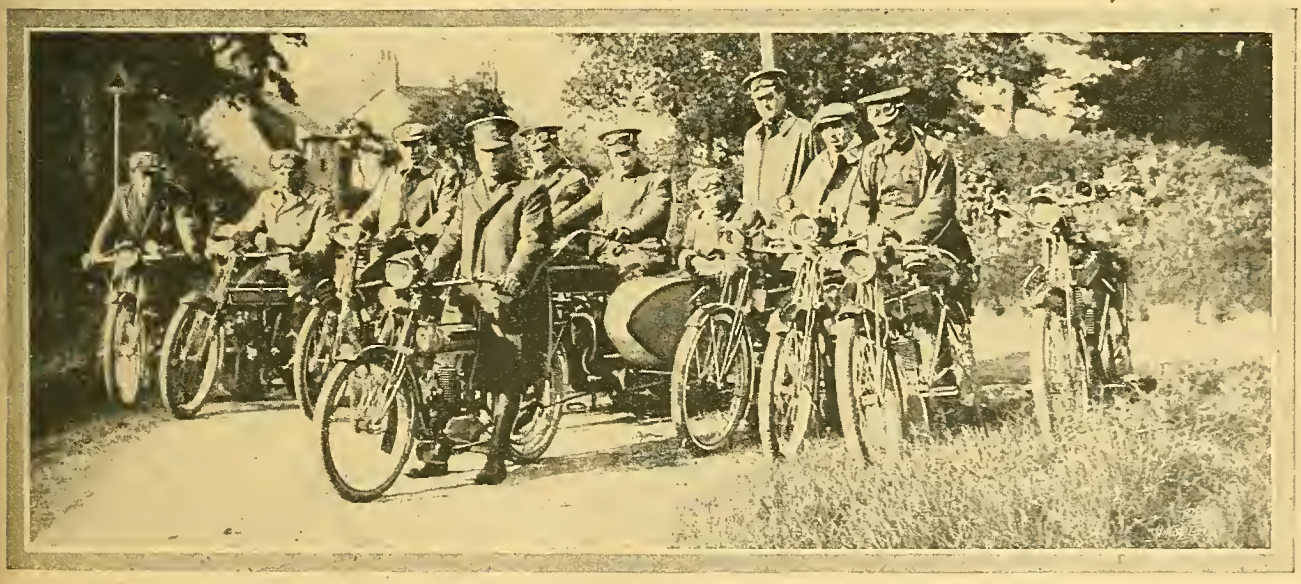
EVENT 7.—Hill-climb.

Entries close on Saturday, July 31st.

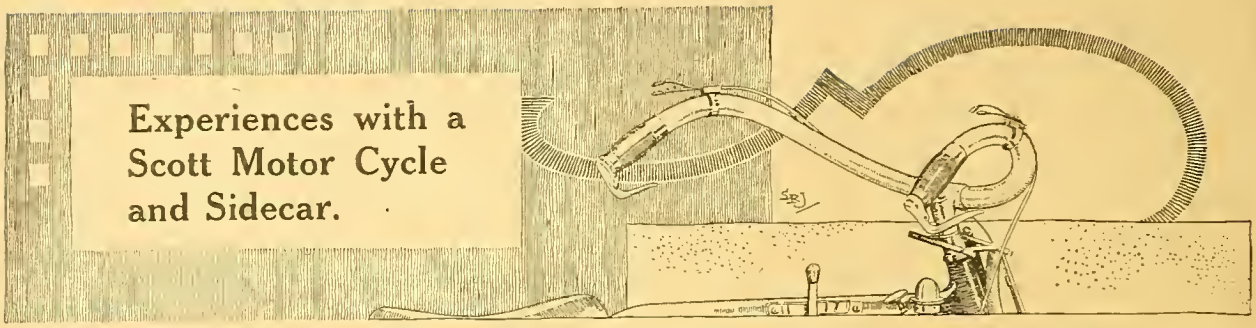
A silver cup, presented by the proprietors of *The Motor Cycle*, will be awarded to the competitor making the best aggregate performance.

The Brooklands authorities hope to arrange for lunch and tea to be supplied to competitors, officials, and spectators at reasonable charges.

We must again remind our readers that the general public are not admitted to Brooklands; only members of the B.A.R.C. and the B.M.C.R.C. will be admitted, and officers and men in uniform.



Despatch riders attached to the Liverpool Mechanical Transport Corps, National Volunteer Reserve.



Experiences with a Scott Motor Cycle and Sidecar.

With some Hints and Tips on Care and Upkeep by a Member of our Staff.

(*Concluded from page 52.*)

Reassembling the Engine.

The various parts of the engine are now ready for assembly, and certain packing joints will be required as follow:

Eight transfer port washers.
Two cylinder base rubber rings.
Two cylinder base linen rings.
One bottle of Silico enamel.

First of all, the crank case should be turned upside down and some thick oil poured in on the connecting rods, so that it runs down on to the gudgeon pins and bushes. The crank case can now be returned to its normal position on the bench, and the rings put back in their respective grooves (with three strips of tin) on the pistons, making sure that they are in their correct positions as regards their slots. The bottom ring should be turned round with the fingers until its slot is midway between the relative positions of the exhaust and inlet ports, as shown in the diagram, thus preventing the edges of the piston ring from catching on the port lips.

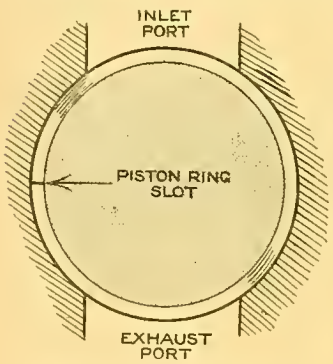
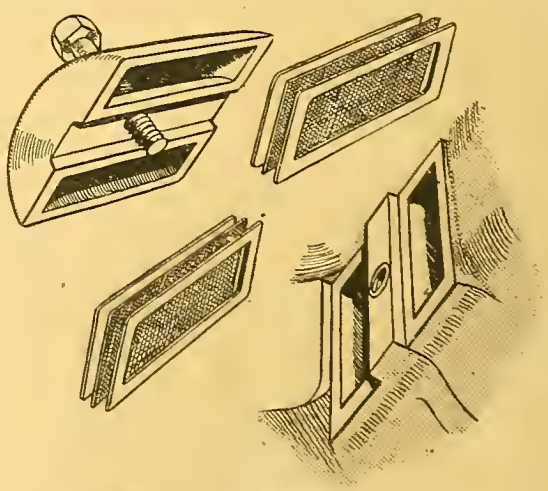


Diagram showing correct position for seat of bottom piston ring.

An operation entailing a certain amount of care now confronts us, namely, replacing cylinders over pistons and bedding them down in position on the crank chamber. Take a perfectly clean brush and paint the cylinder walls and pistons with some good lubricating oil, but do not let any drip on to the surfaces that receive the cylinders on the crank chamber. The inner cylinder rubber ring joints should now be slipped over the cylinder extensions as well as the linen ring joints in position on the crank chamber, the latter being coated on either side with Silico enamel. The next operation is to turn the flywheel round until the two piston heads are level with each other, and in doing so be careful not to dislodge the piston rings from their correct positions in the slots. While you hold the pistons vertically, get someone to let the cylinders down gently over the pistons, meanwhile coaxing each ring into the cylinder bore as the cylinder casting descends. Finally, just before the cylinders actually bed down adjust the linen and rubber rings into their true positions. The cylinders can now be bolted up to the crank chamber, each nut being given small turns in succession to equalise the pressure on the joints.

The replacement of the transfer ports, covers, and gauzes on the engine may now receive attention. As there are two gauzes and four packing joints under each port cover it might be surmised by the novice that they are a matter of difficulty to fix in position, but, provided the faces of the ports and covers are clean, and that a little care is taken to see that the washers are each gently coated with Silico enamel and carefully placed in position, there can be no possibility of leaks past the packing occurring at any time. The enamel is best applied in this case with a child's small paint brush, and if the engine can be shifted near a large window the extra light gained will be found to be of great service. When all the packings and gauzes are in position each transfer port cover should be tightened down without violent strain, as the cover is only of aluminium, and is not made to withstand undue force. The exhaust port covers are returned to the engine with screws, the joints in this case being made with



Transfer port cover and component gauges and packings ready for assembling on cylinder port openings.

The AUTO-CYCLE UNION

Another illustration of Progressive Policy.
The new rules provide that membership now carries
Full Privileges for a complete year from date of joining
(instead of until December 31st of each year).
The Auto-Cycle Union Insurance Policy covers all risks.
It is backed and guaranteed by the Law Accident Insurance Society, but
Disputed Claims are settled by the A.C.U. Committee.
All policies taken out under TABLE III. include,
Free Touring Membership of the A.C.U. without increase of Premium.

Or you can obtain these privileges for Per 5/- Annum. Is it possible to expend such a trifle to better purpose?

Write for full particulars to
T. W. LOUGHBOROUGH, A.M.I.C.E.,
Secretary A.C.U., 89, Pall Mall, W.

ENQUIRY FORM.	Make of Machine.	H.P.	Date of Manufacture.	Present Value.	Registered Number.
No.....					

Please send full particulars to: Name.....
Address.....

The Pope Motor Cycle.

A proposition worth YOUR investigation.

For Strength, Reliability, and Speed unsurpassed.

These Frames DO NOT Collapse and let you down.

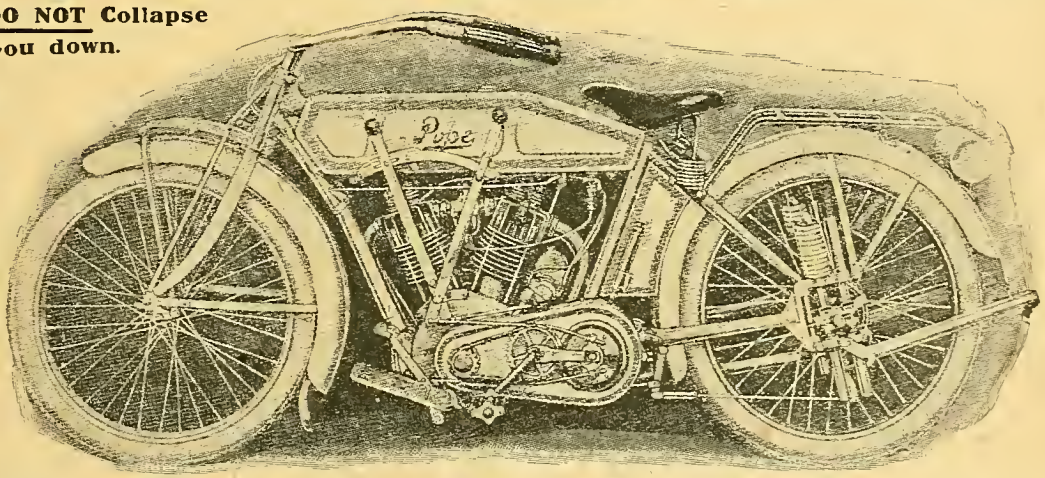
Don't read this:

The idea was:
The finest possible machine.

THAT idea is NOW an accomplished FACT.

NOTE the Rear Springing, the finest in the world.

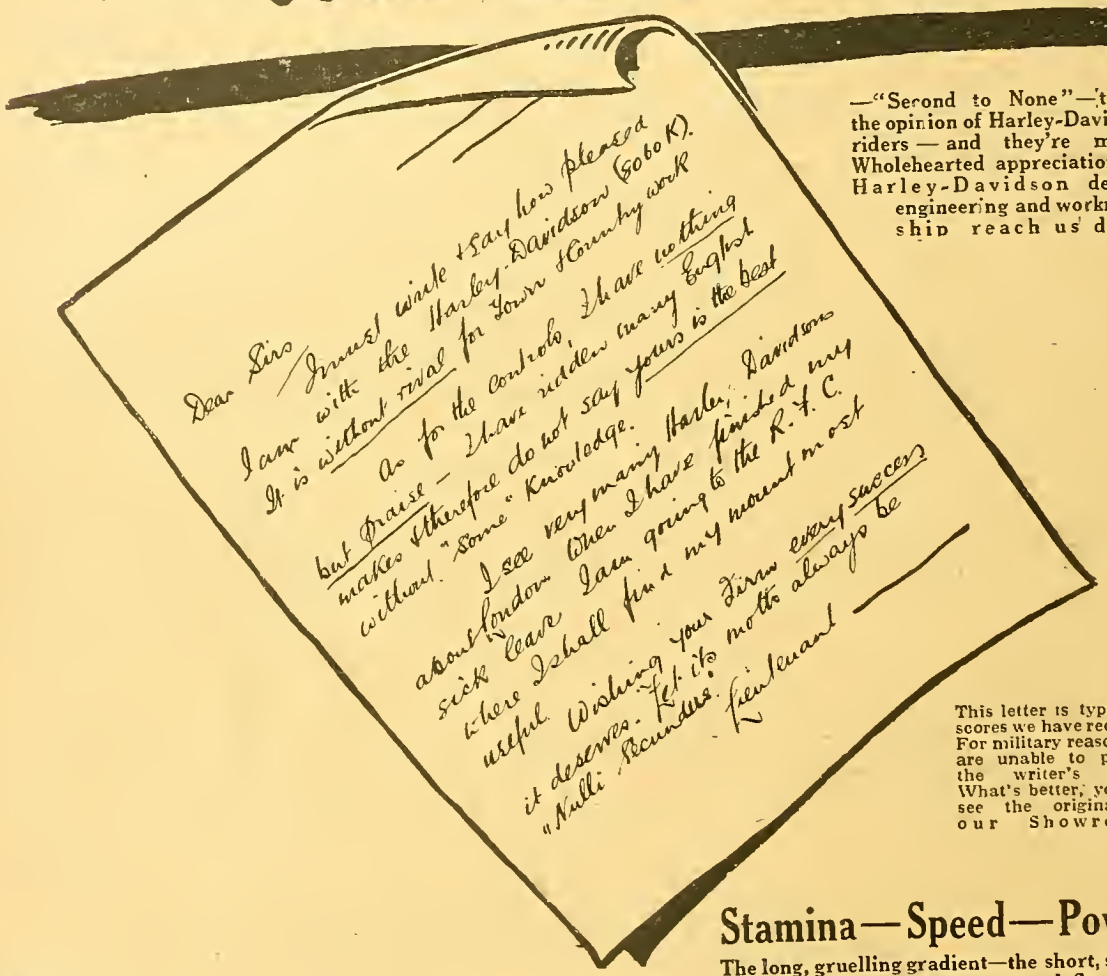
It is IT.



"R. 15." THE BIG TWIN.

Send for Prices and Particulars of our Productions to
THE POPE MOTOR CYCLE AGENCY, 55, Banner Street, Golden Lane, LONDON, E.C.
A FEW LIVE AGENTS STILL WANTED.

"Nulli Secundus"


Dear Sirs
I am with the Harley-Davidson (1060 K).
It is without rival for Town & Country work
but Praise – I have written many England
without "Some" Knowledge.
I see very many Harley Davidson
about London. When I have finished my
sick Leave I am going to the R.F.C.
where I shall find my mount most
useful. Wishing your firm every success
it deserves. Yet its motto always be
"Nulli Secundus".
Yours Lieutenant

—"Second to None"—that's the opinion of Harley-Davidson riders — and they're many. Wholehearted appreciations of Harley-Davidson design, engineering and workmanship reach us daily

This letter is typical of scores we have received. For military reasons we are unable to publish the writer's name. What's better, you can see the original at our Showrooms

Stamina—Speed—Power

The long, gruelling gradient—the short, sharp, uphill grind, prove the power and flexibility of the machine that's strong to endure, having speed and stamina beyond the normal

The HARLEY-DAVIDSON

Write for fully illustrated Catalogue No. 11J.

HARLEY-DAVIDSON MOTOR CO.,
59, Newman Street, London, W.

Telephone—Museum 2070 (3 lines). Telegrams—"Hardavmocy, Ox, London."

In answering this advertisement it is desirable to mention "The Motor Cycle."

Experiences with a Scott Motor Cycle and Sidecar.—

well-mixed aluminium paint instead of enamel, but this operation cannot be carried out until the engine is in the frame.

Final Adjustments.

After clamping the crank case doors in position, the engine is now more or less complete and ready for installation in the frame, according to the instructions of the makers. The lubricator feed pipes should be thoroughly cleaned with petrol and returned to the engine, and the carburetter may now be fixed in position with a leather joint (coated with boiled oil) between the induction pipe and crank chamber.

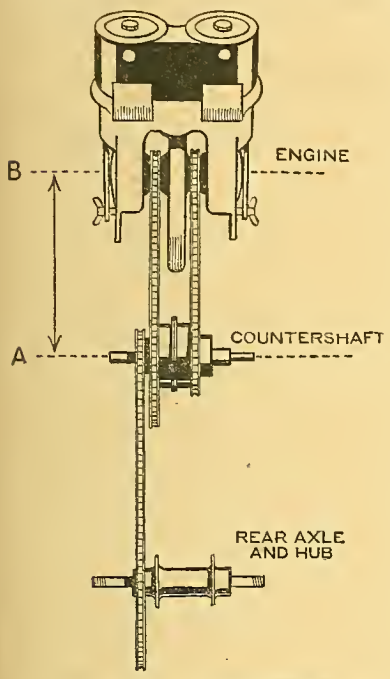
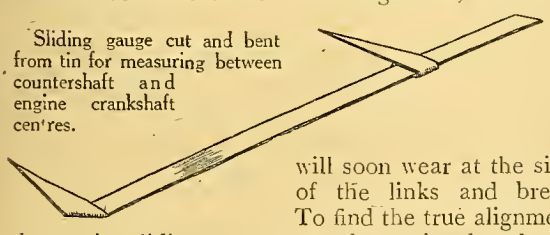


Diagram of Scott chain transmission.

One hears at times a certain amount of unjustifiable criticism concerning the chain drive transmission on the Scott, which the writer is inclined to put down to ignorance more than anything else. The transmission on this machine *must* be looked after as with any other, and it is quite certain that the chains and rear tyre last longer on a Scott than on most machines, owing to the smooth "four-cylinder" torque. The chains on the writer's machine are practically as good as new after four to five thousand miles, and breakage is certainly not feared yet. The diagram above shows the Scott transmission in plan form. To adjust the engine-countershaft chains, the countershaft is moved bodily either backwards or forwards on the lower tubes of the frame, but it is of vital importance to see that its axis A (see diagram) is dead parallel with the engine crankshaft B. If the countershaft is out of alignment, the chains

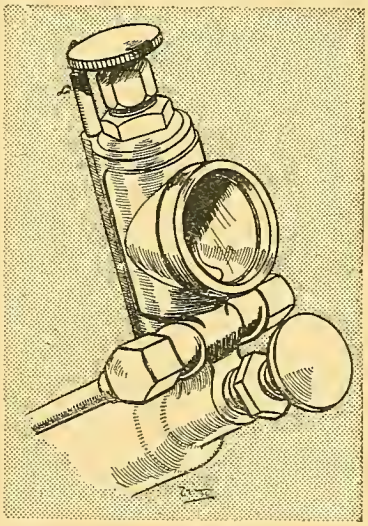

Sliding gauge cut and bent from tin for measuring between countershaft and engine crankshaft centres.

will soon wear at the sides of the links and break. To find the true alignment, make a tin sliding gauge, as shown in the sketch, and measure between centres of engine cranks and countershaft spindle, and adjust accordingly. If the countershaft is now parallel with the engine and one chain is in nice tension and the other very slack, unship the latter and take out a half link, and readjust the countershaft until both chains are right. As these chains generally run at high speeds in an enclosed state, they will run for a long time without fresh adjustment, *provided* the countershaft is in true alignment. To repair and alter the length of the chains themselves, the best advice that can be given to a novice is to consult the Renolds instruction booklets. The rear chain is easily kept in adjustment by sliding the rear wheel backwards or forwards; it should be lubricated with ordinary engine oil every hundred miles, and washed in paraffin and soaked in hot tallow every thousand miles. The writer has seen some Scotts habitually ridden with a perfectly dry rear chain, with the consequence that both the sprockets and chain wear rapidly with a liability of breakage at any moment. If the sprocket teeth have worn "hooky," the sprockets should be replaced by new ones in addition to a *new* chain, as the old chain has stretched and would not fit the new teeth.

The black portions show how sprocket teeth wear "hooky."

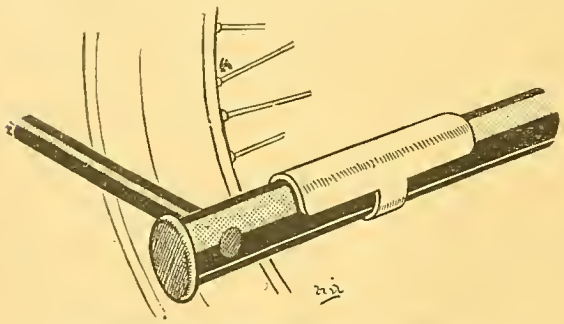
How to obtain Smooth Running.

"Four-stroking" and general misfiring seem to be old bogeys with some Scott owners. With the decompressor in action the engine of the writer's machine can be throttled to run so slowly that the individual explosions can be counted on the fingers, or with full compression in operation the machine can be slowed down to five or six miles an hour on top gear without misfiring occurring. This is done by eliminating air leaks and running on the pilot jet with careful extra air adjustments. If an air leak develops in the transfer ports or crank case joints, or in the induction pipe or carburetter, the slow running is completely upset and it is useless to try and effect a recovery by altering the carburetter setting or ignition. If an engine has been very badly mishandled, and the cylinders and pistons have worn badly through lack of consistent lubrication, a cure cannot be effected very well as regards misfiring, as the explosion gases pass the pistons and adulterate the crank case mixture. The obvious alternative is to have the cylinders rebored and pistons ground to fit. However, in the case of an engine that has been well looked after, but has seen a lot of life, new piston rings will often completely restore its vitality after a short time.


Reconstructed sight feed glass on the writer's Scott.

Experiences with a Scott Motor Cycle and Sidecar.—

There is one point which some riders of later date Scotts may not have noticed, and that is, misfiring caused by leakage of air through a cracked oil-drip feed glass down the oil pipes into the engine. It can be cured sometimes by introducing a new glass and leather packing, but the design of the sight-feed fitting is such that if there is the slightest inaccuracy in its workmanship air passes in and the oil leaks out. The trouble was remedied in the writer's machine by making and fitting an entirely new form of glass which is circular in shape. The original glass was taken out and the screw-down plug above it tightly soldered up. A piece of thin brass tube a little over an inch in diameter was then cut to shape and soldered into position, a thread being cut on the outer end of it to receive a threaded ring watch glass and packing, as shown in the sketch. The tube required careful cutting out to fit accurately in place on the



Aluminium clip on side member of rear stand.

lubricator, and the repair should not be attempted unless one is a tolerably good metal worker.

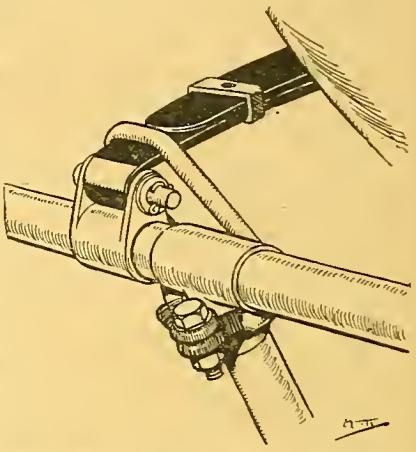
Lubrication.

The Scott is an exception to most two-stroke engines on the score of oil consumption, as the cylinders are water-cooled, and with careful driving 200 miles to a quart of oil (riding solo) can be accomplished. One must confess, however, that strict attention must be paid to the sight feed to obtain this figure. The writer uses bulk oil of good quality at 1od. a quart and feeding it at twice the rate, with very little extra expense. As one would expect, the engine runs remarkably well on this overdosing, which, moreover, seems to keep the piston rings free in their slots for a considerably longer period than usual. Reliance plugs have, so far, remained absolutely reliable. The lubricant used is the standard car engine oil generally kept in bulk in garages, but the buyer must beware of inferior stuff that is occasionally palmed off by unscrupulous people.

The oil feed pipes should be periodically unshipped and cleaned out, and if the radiator is taken off and returned at any time care should be taken to see that the rubber connections are free from kinks, which hinder the water circulation. On this last point insulating tape wrapped around the joints and painted with Silico enamel will effectively prevent water leakages occurring at any time.

An illustration is given showing a small clip fitting attached to one of the side members of the rear stand on the machine. It is made of aluminium sheet, cut to shape, and sprung in place on the stand, and it is most useful in preventing the enamel from being scratched away when kicked down with the foot.

A sketch is also given showing the rubber thongs that have been slipped over the shackles of the leaf springs on the sidecar to prevent bounce of the body when unloaded. The thongs are those fitted to doors in order to keep them shut, and were purchased at an ironmonger's for two or three shillings. They were simply slipped over the springs and part of the chassis and the "eyes" secured together with a 3/8in. nut and bolt.



Anti-rattle rubber thongs over sidecar leaf springs.

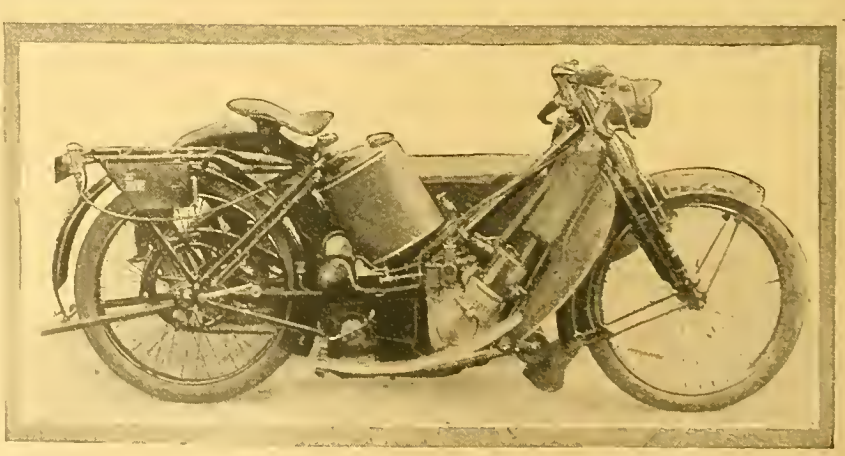
The sidecar fitted to the writer's machine is a sporting model Canoelet, and it is most comfortable. A fourth point coupling to the machine has been added, and the body painted in Scott purple enamel, thus rendering the whole outfit a very smart affair. The sidecar is light in weight and makes no perceptible difference in the speed of the machine, and the petrol consumption works out at approximately 65 m.p.g. on a straightforward journey. M.A.M.

WOODCHUCK REDIVIVUS.

How many strokes would a two-stroke stroke if a four-stroke could stroke two?

A two-stroke would stroke all the strokes it could stroke if a four-stroke could stroke two.

LIEUT. C. H. T. ALSTON,
Inventor of the Premier two-stroke engine.



A Scott sidecar outfit, referred to in the accompanying article.

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Two-stroke Comparisons.

You would oblige me very much by answering the following queries: (1) Given two machines of same horse-power, one four-stroke, the other two-stroke, and of same weight, does the two-stroke machine consume much more petrol than the four-stroke? (2.) Am I correct in thinking that the two-stroke machine, because of the greater number of explosions in a given time, could mount a hill much easier than a four-stroke engine of same horse-power and same weight?—T.D.

(1.) A two-stroke machine will consume slightly more petrol than the four-stroke machine of the same horse-power and weight. This state of affairs is easily accounted for, inasmuch as the two-stroke type of engine has to perform twice the number of power strokes over a given distance. (2.) Your surmise that a two-stroke machine will mount a hill more easily than a four-stroke machine of the same horse-power and weight is quite correct. This is a special virtue of the two-stroke engine.

Increasing the Gear Ratio.

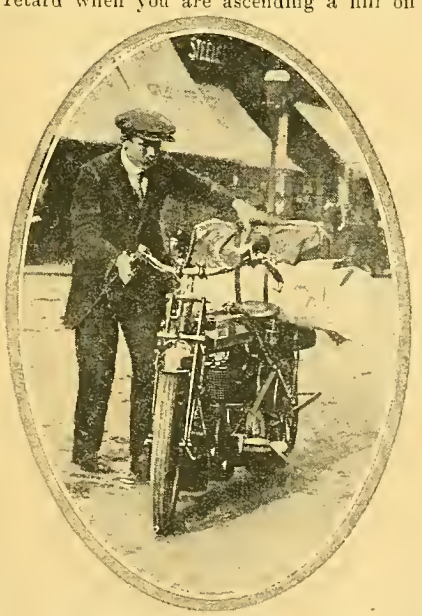
I have a James 2¼ h.p. two-stroke, two-speed, 1915 model, geared 5½ and 10 to 1. I am wondering if it would be advisable to raise the gears by enlarging the pulley to, say, 4 and 7½ to 1. I find that I never have to use the low gear, even on very steep gradients. I am practically a beginner, and would like your advice before making the alteration. (1.) Would this arrangement tend to give a cooler engine? (2.) Would there be less wear and tear of the engine? (3.) Would there be less strain on the belt? (4.) Would speed and petrol consumption be about the same? I may say that I average 25 m.p.h., and run about 100 miles to the gallon.—J.G.

We see no objection to increasing the gear as the engine climbs so well on top speed, but do not go too far. 4 to 1 strikes us as being too high. (1.) The engine would keep cooler with a higher gear. (2.) Also, provided that the engine were not overloaded, there would be less wear and tear. (3.) The strain on the belt would not be appreciably affected. (4.) The petrol consumption would be slightly improved, and the speed perhaps greater on the level, though raising the gear does not always increase the speed.

The Effect of Varying the Timing.

(1.) Would you be kind enough to explain briefly to me the idea of retarding and advancing the spark? (2.) When is it convenient to retard and advance the spark? (3.) I should feel much obliged if you would tell me why the front cylinder of a 6 h.p. twin engine does not receive the required amount of lubrication, yet the back cylinder seems too well fed?—S.H.M.

(1.) You will find the matter fully dealt with in "Motor Cycles and How to Manage Them," which can be obtained from these offices, price 1s. 2d. post free. Briefly, it is this: That the farther advanced is the spark the greater the power of the explosion, owing to the fact that this occurs at the highest point of compression; whereas, with a retarded spark, the explosion occurs at a point when the compression is not so high, consequently the explosion is weaker. 2.) Generally speaking, the spark should be kept as far advanced as possible, taking into consideration the conditions under which you are travelling. You only retard when you are ascending a hill on which the engine shows signs of labouring. (3.) This is largely governed by the direction of rotation of the flywheels, which tend to throw up the oil into the back cylinder, with the result that the front cylinder is somewhat starved. The trouble is overcome in many cases by introducing the oil direct to the front cylinder.



The motor cycle of a newsagent. The owner rides every day a distance of twenty miles to get his stock of newspapers, which is strapped on the carrier of the B.S.A.

Cams.

Could you give me the correct shape for the inlet and exhaust cams of a 3½ h.p. engine, also the correct lift and timing?—E.H.T.

It is outside our province to design cams and other engine parts. You do not tell us what result you wish to obtain from the cams you propose fitting. Roughly, it may be stated that for racing purposes a quick lift and long opening are desirable, but cams of this sort are inclined to be noisy. Therefore, for ordinary purposes a more gradual lift and drop is preferred. The valve lift on your engine should be from $\frac{3}{16}$in. to $\frac{1}{4}$in., and the valve timing should be approximately as follows: Exhaust valve opens when the crank is 45° from the bottom of the firing stroke, and closes on top of the exhaust stroke or very slightly after. The inlet valve opens as the exhaust closes or just previously, and remains open for approximately 180°, or one complete stroke for the piston.

Fitting a Drip-feed.

(1.) My machine is a 3½ h.p. T.T. model, and has ordinary pump lubrication. Would it be advisable to fit a drip-feed, and is this method reliable on such a machine? (2.) What is the average number of drips per minute? (3.) Will a wired-on tyre stand a retread?—A.F.J.

(1.) The modern drip feed is just as reliable as a pump; in fact, it is not infrequently a combination of the two, as by adjusting the drip regulating screw you may either set the lubricator to give so many drops per minute, or you may open it fully and put a full pumpful into the engine. (2.) The number of drops per minute is regulated according to the speed; for instance, at 20 m.p.h. you may give thirty drops per minute, or even fewer than this, while if you are really going hard you may let the oil run in a thin continuous stream. (3.) A wired-on tyre should stand a retread as well as a beaded tyre.

Two-stroke Rattle.

I should be very glad if you would answer the following: I have a 1915 two-stroke machine of 2¼ h.p. At speeds of twenty miles per hour the engine develops an alarming rattle, which I have traced to a badly worn big end. The machine has only run 370 miles, and is oiled on the petroil system—one breakfast cup of oil to one gallon of petrol. What do you advise to prevent a recurrence of this trouble, when rebushed?—J.W.H.

It is just possible that a faulty big end may have been fitted in the first instance. In any case, to avoid a similar occurrence of the trouble, lubricate with a copious supply of oil, *i.e.*, use a ratio of 1 to 14.

No Power.

I bought a two-stroke motor cycle last April, and have ridden under 200 miles so far. Recently I have been troubled with a metallic knock, not so much like engine knock, but more as if the mudguard or tank were being thumped. Recently, too, this has been accompanied by the engine getting rather hot, and by the machine slowing down and refusing to accelerate again, and finally stopping. If I slow down at a corner and then open the throttle the machine knocks a bit and then stops. I have soaked the engine with the oil recommended by the makers, giving it as much as it would take without four-stroking. Also it has lately been almost impossible to wheel the machine with the compression released, but after squirting paraffin into the cylinder it will go all right for a mile or two. The magneto timing is quite correct, and I have tightened every nut on the machine. My theory is that the oil must have stuck up the piston to such a degree that the engine has had to slow down, and, at slow speeds, to stop. This would explain the overheating and the effort to push the machine. Will you please tell me your opinion, and if like the above, why should it go all right for 150 miles before gumming up? As regards the knock, it occurs mostly when starting, and is less in evidence at high speeds. All nuts are tight, and I can find no loose parts. Would any harm result to an engine which is very oily being run four miles without oil? This I did some time ago, it being quite an oversight. The carburetter gives me only 60 m.p.g., and I can drive with the air fully open at all speeds. Would it not be better to give extra air, and is there any means of doing so?—F.W.C.

We should advise you to take the cylinder off your engine and carefully clean the cylinder head and the valve ports. Also examine the piston rings. It is very probable that you will find the top one stuck in its groove, in which case it should be very carefully removed with the help of paraffin. The plug may be at fault; try a single point plug with thick electrodes. It is very likely that running a machine for four miles without oil would do some damage, though if, as you say, the engine was very oily at the beginning the damage may not be serious. If cleaning does not improve the running, we are of opinion that the piston is warped, possibly owing to the engine having been run without oil, which would cause excessive heat. In this case, it must be submitted to the makers. You would get better consumption if you fitted a smaller jet, but this must not be too small or you will have difficulty in starting.

Low Registration Number.

As I am having a new mount, and the registration numbers in Swansea have now gone up to four figures, I should like you to tell me if I can register in another county or borough, where low numbers may be obtained.—J.P.W.

You may register in any county. We should recommend you to apply to the Clerk of the County Council, Darlington, where you might possibly get a low number, or to the following Irish counties: Monaghan, Carlow, Clare, Donegal, or Fermanagh.

Slow Running.

I have recently purchased a 3½ h.p. motor cycle, to which I fitted a 1914 Senspray carburetter, 34 jet. The machine starts at about 10 m.p.h. Can you give me the correct size of jet to use, as this is far too fast for me, not being in any way an expert? The slides are properly adjusted according to the makers' directions.—J.S.J.

It is as well to bear in mind that engine tune has a great effect upon slow running; in fact, just as much so as a correct carburetter setting. The chief points to watch so far as the engine is concerned are—cleanliness, correct strength for valve springs and a tappet clearance of not more than $\frac{1}{100}$in., a good single point plug adjusted to .4 mm., a correctly adjusted magneto contact breaker, and a squarely trimmed up high-tension carbon brush. Great care must be taken to prevent air leaks in the inlet pipe.

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"L.K.G." (Brighton).—A.B.C. 1915 T.T. and touring model for solo work. Reliability, range of speed, hill-climbing, durability, upkeep, wear on tyres, and efficiency.

"S.L." (Coventry).—650 × 65 Dunlop grooved tyres for heavy passenger combination. Durability and freedom from skidding.

LOST AND FOUND.

We receive many letters regarding accessories, etc., both "Lost" and "Found," which we are unable to find space for. As these particular matters are of interest to two persons only, viz., the finder and the loser, we keep a list of such articles, and all that are notified to us are inserted in this list. Should we receive a letter from the finder which corresponds to the article lost, the two persons are put into communication, but it must clearly be understood that we cannot enter into correspondence on the matter beyond this.

ROUTES.

ILFORD TO BUDE.—H.G.R.

Through London *viâ* Bow, Whitechapel, Embankment, and out to Hounslow, Staines, Basingstoke, Andover Salisbury, Bishopstone, Broad Chalks, Shaftesbury, Sherborne, Honiton, Exeter, Okehampton, Hatherleigh, Holsworthy, to Bude.

TAUNTON TO AYR.—J.O.B.

Taunton, Bridgwater, Highbridge, Bristol, Almondsbury, Stone, Gloucester, Tewkesbury, Worcester, Kidderminster, Bridgnorth, Wellington, Hodnet, Whitchurch, Tarporley, Warrington, Wigan, Preston, Garstang, Lancaster, Carnforth, Kendal, Penrith, Carlisle, Annan, Dumfries, Corsock Bridge, Balmaclellan, Dalmellington, Ayr.

SUNDERLAND TO BIRMINGHAM; also mileage.—W.H.D.

Sunderland, Durham, Darlington, Northallerton, Thirsk, Topcliffe, Boroughbridge, Wetherby, Aberford, Ferrybridge, Doncaster, Tickhill, Worksop, Mansfield, Derby, Burton-on-Trent, Lichfield, Sutton Coldfield, to Birmingham. Approximately 210 miles.

PORTSMOUTH TO LONDON, avoiding, if possible, roads cut up by military traffic.—H.A.T.

Portsmouth, Cosham, Petersfield, Farnham, Hog's Back, Guildford, Ripley, Kingston, to London. This avoids the bad stretch of road between Godalming and Hindhead; the road is fairly good.

KEARSLEY (LANCS.) TO GOLSPIE (SUTHERLAND).—A.G.

Kearsley, Bolton, Horwich, Chorley, Preston, Garstang, Lancaster, Kendal, Penrith, Carlisle, Gretna Green, Lockerbie, Crawford, Abington Inn, Symington, Lanark, Carluke, Cumbernauld Station, Denny, Stirling, Dunblane, Auchterarder, Perth, Dunkeld, Ballinluig, Pitlochry, Blair Atholl, Dalwhinnie, Kingussie, Carrbridge, Inverness, Beauly, Dingwall, Bonar Bridge, to Golspie. A considerable part of the journey could be cut off by going through Evanton and across the hills to Bonar Bridge.

ABERDARE TO BRIGHTON, avoiding traffic as much as possible.—G.R.

Aberdare, Pontypridd, Caerphilly, Newport, follow Chepstow road turning right to Severn Tunnel Junction, and training to Pilning (railway company handle motor traffic well), Mangotsfield, Bath, Beckington, Warminster, Hertesbury, Salisbury, Stockbridge, Winchester, Brandean, Petersfield, Midhurst, Pulborough, Steyning, Brighton.

WOLVERHAMPTON TO CHIPPING ONGAR (ESSEX); also approximate distance.—H.J.B.

Wolverhampton, Kingswinford, Stourbridge, Bromsgrove, Alcester, Stratford-on-Avon, Banbury, Aynho, Bicester, Aylesbury, St. Albans, Hatfield, Goff's Oak, Cheshunt, Waltham Abbey, Epping, Ongar. Approximately 150 miles.

MOTOR CYCLES FOR SALE.

Auto-Wheels.

AUTO-WHEEL, B.S.A. de Luxe, 1914, for sale, very little used; £10/10.—J. Andrew, Church St., Berrie. [X1727

WALL Auto-Wheel; £14/14 cash, or 26/8 down and 26/8 monthly.—Seen at 248, Bishopsgate, London, E.C. [1712

AUTO-WHEEL and Enfield 3-speed cycle, 26in., good condition; 10 gns., or separate, 7 gns.—White, 12, Oakhill Rd., Sutton, Surrey. [8763

WALL Auto-Wheel, 1913, little used, good running order, all accessories; 10½ gns.—Hill House, Wotton-under-Edge, Glos. [8844

AUTO-WHEEL, 1914, practically new, ridden under 10 miles, fitted gent's Royal Eagle, extra heavy tyres; 20 gns.—42, South St., Romford, Essex. [8732

AUTO-WHEEL and James Tricycle, gent's 22in., with Hucklebridge attachment; new, actually in stock; £33/11.—Hucklebridge, 133, Sloane St., London. [X1878

AUTO-WHEEL de Luxe, 1914, in perfect condition; £8/10; owner buying car, hence sacrifice; seen any time.—R.R., 11, Pembridge Crescent, Notting Hill Gate. [8722

TWO 1914 Auto-Wheels in first-class order, £9 each, or one with special B. and B. carburetter, £10; or with 3-speed Raleigh, 22in. cycle, £15.—Crow Bros., 190, High St., Guildford. [8909

AUTO-WHEEL, Model de Luxe, £15/15, new March, 1915, with shock absorber and 11/6 rear lamp, rider selling on account of ill-health; accept 10 gns.—Johnson, Portscatho, Cornwall. [8795

Bat.

BAT, 2¾h.p., spring frame, h.b.c., low, reliable; £7.—24, Lister St., Rotherham. [8738

4h.p. Bat-Jap, spring frame, variable gear, as good as new; £22/10.—Murphy, Green View, Tralee. [X0452

6h.p. 1912 Bat, single gear, Whittle, F.R.S., etc., nice condition; £26.—Harvey, Hudson and Co., South Woodford. [X1888

1914 4½h.p. Twin Bat-Jap, 2-speed, speedometer, Lucas horn and lamps, Amac, done 4,000; £46.—Bowyer, Grosvenor Lodge, Twickenham. [X1815

BAT-J.A.P., late 1913, 7-8h.p., 2-speed, clutch combination, £55; large deposits secure preferential terms.—Lamb's, 151, High St., Walthamstow. [8776

BAT-J.A.P., 1912, 3½h.p., single gear, in excellent condition; £21/10.—The Exeter Motor Cycle Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0569

BAT-J.A.P., 1913, 6h.p., underslung coachbuilt sidecar, 2-speed, chain drive, F.R.S. lamp set; £48.—W. E. White, Three Jolly Weavers, 94, Lever St., Goswell Rd., E.C. [8779

LATE 1914 6h.p. Bat-Jap, coach sidecar, 3-speed, kick start, speedometer, Lucas lamps, all accessories, splendid combination, like new, cost over £100; accept £63.—436, Whitehorse Rd., Thornton Heath. [8799

BAT, 6h.p., October, 1913, 3-speed, kick-starter, and 1914 Swan sidecar, lamps, horn, spare inner tubes, belt, etc., hardly used since war, thorough overhaul by makers last April, excellent condition; 45 gns.—Lieut. Thursfield, Torpedo Boat 113, Sheerness. [8928

BAT, 1913, 5-5h.p., spring frame, 2-speed, chain driven, only run 3,000 miles by careful rider, luxuriously fitted 3-ply coachbuilt light sidecar, special luggage carrier, ideal outfit for touring; £60; with accessories cost £104.—J.W.M.G., Box 19354, Haddon's Advertising Offices, Salisbury Sq., E.C. [8752

Bradbury.

BRADBURY, 4h.p., and sidecar, lamps, horn; £24.—54, Rathfern Rd., Catford. [8880

BRADBURY, 1913, 4h.p., 2-speed, free engine, and sidecar; £30.—29, St. Leonards St., Bow. [8857

4h.p. Bradbury and Coach Sidecar, N.S.U. gear, grand condition; £32.—Harper, Craven Arms, Salop. [X1960

BRADBURY 1915 Models, lists free.—Agents, Bright and Hayles, Church St., Camberwell. [8917

BRADBURY, 4h.p., wicker sidecar, 2-speed, F.E., good order; £30.—Seen 50, High St., Peckham, London. [8688

4h.p. Bradbury, Gondola sidecar, new 1913, 2-speed, equal to new; best offer over £30.—96, Yavasour St., Rochdale. [8405

BRADBURY, 1915, 4h.p., 3-speed countershaft model; £60: cash or exchange.—Motories, 68, Horton St., Halifax. [0388

1914 3½h.p. Bradbury Twin, opposed, 3-speed countershaft gear, in perfect condition; £55, near offer.—Apply, R. Vinson, Monkton, Kent. [8725

1912 4h.p. Bradbury, 2-speed, free engine, sidecar, lamps, horn, tools, etc.; £32.—Shearman, 7, Hargreaves Buildings, Rothwell, Leeds. [X1932

4h.p. Bradbury, 1914, Millford coachbuilt family sidecar, 3-speed, new tyres and belt, Lucas lamp, cyclometer, accessories, £20 just spent in overhauling and doing up; 60 gns.; could transfer insurance.—Wise, Middleton, King's Lynn. [X1942

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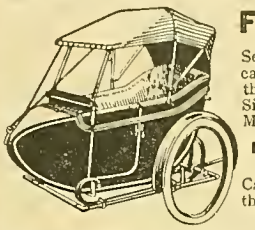

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The most improved Sidecar machine made, fitted with automatic mechanical oil pump like a car, 3-speed sliding counter-shaft gear, fool-proof, both hand and foot control to clutch, spring seat, 3in. tyres, silent running engine will just tick over when in free engine, double stem handle-bar made from rolled cold steel, carrier, one steel stamping, spare petrol tank; in fact, refinements not found on any other machine. Full detailed catalogue upon application.

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6 h.p. twin **BRADBURY,** 1915 model, 3-sp., complete with £16 16 Bradbury Sidecar, speedometer, screen, £4 4 electric lighting set, only run about 1,000 miles; cost nearly £100 ..... **£75 0**
3 h.p. **LINCOLN-ELK,** 1910 model, M.O.V., magneto, B. and B., h.b. control, enamel and plating in splendid condition **£12 15**
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6 h.p. twin **REX,** spring forks **£11 10**
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MOTOR CYCLES FOR SALE.

Brough.

BROUGH, 5-6h.p., torpedo sidecar, fast, and powerful; £16, bargain.—16, Upper Hall St., Peckham. [X1857

LATE 3½h.p. 1914 Opposed Twin Brough, only used 6 weeks by officer, very fast, and still new; £44.—Walker, Fishburn, Ferryhill. [X1922

Brown.

3½h.p. Brown, m.o., good puller with sidecar; real bargain, £15.—17, Goldhawk Rd., London, W. [8800

BROWN, 3½h.p., mag., 1910, modern appearance, fast, recently overhauled; £19, or offer.—59, Onslow Gardens, Wallington. [8887

B.S.A.

B.S.A., 1915, 4¼h.p., model K, in stock; £59/15.—Priestley, Seamoor Rd., Bournemouth. [8840

B.S.A., 1914, chain drive, with B.S.A. sidecar, complete; £57/10.—Geo. Sharman, Brackley. [X1813

1914 B.S.A., chain drive, 3-speed counter-shaft, and sidecar; 55 gns.—33, Coten End, Warwick. [X1788

B.S.A., 1914, 3½h.p., 3-speed, splendid condition; £42/10.—63, Henrietta St., Bulwell, Notts. [8991

B.S.A., 1912, 3½h.p., and sidecar; £33/10; perfect running order.—Jones, 595, High Rd., Tottenham, N. [8747

B.S.A., 1914 model K, 3-speed gear box, perfect condition, carefully used; 45 gns.—Potter, Billericay, Essex. [8967

B.S.A. 1914½ 4¼h.p. Combination, 3-speed, chain driven, little used; £60.—Dr. Pitt, Platt Bridge, Wigan. [8781

B.S.A., 1914, 4h.p., 3-speed counter-shaft, chain, Lucas, excellent condition; £48.—Nicholl, Easington, Durham. [X1919

3½h.p. 2-speed B.S.A. and Sidecar, Cancelet sidecar, all spares and accessories; £45.—169a, Lower Clapton Rd., N.E. [8946

B.S.A., late 1913, 3½h.p., 2-speed, chain drive, Jones, spares, perfect order; nearest £40.—Brown, 3, Marlborough Grove, York. [X1814

1914 B.S.A., 4¼h.p., 3-speed, chain drive, B.S.A. coachbuilt sidecar, good condition; £53.—R. Hockenhull, North Crofts, Nantwich, Cheshire. [X1647

B.S.A., 4¼h.p., late 1914, all chain drive, semi T.T. bars, new Lucas lamp and horn, Watford speedometer; £59.—W.S.F., 25, Brisbane Rd., Reading. [8753

B.S.A., 1914, 4h.p., 3-speed, chain drive, speedometer, lamp, horn, little used, tip-top condition; £50.—J. M. Child, 13th D.L.I., Bramshott, Hants. [8731

B.S.A. and Sidecar, 1912, 2-speed, F.E., and accessories, fine condition, and guaranteed perfect; £42.—Leighton's, opposite Wood Green Station, G.N.R. [8791

B.S.A., 1915, 4¼h.p., 3-speed, chain drive, Montgomery coach sidecar, accessories, complete, condition as new; £65.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0480

1915 Model H B.S.A., T.T. and touring bars, Lucas large lamp, rear light, and horn, cost £68, perfect, unscratched, as new; £60.—Box 8,088, *The Motor Cycle* Offices, Coventry. (D) [X1789

1915 B.S.A. Motor Cycle, chain drive, counter-shaft 3-speed gear, 3 Miller and Lucas lamps, Lucas horn, also Millford sidecar, practically unused, all new condition; cost £80, price £65.—Dickenson, 64, Gerard St., Derby. [X1826

1914 B.S.A. Combination, 4¼h.p., 3-speed countershaft gear, clutch, kick starter, chain-cum-belt, lamp, speedometer, etc., perfect condition, hardly used; owner on active service; Montgomery sidecar, waterproof apron.—A. Glynlee, Church Rd., Tunbridge Wells. [X1646

Calthorpe.

1914 Calthorpe Junior, little used; bargain, £18/10.—Church, 8, Sterling Rd., Enfield, N. [8965

CALTHORPE Junior, 2-speed, 1914, little used; £16/10.—C/o Hercules Dairy, Hercules Place, Holloway. [X1856

CALTHORPES.—All models in stock; large deposits secure generous terms.—Lamb's, 151, High St., Walthamstow. [8773

CALTHORPE, 1915, latest 2-speed lightweight models in stock; cash or extended terms.—Eagles and Co., High St., Acton. [X1910

CALTHORPE Motor Cycles, J.A.P.'s and 2-strokes, from £27/14; send for list and easy payment terms.—Storey's, 118, Gt. Portland St., W [0647

CALTHORPE.—Immediate delivery from stock of all single-speed and 2-speed 1915 Calthorpe models.—Keys and Paskells, 44, Finsbury Pavement, E.C. [8648

CALTHORPE-J.A.P. 2-speed and Calthorpe 2-stroke, actually in stock; free tuition.—Hucklebridge, 133, Sloane St., London. Tel.: 451 Victoria. [X1880

CALTHORPE-J.A.P., latest model, 2¾h.p., Enfield 2-speed gear, actually in stock; £34/13.—Prestwich's Motor Exchange, 26, St. John's Rd., Hove, Brighton. [7764

CALTHORPE and Sidecar, 1912, 3¾h.p., Bosch, B. and B. carburetter, Mabon 8-speed gear, free engine, just re-bushed; £21, or near offer.—Write, Hollow Tree, The Heath, Dartford. [8910

MOTOR CYCLES FOR SALE.

Calthorpe.

CALTHORPE Junior, 1914, 2-speed, Michelin tyres, B. and B. carburetter, enamelling and plating practically as new; £18; exchange entertained.—Ideal Cycle Co., Thundersley, Essex. [X1929

CALTHORPES from stock; 2-speed 2-stroke models, £31/7; also 2¾h.p. Calthorpe-Jap, 2-speed models; delivery from stock; extended payments, or exchange.—Wauchope's, 9, Shoe Lane, London. [X1781

1915 Calthorpe-J.A.P., 2-speed and clutch, £34/15; also 2¼h.p. 2-stroke, 2-speed, £31/8/6; delivery from stock; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6409

Campion.

NEW 1915 Campion, 2½h.p., only ridden 90 miles; £25 cash.—Wm. Coltman, Lawns, Hinckley, Leicestershire. [X1697

Centaur.

4h.p. Centaur, spring forks, low, B. and B., do 40; £12.—G., 44, Chesterton Rd., North Kensington. [8687

CENTAUR, 3½h.p., 2 speeds, Montgomery sidecar, perfect; £35.—70, Evering Rd., Stoke Newington, N. [8949

Chater-Lea.

3h.p. Chater-Lea, perfect, just overhauled, Amac; £9.—C. Thomas, West Royd, Formby, Liverpool. [X1692

6h.p. Chater-Lea, 1913, 3-speed gear, with A.J.S. sidecar, and all accessories; £40.—McKinnon, Wallington, Surrey. [X1796

CHATER-LEA, 1913, 6h.p., 3-speed counter-shaft, chain, coachbuilt sidecar; £48, or best offer.—Hopkinson, Dovecote, Ashover, Chesterfield. [X1854

CHATER-LEA No. 7 Combination, 3-speed, electric light, rear seat, every luxury, like a car, a perfect machine; lowest price £75.—Morton, 11, Green Ter., Rosebery Av., London. [9001

CHATER-LEA, 1912, No. 7, 8h.p., coachbuilt sidecar, car tyres all round, Cowey speedometer, lamps, tools, spares, run 6,000 miles, perfect condition; trial; £60.—Dixons' Refreshment Chalet, Lister Park, Bradford. [X1821

Chater-Precision.

6h.p. Twin Late 1914 Chater-Precision, Bransom and Keot £12/10 underslung sidecar, full kit of accessories, not run 2,000 miles; £48.—Write, Baker, Parkfield, Potters Bar. [8756

Clyno.

CLYNO, 2-stroke, 2-speed, 1914; £27.—Wright, 14, Trafalgar Rd., Moseley, Birmingham. [X1889

CLYNO Combination, 1914, 4 detachable wheels; 50 gns.—Percy and Co., 337, Euston Rd., London. [8996

1914½ Clyno, 2-stroke, 2½h.p., 2-speed, Lucas lamp, horn, etc.; £28, lowest.—No. 8,074, *The Motor Cycle* Offices, Coventry. [X1598

CLYNO Combination, 1912, tyres, chains, back wheel, and sprockets new; £45, bargain.—Leighton's, opposite Wood Green Station. [8790

CLYNO, 1913 model, 6h.p., 3-speed combination, lamps, speedometer, new tyres, spares; £55.—Marston, 26, Bridge St., Chester. [8823

1914 Clyno Lightweight, 2-speed, and clutch, Lucas lamp and horn, good condition, £28; small sidecar, £4/10.—Barnish, Half Acre, Rochdale. [X1873

CLYNO, 1914, 6h.p., 3 speeds, clutch, and starter, also new coachbuilt Clyno sidecar, perfectly sound; £58.—P. J. Evans, John Bright St., Birmingham. [8834

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CLYNO, 1912, 5-6h.p., 2 speeds, kick start, thoroughly overhauled and enamelled by experts, perfect condition, £40; also nearly new 20 gn. Burberry sidecar, hood and screen, £12.—52, Cullcott Rd., Brondesbury, London. [8728

CLYNO, 1914½, No. 6 sidecar, speedometer, wind screen, spare wheel complete, luggage grid and petrol carrier, Miller lamps, all accessories, many spares, little used, excellent condition; 70 gns.—28, Granville Gardens, Shepherd's Bush, W. [X1391

Connaught.

CONNAUGHT, late 1913, 2¾h.p., 2-stroke, new F.R.S., Jones speedometer, spares; £18 10.—Johnson, Jeweller, Nuneaton. [X1976

CONNAUGHT, 2¾h.p., sidecar model, Sturmey-Archer 3-speed and clutch, perfect order; £25.—Wood, 48, High St., Windsor. [8972

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CRAVEN-J.A.P., new 10h.p., 90° overhead m.o.v., 3-speed, coachbuilt double sidecar, hood, screen, spare wheel, complete with tyres, C.A.V. dynamo lighting set, batteries, 4 lamps, spare chain, many tools, spares, etc., 2 spare tubes, only done 2,000 miles; owner bought car; accept £100, cost more than double, no offers.—J.C., 45, De Vere Gardens, Ilford. [9002

Dayton.

1914 Dayton de Luxe, Oct.; 18 gns.—Sam Cheriton, New Farm, Henley-on-Thames. [8694

Douglas.

DOUGLAS, nearly new 1914 model U, 2-speed; £42—Marston, 26, Bridge St., Chester. [8827

DOUGLAS, 2¾h.p., little used, splendid condition, Whittle; 17 gns.—154, Grenville St., Stockport. [X1671

DOUGLAS, 2¾h.p. to 10h.p. models.—Gourlay, the great Douglas agent, Fallowfield, Manchester. [4241

1915 4h.p. Douglas Combination, 3-speed, and accessories; £68.—Seen, 223, High Rd., Kilburn. [8867

DOUGLAS, model K, P. and H. lamp; appointment essential; £30.—Cheal, 290, Hither Green Lane, S.E. [8720

DOUGLAS, immediate delivery, limited number 2¾ h.p models.—Edwards, Motors, Taunton. 'Phone: 191X2. [X1870

DOUGLAS, 1915, 4h.p., not ridden 300 miles, horn, and speedometer extra; £55.—Merk, Christ's Hospital, Horsham. [8968

DOUGLAS, 1914¾, 2¾h.p., 2-speed, accessories, as new; £44; any trial.—Oil Stores, 1, Church St., Kingston, S.W. [8883

DOUGLAS, 1915 model U, 2-speed, Lucas lamp and horn, Cowey, 2,000 miles; £48.—Wilderspin, Chatteris, Cambs. [8808

DOUGLAS, 2¾h.p., 2-speed, late 1913, new appearance, only had 2 months' wear; £40.—Robert St., Tetbury, Glos. [X1914

1914 Douglas, 2¾h.p., 2-speed, clutch, kick start, and accessories, in good condition; £44.—Seen, 223, High Rd., Kilburn. [8868

1914 Douglas, 2-speed, in splendid condition, with tools, complete; price £43.—Tretbewey, Rocklyo Villa, Roche, Cornwall. [X1678

DOUGLAS, late 1914, 2¾h.p., 2-speed, like new, accessories; £43.—B., 28, Eden St., Kingston-on-Thames. 'Phone: 1701. [8932

DOUGLAS, late 1911, 2-speed, clutch, engine lately overhauled, splendid condition, all accessories; £24/10.—9, Wilmot St., Derby. [X1791

1911 Douglas, 2-speed gear, engine just overhauled, tyres and belt nearly new; £22.—Hooker's Cycle Stores, Cuckfield. [6846

1914 Douglas, model W, new condition, lamp, horn, everything like new, ridden about 1,500; £42.—W. G. Williams, A.O. Dept., Harwich. [8888

DOUGLAS, 1914, semi-T.T., 2 speeds, fully equipped, condition as new; £44; seen after 3 p.m.—1, Bowles Rd., Old Kent Rd. [8797

DOUGLAS, 2¾h.p., 1911, just fitted new cylinders, piston, crank-shaft, etc., grand going condition; £17 10.—Piercy, 255, High St., Hounslow. [X1778

1915 4h.p. Douglas Combination, 3-speed clutch and kick starter, speedometer, lamps, horn, new condition; £68.—Miller, Burgate, Canterbury. [8877

BARGAIN.—1914 Douglas, 2-speed, kick starter, speedometer, tyres good; £43; seen at Winnington.—Box L975, *The Motor Cycle* Offices, 20, Tudor St., E.C. [8982

1914 Douglas, 2-speed, clutch, kick starter, Amac carburetter, lamp, generator, speedometer, horn, tools, etc., spare belt, as new; £48.—Write, Rex Mundy, 19, Grafton Mews, Warren St., W. [8810

DOUGLAS, 1915, 3-speed, model U, Lucas lamps, Lucas horn, College shield, spare tube and case, accessories, not done 250, cost over £58, sacrifice £50.—7, Holyrood, Fentham Rd., Handsworth, Birmingham. [X1343

DOUGLAS Agents Eastern Counties.—Although Douglas deliveries are temporarily suspended due to the action of the Government, we are prepared to accept orders now for delivery on the recommencement of supplies.—Tel.: 3888. T.A.: Bicycles.—Robinson's Garage, Green St., Cambridge. [6866

DOUGLAS, 1914, model W, 2¾h.p., 2-speed, kick-start, as new in all details, lamp, horn, £46; also 1914 model V, 2¾h.p., 2-speed, in equal condition, complete, £44; and one 1914 model V, 2¾h.p., 2-speed, with raised handle-bars, fully equal to the average 1914 machine, £42. Layton's Garage, Bicester, Oxon. 'Phone: 35 Bicester. [X1899

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INDIAN, Red, 1914, 7-9h.p., electrical equipment, electric starter, with Millford coachbuilt sidecar, with hood and screens, only done 3,000 miles, almost new condition; bargain, £73.—604, Mile End Rd., E. [8939

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IVY-PRECISION, 3¾h.p., 3-speed gear, nearly new; £35, or exchange larger.—Grove, 224, Fore St., Upper Edmonton, London. [8901

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JAMES Combination, 4½h.p., 1914, all accessories, like new; £67/10.—Leighton's, opposite Wood Green G.W.R. Station. [8789

JAMES, 1914, 3½h.p., new accessories worth £5, new tyres; accept £45; owner enlisting.—P. Stalker, 12, Dorset Rd., South Ealing, London. [8766

JAMES, 1914, 4½h.p., 3-speed, Canoelet, perfect order; £56; London district.—Box L966, *The Motor Cycle* Offices, 20, Tudor St., E.C. [8751

JAMES, 1914, 4½h.p., 3-speed gear, Lucas lamp set, speedometer, horn, watch, back-rest, splendid order; £45.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0481

JAMES, 1915, 4½h.p., 3-speed countershaft gear, clutch and kick-starter, chain drive, Canoelet sidecar, with Lucas electric lighting outfit, Lucas electric horn; £90/15.—Colmore Depot, 261, Deansgate, Manchester. [0674

1915 3½h.p. Twin James, 3-speed countershaft, clutch, kick-start, T.T. bars, accessories, Flying Middleton sidecar, whole turnout unscratched, hardly been used, "some combination"; £70, cost nearly £80.—Bartters, Signs, Kingston-on-Thames. 'Phone: 1701. [8934

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J.E.S. Lightweight, with Druid forks, specially built frame, many extras; cost £26, what offers?—Millard's, Cyclist, Guernsey. [8118

Juno.

JUNO-J.A.P., 6h.p., 3-speed Sturmey-Archer, countershaft, kick starter, footboards; £71/18, or £6/6 monthly.—Seen at 248, Bishopsgate, London, E.C. [1705

JUNO-VILLIERS, 2½h.p., 2-stroke (silver medal), new; £27/11 cash, or £2/8/7 down and £2/8/7 monthly.—Seen at 248, Bishopsgate, London, E.C. [1704

Kerry.

2¾h.p. Kerry, low, fast, and powerful; £6/10.—Speechley, 45, Church Rd., Acton. [8984

KERRY-ABINGDON, 1912 model, 3½h.p., perfect order, new tyre, belt; only £21.—Midland Garage, Oxford. [X1875

KERRY, 1913½, 3½h.p., Armstrong 3-speed, free engine, Amac, spare Whittle belt, lamp, tools, etc., complete, very little used, first-class condition; £43.—Rover, 54, Park Rd., Faversham. [X1945

Kingston.

2¾h.p. Kingston, De Dion, good condition.—Slater, Grosvenor St., Crosby, Lincolnshire. [X1591

Lea-Francis.

LEA-FRANCIS 1913 3½h.p. Twin, 2-speed, clutch, enclosed chain drive, in splendid condition; £46.—Hucklebridge, 133, Sloane St., London. [X1879

1914¾ Lea-Francis, 2-speed, hand and foot clutch, little used, perfect condition, with new 1915 (July) coachbuilt sidecar, Lucas lamp and horn, the whole turnout as new; cost £86, accept £60.—23, Albion St., Shaldon, Teignmouth. [8707

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LEVIS.—Popular model in stock; £28/1.—Marston, 26, Bridge St., Chester. [8826

LEVIS Populars and No. 1's delivered now.—Lamb's, 151, High St., Walthamstow. [8772

LEVIS 1915 Popular, £28/1, in stock.—Cyril Williams, Chapel Ash Depot, Wolverhampton. [X1936

LEVIS Popular; £28/1 cash, or fifth down, 2½% on balance.—Referee Cycle Co., 332, High Holborn, W.C. [2773

LEVIS, 1915, Popular model; delivery from stock; £28/1; exchange entertained.—Layton's Garage, Bicester, Oxon. 'Phone: 35 Bicester. [X1902

LEVIS, 2½h.p., 1914, very little used, grand condition; £23; accessories.—Gaston, "Altona," Hockliffe St., Leighton Buzzard. [8942

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LEVIS, 1913-14, 2½h.p., 2-speed, splendid condition; £27, or exchange for combination, cash adjustment.—Phillips, Tupwood Cottage, Caterham Valley. [8796

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1914 2h.p. Little Giant-Precision, 2-speed unit, perfect, £20; 4½h.p. twin Minerva and sidecar, £20.—B., 145, Meanley Rd., Manor Park. [8856

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L.M.C., 1913, and sidecar, 4½h.p., 2-speed countershaft, very powerful, and splendid condition; £40.—Bevir, Hurstdown, Headon. [8400

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MARTIN, 6h.p., 1914¾, brand new; what offers? cost £65.—65a, Rosendale Rd., West Dulwich. [X1916

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1913 Matchless Combination, 2 speeds, chain drive, complete; £57.—Cross, Agent, Rotherham. [X1883

MATCHLESS, 6h.p., 2-speed, coachbuilt sidecar, speedometer, lamps; £42.—Chatwins, King St., Richmond. [8916

1914 Matchless Combination, with £20 worth accessories and spares, in new condition; £80.—Seen, 223, High Rd., Kilburn. [8865

MATCHLESS, 6h.p., 2-speed gear, £10/10 Bramble sidecar, accessories; £45.—Colmore Depot, 31, Colmore Row, Birmingham. [X1983

MATCHLESS 1913 Combination, 8h.p., 2-speed gear, coachbuilt car, and accessories; £50.—Colmore Depot, 31, Colmore Row, Birmingham. [X1982

MATCHLESS-J.A.P., 1912, 4h.p., 2-speed, Bosch, Claudel, excellent tyres, canoe sidecar, perfect condition; £28.—25, Colchester Rd., Leyton. [8809

8h.p. Matchless-Jap, 2 speeds, kick starter, blue aluminium torpedo sidecar, lamps, and tools, all perfect; £48, no offers.—Fisher, 272, Waadsworth Rd., S.W. [8764

MATCHLESS, 1913-4, 8h.p. J.A.P. engine, and 14 gn. sidecar, hood, wind screen; 60 gns.; deferred payments if desired.—Lamb's, 151, High St., Walthamstow. [8778

MATCHLESS Combination, 1915, for sale, 7-9h.p. M.A.G. engine, practically new, all accessories, lamp, generator, and horn; £90, or near offer.—S. B. Wood, Horn Park, Lee, S.E. [8794

1913 Matchless, 6h.p., 2 speeds, 1914 special Matchless coach sidecar, new condition; £60; consider exchange 1915 Triumph 4h.p. combination.—Hodgkinson, 62, Markham Av., Leeds. [X1921

Minerva.

MINERVA, 4½h.p. twin, and sidecar, variable gear, ready to ride away; bargain, £15.—Wood, 48, High St., Windsor. [8973

BARGAIN.—Splendid 3h.p. Minerva-Jap, B. and B. carburetter, Simms mag.; £13.—177, Earlsfield Rd., Wandsworth. [8749

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MOTO-REVE, spring forks, mag., splendid running order; £10; owner bought cycle car.—18, Nightingale Rd., Middlesex. [8780

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MOTOSACOCHE Lightweight, good condition, mag., Druid spring forks; sacrifice £10.—139, Clarence Rd., Grays, Essex. [X1694

3½h.p. New 1915 Motosacoche, fitted with M.A.G. engine, 2-speed counter-shaft gear, an ideal solo machine; £62; exchange or gradual payments.—Wanchope's, 9, Shoe Lane, London. [X1747

MOTOSACOCHE, 1915, 3½h.p. twin, just delivered fitted with the famous M.A.G. engine, De Lissa valves, countershaft gear, chain drive, phenomena acceleration; £62; best exchange terms.—Eagles and Co., High St., Acton. [X1911

New Hudson.

NEW Hudson Model C. in stock; £36.—Marston, 26, Bridge St., Chester. [8819

NEW Hudson, 4h.p., 1913 model, 3-speed; £35.—Marston, 26, Bridge St., Chester. [8822

3½h.p. New Hudson and sidecar, 3 speeds; £37.—42, Newington Green Rd., London, N. [8765

NEW Hudson, 1914, 6h.p., coachbuilt sidecar, grand order; £52.—Chatwins, King St., Richmond. [8915

NEW Hudson, 1912, 3-speed, and sidecar, good order; £40.—T. Knowlton, South Ockendon, Essex. [X1755

NEW Hudson, 2¾h.p., 3-speed, clutch, new Palmers; £25.—133, Hampstead Way, Golder's Green. [8708

LATE 1912 3½h.p. New Hudson Sidecar, 3-speed, speedometer, lamps, etc.; £37.—H. Wright, Arlesey, Beds. [8872

NEW Hudson Big Six Combination just arrived, £92/8; large deposits secure preferential terms.—Lamb's, 151, High St., Walthamstow. [8774

NEW Hudson.—All models delivered from stock.—The Exeter Motor Cycle Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0603

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NEW Hudson, 1913, 2½h.p., 3-speed gear; £25/10. —The Exeter Motor Cycle Co. Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0570

NEW Hudson, 3½h.p., 1912, 3-speed, and clutch, very sound and desirable machine at bargain price of £25.—Layton's Garage, Bicester, Oxon. [X1903

NEW Hudson, 3½h.p., 1913, 3-speed, Mills-Fulford coachbuilt sidecar, fully equipped, also spares, all in new condition; £44.—Hole, 129, Park Lane, Carshalton. [X1793

NEW Hudson 1914 Combination, 6h.p., 3-speed, kick starter, Armstrong gears, coachbuilt sidecar, lamps, horn, and tools complete; £58.—4, Summer Rd., Erdington, Birmingham. [X1684

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NEW IMPERIAL-J.A.P., 2½h.p.; £34/3/6 cash, or fifth down 2½% on balance.—Referee Cycle Co., 332, High Holborn, W.C. [2774

1915 2¾h.p. New Imperial-J.A.P., 2-speed, actually in stock; price £34/3/6; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6408

NEW Imperial-Jap, 1914, 2½h.p., excellent condition, carefully used, complete with accessories; £26, no offers.—R., 13, Freeland Rd., Ealing Common. [8854

NEW Imperial.—The ideal solo medium weight, fitted with the famous J.A.P. engine and counter-shaft 2-speed gear, £34/3/6.—The Colmore Depot, 31, Renshaw St., Liverpool. [8691

NEW Imperial, 1915, 3½h.p. J.A.P., 3-speed countershaft, clutch, kick start, Dunlop heavy tyres, T.T. bars, not done 900 miles, hardly scratched, too fast for owner; £52, or with new Canoelet sidecar £65; exchange entertained.—Ideal Cycle Co., Thundersley, Essex. [X1928

New Ryder.

NEW Ryder, 3¾h.p. (1914), T.D.C. engine, Hoffmann's ball bearings, Albion variable pulley, B. and B., Hutchinsons, wicker sidecar, side entrance, storm apron, careful usage, perfect, all accessories; £35, cost £55.—W., 106, Guia Lane, Lichfield. [X1820

Norton.

NORTON, 1915 Brooklands special, fitted for road, Philipson pulley, spare belt; comment superfluous; £54.—Godden, 31, Museum Chambers, Holborn. [8971

N.S.U.

N.S.U. 2-speed Adjustable Pulley, nearly new; £3/10. —Hilton, Sharp and Co., Ltd., Foxhall Sq., Blackpool. [X1823

4½h.p. Twin N.S.U. Engine, Bosch mag., 2-speed gear, B. and B. carburetter, speedometer; for sale.—Apply, 36, Creed Place, Greenwich, S.E. [8890

N.U.T.

1914 6-8h.p. N.U.T., complete combination, with speedometer, lamp, and horn, almost new; £60. —West End Garage, Blackburn. [0677

O.K.

2h.p. O.K. Junior, new 1915 machine, 2-speed model. £33/1/6; delivery from stock; extended payments arranged.—Wauchope's, 9, Shoe Lane, London. [X1749

O.K. Motor Cycle, practically new, only covered about 200 miles; owner purchasing more powerful; will accept £25, first offer.—Apply, Caversham Motor Co., Reading. [8746

Omega.

OMEGA, semi T.T., late 1914, 3h.p., splendid condition, plating perfect, good lamp, overhauled month ago; any trial, expert examination; £22.—Edward, Bungalow, Carnoustie. [X1763

P. and M.

1914¾ Phelon-Moore Combination, fully equipped, only out few times; bargain, £68/10.—Abson, 49, Kirkgate, Wakefield. [X1734

P. and M., 1913, Mills-Fulford wicker sidecar, done 5,000 miles, splendid condition, insurance, spares; £45.—Gillat, 140, Withington Rd., Manchester. [X1876

P. and M., 3½h.p., 2-speed, and sidecar, engine just been overhauled, new back tyre and inner tube, in first-class condition, with lamps, horn, etc.; £35.—Box 8,086, *The Motor Cycle* Offices, Coventry. [X1940

Peugeot.

6h.p. Twin Peugeot, Mabon clutch, B. mag., late sidecar; £18, bargain; must sell.—72, Penton St., N. [X1751

Premier.

PREMIER, 1912½, 2½h.p., good running order, good tyres, spare belt, £18.—Crane, Coleshill, Amersham [8876

PREMIER, 1914, 3-speed, counter-shaft gear, 3½h.p., fitted with Watson's sidecar, good as new; trial any time; price £60.—Box 8,080, *The Motor Cycle* Offices, Coventry. [X1675

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PREMIER, 3½h.p., clutch hub model, in new condition throughout; £29/10, absolute bargain.—Full particulars, Bradbury, Coggeshall Rd., Braintree. [8726

PREMIER, 1913, 3½h.p., 2-speed, countershaft gear, chain-cum-belt drive, good order; £36.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0492

7-9h.p. 1914 Twin Premier, counter-shaft gear, chain drive, and coachbuilt sidecar, all complete; cheap for cash, or exchange for solo model, Douglas preferred. —F. Davies, Illingworth, Halifax. [X1738

PREMIER, 1914, 2½h.p., 3-speed, clutch, electric light set, tools, spares, ridden about 400 miles, condition as new; owner enlisted; £30; seen any time.—147, Stockwell Park Rd., London, S.W. [8989

PREMIER, 1913, 2-speed counter-shaft, 1914 coach built sidecar, underslung, Cowey, lamps, just overhauled by makers, in new condition throughout; £45, or exchange twin.—280, Camberwell Rd., S.E. [8714

1913 (August) Premier, 3½h.p., 3 speeds, excellent condition, just overhauled, new heaviest Dunlops and belt, lamp set, horn, large footboards; £35.—7, Vale Terrace, King's Rd., Chelsea, London. [X1829

P.V.

3½h.p. Twin P.V., sidecar, spring frame, Bosch, 2 speed, free engine, belt and tyres excellent, good running order; £25.—66, West Side, Clapham Common, S.W. [8955

Quadrant.

QUADRANT 1915 4½h.p. Big Single, Sturmey-Archer 3-speed gear and clutch, immediate delivery from stock; £49/12/3.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0552

Radco.

RADCO, 1915, 2¼h.p., 2-stroke, complete, front and rear lamps, satisfactory reason selling; £22.—Andrew, 5, Spencer Hill Rd., Wimbledon. [8855

Rex.

3½h.p. Rex, Bosch mag., Binks carburetter; £8.—Sedgwick, 17, Sedgwick St., Darlington. [X1812

REX 1909 Twin, 2-speed, and free, £18/10.—5, Devonshire Parade, Pinner Rd., Harrow. [8693

5-6h.p. Twin Rex, sidecar, 1910, just overhauled; £30; exchange.—Hall, 41, Gladstone St., Loughborough. [8744

REX Accumulator, re-bored, new piston, perfect order; £9, or best offer.—Hazelmead, Vicarage Rd., King's Heath, Birmingham. [X9287

REX Twin Combination, 1913, speedometer, lamps, horn, 2-speed, free engine, in good going order; £35.—28, Lower Addiscombe Rd., E. Croydon. [8803

REX, 1913, 6h.p., done 3,000, condition as new, 50/- lamp, horn, cyclometer; cost £54; very powerful; sensible offer.—Tiuteru, Norman Rd., Sutton, Surrey. [8755

MOTOR Cycle, 3½h.p. Rex engine, B. and B., Dunlops, new accumulator, footboards, running order; 140/-, offers.—Laue, Carlton Villa, Cheltenham. [X1939

6h.p. Twin 1914 New Rex Sidettes, 3-speed countershaft gear, chain drive, free engine, and kick starter, ready for the road; £69; extended payment or exchange.—Wauchope's, 9, Shoe Lane, London. [X1743

REX Sidette, 6-8h.p., new April, 1915, 3-speed countershaft gear, all chain drive, not done 1,000 miles, in perfect condition; any test given to intending purchaser; cost £85, accept £65.—Teall, Kerryewy, Mayfield Rd., Wylde Green, Warwickshire. [8936

REXES.—Why pay 5% extra? We give immediate delivery and 10% discount from new 6h.p. belt or chain drive De Luxe models, just delivered from makers. Rex luxurious coachbuilt sidecar, £12/10 extra. Exchanges quoted.—Motories, 68, Horton St., Halifax. [0707

COMBINATION, 6h.p. Rex, 1913, engine and Sensprag new 1914, Armstrong 3 speeds, 1915, new Dunlop and Avon 650 covers, tubes, belt, Jones £25, Lucas head lights, child carrier, spare cover, new tube, valves, perfect; any examination; best offer.—14, Baker St., Sparkhill, Birmingham. [X1891

Rex-Jap.

NEW 6h.p. Twin-cyl. Rex-Jap, fitted 6h.p. J.A.P. engine, and 2-speed and free engine; bargain at £65.—Wauchope's, 9, Shoe Lane, London. [X1739

6h.p. 1912 Rex-Jap, perfect condition, coachbuilt sidecar, new 1914, lamp, horn, electric sidecar and tail lamps; any trial; £45.—The Premier Motor Co., Aston Rd., Birmingham. [8673

1912 Rex-Jap, 6h.p., coachbuilt sidecar, tyres good condition, new Sensprag, drip feed, handle starter, free engine, Cowey speedometer, watch, lamps, etc.; £38.—Garage, Old Fire Station, Thornton Heath. [8969

REX-J.A.P., 1914, 8h.p., sidecar, 3-speed, countershaft gear, and free engine, £97/10 outfit, with lamps, etc.; will accept £73; been used 5 months only, good as new; owner gone to France; can be seen by appointment.—E. M. Blyth, Witham, Essex. [8727

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IN Stock, new 1915 4-5h.p. Zenith, clutch model, been 20 miles; £64.—Walbro Cycle Co., Saffron Walden, Essex. [X1926

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ZENITH-GRADUA, 1914, 3½h.p., lamps, speedometer, horn, perfect; £33.—Davis, 43, Middlegate St., Gt. Yarmouth. [8745

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ZENITH-GRADUA, 1912-3, 3½h.p. J.A.P., excellent condition, just overhauled; £27/10 cash.—Pizey, 27-34, Walnut Tree Walk, Kennington Rd., S.E. [8742

1913 Zenith, 6h.p. J.A.P., Gradua gear, and coachbuilt sidecar, just fitted new tyres; bargain, £45.—Hawthorn Cottage, Little Lever, near Bolton. [X1687

1912¾ 3½h.p. Zenith-Gradua, accessories, spares, including tube, perfect condition, re-bushed, new cylinder and piston fitted recently; £32.—McDermid, 98, Micklegate, York. [X1886

8h.p. Zenith-Gradua, 1912¾, and coachbuilt sidecar, very powerful and fast; £40, no offers, or exchange for cycle car.—Chaffey, Boot Stores, Stoke-under-Ham, Somerset. [X1786

3½h.p. Zenith-Gradua, 1913 model, for sale, excellent condition, plating and enamelling as new, lamp, horn, and full kit tools and spares; cheap, £35.—4, Ashmeadow Villas, Arnside, Carnforth. [X1654

1915 4-5h.p. Zenith, new July 8th, with speedometer, and all spares, with new 20 gn. sidecar, fitted with screen, hood, and luggage carrier; combination cost over £90, will accept £80, or nearest offer.—Booth, High St., Malpas, Cheshire. [X1836

1914 Countershaft Zenith, twin, 3½h.p., and Millford Corvette sidecar, under 5,000 miles, lamps, horn, speedometer, spares include brand new Kempshall and John Bull belt, grand trim, been carefully driven; £55.—Martin, Hillside, Portsdown, Cosham, Hants. [8929

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LADY'S 2½h.p. Singer, splendid order, £7; 3½h.p. Rex engine, 22/-.—53, Reid St., Belfast. [X1941

1914 2¾h.p. Lady's Douglas, lamp and horn; cost £57; not done 300 miles; £44.—Walker, Fishburn, Ferryhill. [X1922

VELOCETTE, Model DL, special open frame lady's, 2¼h.p., 2-speed, 120 miles per gallon; £36/10; immediate delivery.—The Premier Motor Co., Aston Rd., Birmingham. [8675

Miscellaneous.

BARGAIN.—Brand new 4h.p. motor cycle; £30 secures.—Mitchell, White Hill, Crowborough. [8718

DOUGLAS, £17; lady's Centaur, 3-speed, £25; F.N., £10.—Brook, Skippool, Poulton-le-Fylde. [X1398

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EAGLES.—Bradbury, 4h.p., 1912, free engine model, N.S.U. 2-speed gear, condition nearly new; £28/10.

EAGLES.—Rover, 3½h.p., 1914, 3-speed model, with footboards, front and rear lamps, accessories; £42

EAGLES.—N.S.U. 6½h.p., Twin, late 1913, loop frame with rear springing, heavy type 2-speed gear, kick-starter, Millford underslung coachbuilt sidecar; £43/10.

EAGLES.—Bat-Jap, 8h.p. twin, 1911-12 model, 2-speed gear, free engine, spring frame; £29/10.

EAGLES.—N.S.U., 6h.p. twin, 2 speeds, free engine, Kempshall tyres, footboards, coachbuilt sidecar; any trial; £28/10.

EAGLES.—Douglas, 2¾h.p., 1911, excellent condition, Palmer tyres; £19.

EAGLES.—N.S.U., 3½h.p., 1912, model de luxe (85×88), Amac latest carburetter, N.S.U. 2-speeds, adjustable pulley; £25.

EAGLES.—Precision, 4¼h.p., 1913, 2-speed, countershaft gear, kick-starter, chain and belt drive, with sidecar; £39.

EAGLES.—N.S.U., 3½h.p., 1913 model de luxe (85×88), loop frame, rear springing, Senspray carburetter, 2 speeds, adjustable pulley, Millford coachbuilt sidecar; £34/10.

EAGLES.—Any of the above can be had on approval, "The Motor Cycle" deposit system.—Eagles and Co., High St., Acton. Tel.: 556 Chiswick. [X1912

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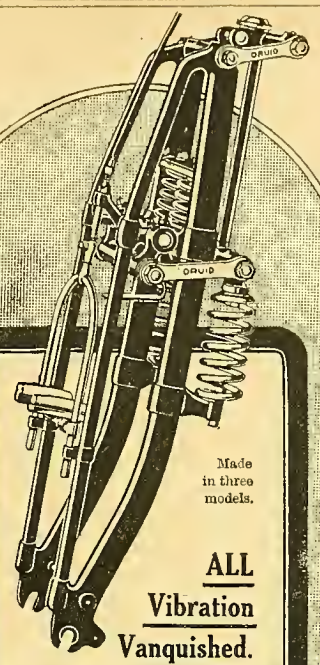
5h.p. Twin, with sidecar, good running order, 2 speeds, mag.; price £22.—H. Mitchell, 100, Lillington St., Westminster. [X1394



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PHŒNIX Sidecar Dept. (Propre. Phœnix Motors, Ltd., established 1889), 736, Holloway Rd., and 4, 5, 6, Criterion Mews, London, N. Tel.: Hornsey 449. Telegrams: Sycamix, Upholl, London. [2218

WICKER Sidecar, good condition, plated rim, good tyre; £3/10.—Simpson, Rodborough, Woking. [8698

COACHBUILT Sidecar Body, French grey, brand new; £4.—136, St. Ann's Rd., Tottenham. [X1918

MILLFORD'S Latest Corvette and Skiff Models in stock.—Eagles and Co., High St., Acton, London. [X1909

COACHBUILT Light Sidecar, nearly new, complete with fittings; £6.—Holland, Earlsdon, Coventry. [X1972

COACH Sidecar Bodies made to suit any chassis from £3.—Grey Friars Bodies Co., Croft Rd., Coventry. [X1600

DOUGLAS Sidecar for a 1915 4h.p. Douglas, in stock; what offers? quite new.—Moffat, Yeovil. Tel.: 50. [1479

SIDECARS from stock to suit Harley-Davidson and B.S.A.—Leighton's, opposite Wood Green G.W.R. Station. [8788

CANOELET, sporting, £10/10; also several new and second-hand, £4/15.—Lamb's, 151, High St., Walthamstow. [8769

HERALD Sidecar, model D; £6/6 cash, or 11/- down and 11/8 monthly.—Seen at 248, Bishopsgate, London, E.C. [1706

JUNO Side Entrance Wicker Sidecar, model A, £6/10, or 12 monthly payments of 10/10.—Seen at 248, Bishopsgate, London, E.C. [1706

MILLS-FULFORD Sidecar, 35/-; 4 new Pedley belts, inch by 8ft. 7in., 8/6 each; Mabon clutch, 20/-.—Williams, 202, Mare St., Hackney. [8709

GROSVENOR Sporting Sidecar, door and apron, done 200 miles, £8; wicker sidecar, £1/17/6.—Hilton, Sharp and Co., Ltd., Foxhall Sq., Blackpool. [X1625

WATSONIAN Featherweight Sidecars, 1915 models; £6/7/6, or 11/8 monthly; £9/10, or 17/5 monthly.—Seen at 248, Bishopsgate, E.C. [1711

UNDERSLUNG Sidecar Chassis, 26×2¼ rim, 50/-; Chater-Lea sidecar chassis, extra strong, 650×65 rim, 50/-.—70, Evering Rd., Stoke Newington, N. [8950

JUNO Sidecar, coachbuilt, side entrance, 2¼ Bates tyre, finish various colours, quick detachable joints; £8/8; 15/5 monthly.—Seen at 248, Bishopsgate, London, E.C. [1707

CANOELET, Swan, and Middleton record breaking sidecar; trade supplied. — Sole Wholesale Agent London, Rey, 378-384, Euston Rd., and 175, Great Portland Street. [5381

SIDECARS are our speciality. — We make throughout thirty different designs. If we cannot give value, who can? Hoods, screens, and every sidecar requirement.—Melville Sidecars, Halifax. 'Phone: 999. [X1034

COLLECTION of Sidecars from 50/- to clear, some sporty; also new underslung coachbuilts, any colour, £8/10; photos, 2 stamps; picture collectors needn't apply.—Aero, 27, Queen's Mews, Porchester Gardens, Bayswater (side of Whiteley's). [8897

BODIES.

COACH Bodies, £3/10, made to order.—Bright and Hayles, Church St., Camberwell. [8919

CIGAR-SHAPE Bodies; £3/12/6; lists free.—Bright and Hayles, Church St., Camberwell. [8920

CANE Body, side entrance, good condition; 12/6.—Bright and Hayles, 73, Church St., Camberwell. [8921

UNDER Cost.—Manufacturer wishes to sell some cane bodies, ready for upholstering.—Box 8,087, *The Motor Cycle* Offices, Coventry. [X1927

NEW Coachbuilt Body, 75/-; shop-soiled Millford Herald wicker, 20/-; second-hand coachbuilt Clyno, 55/-.—Seen at 248, Bishopsgate, London, E.C. [1710

FIRST-CLASS Modern Sidecar Bodies, upholstered best quality pegamoid, with nickel beading, coach painted, fit ordinary type chassis; £3/10 each; only a few left.—8, Byron Rd., Harrow. [8893

All letters relating to advertisements should quote the number at the end of each advertisement, and the date of the issue.

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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Rear Springing.

DURING *The Motor Cycle's* career a number of campaigns have been launched in its pages to give stimulus to the production of some particular article or fitting in connection with the motor cycle, the need of which has been clear to our minds. For instance, the change-speed gear was many years ago seized upon by us as a fitting more likely than anything else to popularise the motor cycle. We therefore expressed our opinion both regularly and persistently, and made it a practice to review from time to time the different types of speed gears as they were evolved. The early gears were of the two-speed variety without exception, but gradually and surely improvements came hand in hand with the experience gained, until the change-speed gear of to-day is as reliable as any other portion of the motor cycle. Similarly *The Motor Cycle* can lay claim to having brought about the standard adoption of spring forks, footrests, stands, and carriers. Nowadays one would never dream of purchasing a machine without a stand and carrier, yet it is not many years ago that buyers had to purchase these articles separately and fit them to their machines. Now it seems to us that we have reached a stage when the comfort (or otherwise) of motor cycles is the point upon which the brains of designers must be concentrated. Obviously we refer to the crying need for the more general adoption of spring frames, or at any rate spring footrests and saddle pillars. Already we have excellent spring forks absorbing shocks produced by road inequalities on the front wheel, but the discomfort to the rider by reason of the absence of springs on the rear portion of the machine is very pronounced. We have urged the desirability of spring frames for some years past, but, strange to say, British manufacturers have taken but a lukewarm interest in them. Our reason for returning to the topic, doubly convinced that the adoption of spring frames is a desirability of the future, is the rapid deterioration of our roads due to military traffic. For some months past we have made it a practice to record the stretches of road which a motor cyclist would be well advised to avoid, and the list has now grown to such an extent that it confirms the suspicions we have had for some months that the roads of this country may not, unless a reformation takes place, be a paradise for motor cyclists. Of course, the military traffic is not wholly to blame: the opening of so many motor 'bus routes and the increase in that juggernaut of the road, the steam lorry, have caused a tremendous destruction of the road surface.

A spring frame on a motor cycle is not perhaps so easy to devise as one may suppose when first considering the subject. The majority of existing devices are very unsightly, but mere unsightliness cannot in itself be considered a real objection. What is required is (1) a springing system allowing easy movement without rebound. (2.) Invariable distances between driving centres. (3.) Lateral rigidity. (4.) A minimum number of joints. (5.) The drive must be unaffected by rise and fall of the wheel. (6.) Not much increase of weight.

The above is a bold specification, but the objections should not be insuperable. There are many designs which have already been evolved, which fail only in one or two particulars, but by a combination of ideas the ideal spring frame should be attainable. We therefore urge manufacturers to devote attention to this pressing problem. Were the leading British makes of motor cycles fitted with a spring frame as standard there is no doubt that there would be few rigid frames sold. Consequently those smaller firms who wish to shine cannot do better than devote their attention to the production of an efficient spring frame.

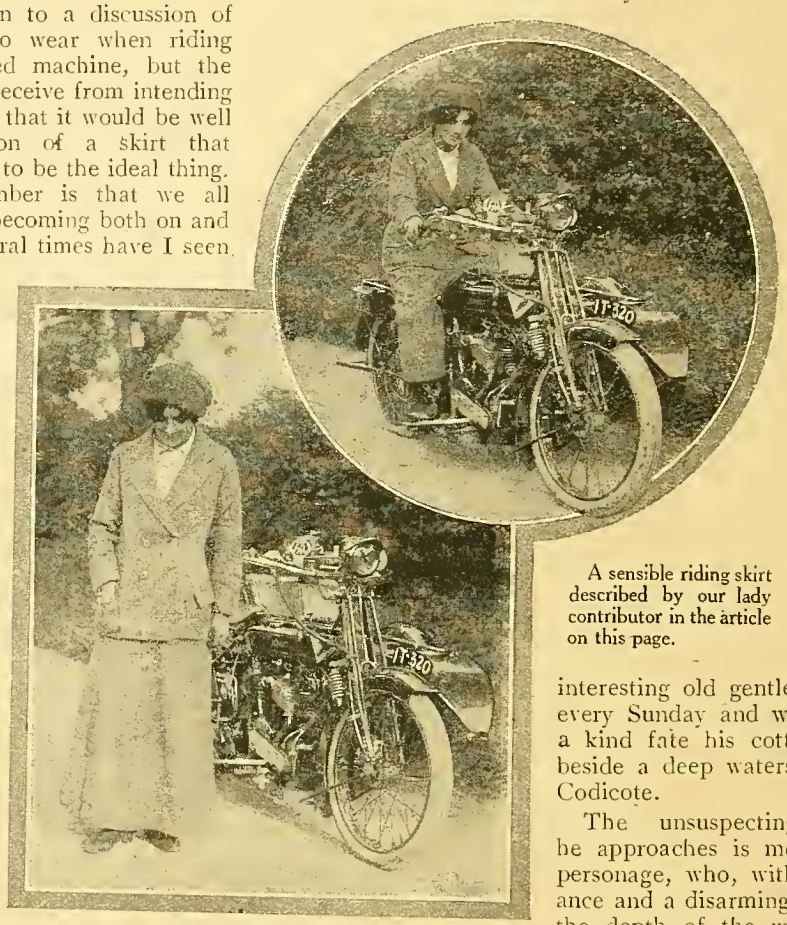
In this issue we publish an article on springing systems in general, reviewing the points to be aimed at, and illustrating some typical designs which should provide food for thought.

An index to the advertisements in this issue will be found on the page facing the back cover.

THROUGH FEMININE GOGGLES.

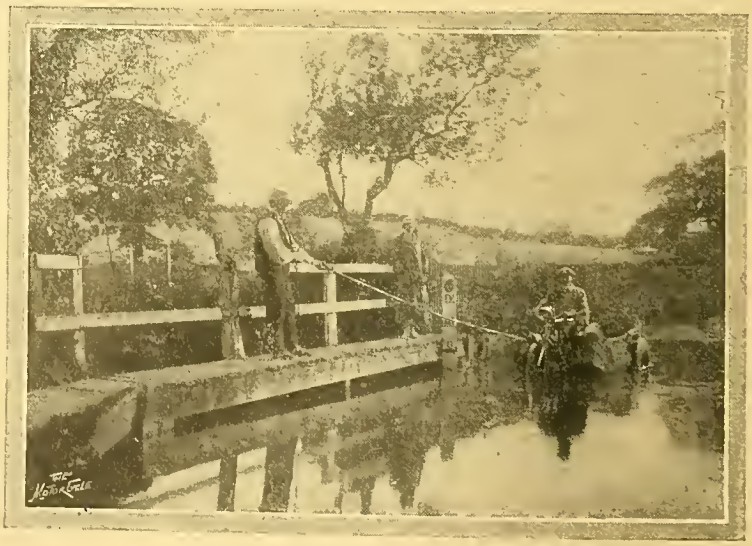
A GOOD RIDING SKIRT.

I AM loth to return to a discussion of the best skirt to wear when riding a diamond-framed machine, but the enquiries I regularly receive from intending riders make me think that it would be well to give a description of a skirt that experience has shown to be the ideal thing. The point to remember is that we all prefer a skirt that is becoming both on and off the machine. Several times have I seen illustrated designs of which complication seems the dominant feature. These only serve to deter prospective lady motor cyclists from taking up the pastime. The accompanying photographs will serve to show the type of skirt I prefer. It is an ordinary hobble skirt of tweed material made with buttons up the centre front. If about a dozen are used, the lower eight should be made to unbutton. Any tailor can supply this garment, or almost anyone handy with the needle can make it without the need of a special paper pattern.



A sensible riding skirt described by our lady contributor in the article on this page.

When the novice is called upon to specify details for her first machine, the various makes of carburetter and other fitments are confusing. However, there are refinements which, in my opinion, are worth the slight extra cost involved. For instance I recently had a pair of Terry spring links fitted to the head of the front forks of my machine, and they have proved a great success. The resiliency given when driving a high-powered outfit is worth the additional outlay. No vibration is carried to the arms from the front wheel.



Towing a sidecar outfit through a deep watersplash.

A few days ago I was searching a motorists' emporium to find the hooter most to my taste and worthy of my 1915 sidecar combination. Many were the weird and awesome sounds emitted from the mechanical contrivances offered. Doubtless they would clear any traffic, but, much as I should appreciate a change from the usual note, I felt it would be more ladylike to run over people!

Towing a Business.

Near Welwyn an interesting old gentleman spreads his web every Sunday and week-day evening. By a kind fate his cottage has been placed beside a deep watersplash on the road to Codicote.

The unsuspecting motor cyclist as he approaches is met by this benevolent personage, who, with a guileless countenance and a disarming sympathy, points out the depth of the water on the roadside measure provided by the A.A., and makes his helpful suggestion in something like the following terms: "Well, now, if you like to wait till I get a bit of rope, I'll tie it on to your sidecar, and you can sit on the motor and steer it across while I pull. The lady in the sidecar can walk across the bridge." Slightly amused, one accepts the proffered help, quite certain, when one sees the thickness of the rope and the ingenious way in which it is attached to the outfit, that it is not the first time that sixpence has been gained by this means.

MAY WALKER.

Finicky Chain Cases.

Here's another grumble. It is not a difficult matter to encase an engine chain by means of a substantial cast aluminium cover attached by half-a-dozen decent sized screws. But many makers continue to fit bendy contraptions made of sheet iron, or a similar flimsy material. I inspected a machine last week which, amongst other defects, was disfigured by a tin chain cover made in three parts. The outer and inner sides of the cover snicked into each other by means of very light-tongued metal projections. The pair when once engaged (no short or easy job!) were secured to the crank case by yet a third shapeless and bendable piece of tin, on to which they fitted by still more bendable grooves and tongues! A worse design it has never been my misfortune to strike. What's the matter with cast aluminium? It ought to be cheaper, and is certainly a thousand times less troublesome. It speaks much for motor cyclists that we are not known as the most profane and irascible class in the community.

British Magnetos.

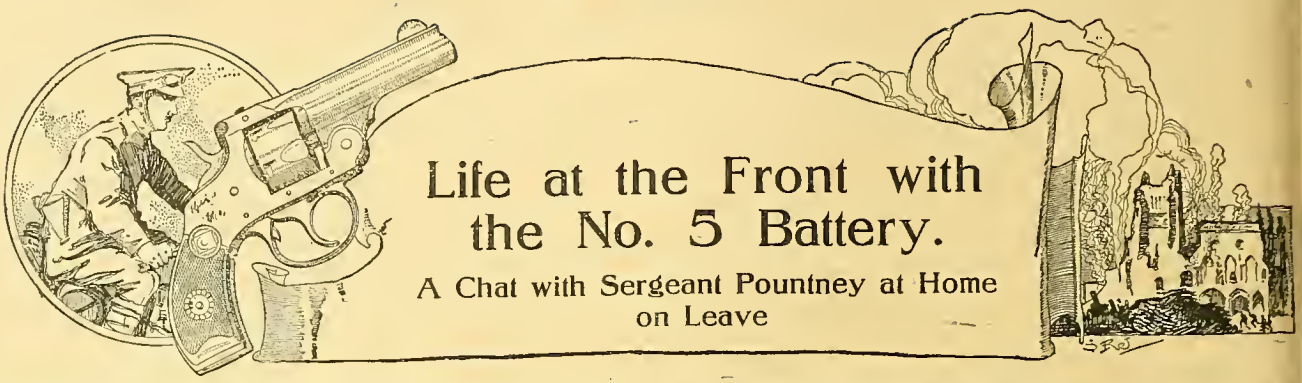
The main impression made on the mind of a patriotic business man, after reading the magneto makers' replies to our Editor's circular (see issue of July 1st), is that too many cooks spoil the broth. Price questions have always been the chief obstacle in our competition with Germany and America in the production of magnetos; and price questions are very intimately connected with output. Now the sum total of the British demand for magnetos is absurdly small; and a manufacturer who is competing with:

(*a*) The American magneto makers
(*b*) The German magneto makers
(*c*) A score of small British magneto makers

can hardly hope to secure annual orders for more than about a fiftieth of the British trade, even if his instrument is as good and as cheap as any rival's; and on this range of output he can hardly hope to keep his prices down to the figures attained by a rival—probably foreign—who has nine-tenths of the trade in his hands. The war may alter matters; but, personally, I do not believe that anti-German prejudice will continue to be a very formidable factor for more than a year after the war ends. If Germany is mulcted in colossal indemnities, taxation will smother her export trade to a large extent; but in that case America will simply replace Bosch as a foreign competitor whose advantage is based on huge outputs. A tariff might level up matters, but there are few signs of tariffs in British politics as yet. The outlook of the British magneto manufacturer is, therefore, far from rosy. In the meantime, there is one obvious step, which could be taken, and should be taken, viz., the association of all British magneto makers into a single large combine, with a united staff, a single factory, and a single policy. At present each of the numerous small concerns is wasting a huge amount of money on establishment charges, and an economy of at least 25% is possible if their factories and offices and staffs are amalgamated. Even then it is a very open question whether they could hold their own against Germany and America after the conclusion of peace, unless they are further aided by Government protection in some form. The marvel to me is that they think it worth while to enter upon a new industry under such conditions. I want to add that I have bought five magnetos this year, three American and two British, and that the British are infinitely the better, so far as workmanship is concerned.

Increasing Weights.

The weight of the average tourist mount is being increased very perceptibly. The last time my eagle eye was concentrated on the scales in a big garage prior to an important trial, the competition 3½ h.p. roadster, ready equipped for six days, scaled from 230 to 280 lb. Bigger tyres, stronger frames, and bulkier fittings are all piling on the load, and the countershaft gear box and combination or all-chain drive are far heavier than the belt and three-speed hub. The other day I weighed four machines, all equipped by sane and normal owners for ordinary use. A 4 h.p. combined drive twin, with countershaft gear, scaled 325 lb., including a lighting dynamo. A 2¾ h.p. T.T. twin tipped the beam at 212 lb. A 3½ h.p. with combined drive and countershaft gears, scaled 298 lb. The most creditable machine of the quartette, judged on this factor at any rate, was my own 3½ h.p. M.A.G.-engined Motosacoche, which, complete with a lighting dynamo set, weighed no more than 197 lb., and is, nevertheless, quite sturdily constructed, its chain case being the only noticeably light element in its make-up. If this tendency continues, it can only have one result; the big singles and small twins will gradually become constricted to sidecar or combination use, and the 2¾ h.p. will slowly replace them for solo work. The tendency is admittedly unconscious. The trade has formed no deliberate intention to disqualify its 3½-4 h.p. patterns for solo work; it is merely strengthening and refining them with an eye to the double-purpose man, who wishes to see them better adapted for occasional sidecar work. In time the tendency may be balanced by another aim, exemplified by the 3½ h.p. 80 m.p.h. A.B.C. which I have on order, and which weighs but 150 lb. all on. Unless the trade wishes to leave the solo market to the smaller engines, it will have to develop two separate 3½ types, one intended for fast solo work, and the other planned for efficient sidecar service.



Life at the Front with the No. 5 Battery.

A Chat with Sergeant Pountney at Home on Leave

SERGT. J. H. POUNTNEY, who enlisted in the M.M.G.S. early in the year, has been home on leave, and one day last week we had a chat with him. Pountney belongs to the No. 5 Battery (the "Coventry Battery"), and crossed over to France early in March. After a short time at the base the battery was moved up to within three and a half miles of the firing line, and within sound of the guns. After further training some of the men became so anxious to taste the experience of trench life that they volunteered for trench duty, and it was arranged for one of the sections, with a couple of machine guns, to take a turn, and Pountney accompanied the section.

En Route to the Trenches.

Two of the quietest cars obtainable were used to run the party to the advance post, about threequarters of a mile from the reserve line of trenches. At this stage the excitement began, as they were under shell fire, but all members of the section crawled safely into the first line trenches. At the time mud was very prevalent, so the experience was not one to be easily forgotten if only on that account.

Serg. Pountney gave us some interesting impressions of trench life.

On hearing the whistle of a bullet or a thud the men automatically "duck," but it is a waste of time, as the bullet has by then long since past. This ducking is a habit which all new-comers have great difficulty in overcoming. It does not do to peep over the sandbags, as the German snipers are always on the watch, and are from time to time sweeping the top of the parapet with machine guns.

One of the many dirty habits of the foe is to reverse the bullets, so transforming them into dum-dums. One poor fellow of the No. 5 Battery, B. Chambers, was hit by one of these bullets and killed instantly. Only one other casualty has occurred to the No. 5, and that was Gunner Clarke, who was hit in the left lung whilst filling a sandbag.

All the sections have had their turn in the trenches, and none suppress the fact that they would prefer to tackle the Germans openly.

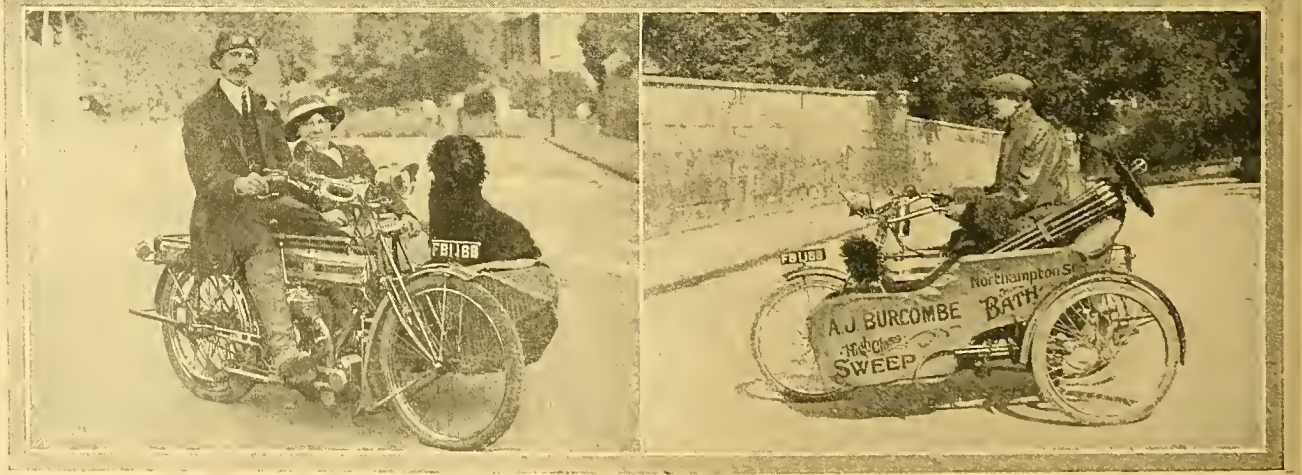
It is interesting to note how religiously the Germans shell the roads behind the British lines on which they believe the transports bring rations and supplies. Pountney's most exciting incident was in fetching rations with a party of the No. 5 Battery. Going *via* the open road for quickness, they were spotted, and a hail of machine gun and rifle fire followed them. One of the Connaughts with the party was shot through the bead; the others crawled back through the thick mud to get a stretcher party.

Members of the No. 5 Battery are very cool under fire, some of the men in particular seeming to enjoy the experience. A grim sight which some of the men will always remember was finding a German and a Gurkha locked in death grips in front of the trenches. Apparently after a hand-to-hand fight the German had clasped the Gurkha's throat in a last grip, and the Gurkha's knife was embedded in the German's stomach.

Sergeant W. A. Davenport has, unfortunately, had two illnesses, and his work has been performed by Ivor Chance (formerly with the Excelsior Co.).

Pountney emphasised the need of more and yet more men at the Front, and anxiously enquired about our recruiting work. He called on an inspection day, and saw sixty raw recruits being sworn in.

Major Alkin is no longer the commanding officer of the "No. 5," Captain Hammond having taken his place. Major Alkin is now in charge of a transport column.



A novel way of converting a sidecar for business use is shown in these pictures of a Triumph outfit belonging to A. J. Burcombe, who carries on a sweep's business at Bath. The same sidecar is used for both pleasure and business; for the latter, the cushion and apron are removed and the sidecar covered with a special waterproof canvas cover made at a cost of a few shillings.

The Increase of Motor Cycles in the London District.

FOR some ten years past it has been the practice of our contemporary, *Motor Traction*, to conduct enumerations of traffic annually at certain points in the Metropolis. The figures obtained are not without interest to our readers. The census of central traffic taken in Fleet Street was naturally not calculated to reveal any great use of motor cycles. Nevertheless, while the average number counted from 1907 to 1910 was only about four in the course of a day, the last census, taken in April of this year, had multiplied that number by ten.

Again, in the Edgware Road, the number of cycles, which averaged about ten a day from 1906 to 1908, has during the past three years averaged over eighty a day, these figures being obtained in the middle of

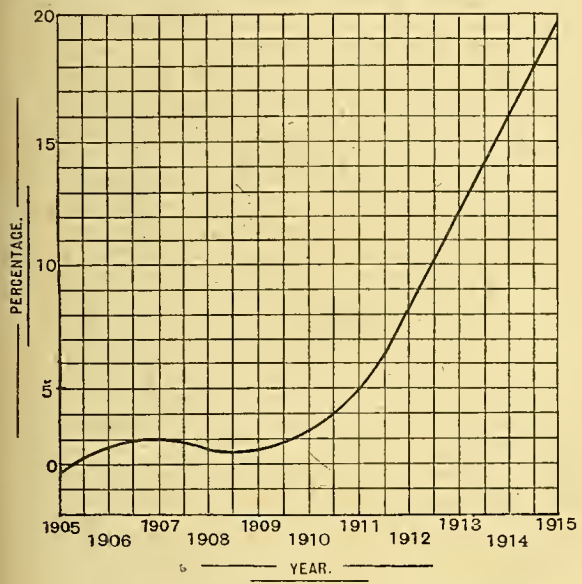


Fig. 1.—Putney Bridge Sunday cycle (pedal and motor) traffic, showing steady decrease of former and increase of latter since 1905. The decrease in the number of motor cycles in 1915 compared with 1914 is only to be expected, and is one of the many evidences of the great part motor cyclists are now playing in the defence of the country.

September of each year. They do not include motor carriers, which hardly figure at all in the results till 1912, when seven were counted. A surprising increase took place in the course of the next twelve months, the figure for 1913 being no less than fifty-one, and this increased to seventy-one during the census of September, 1914.

From our point of view, the Putney Bridge census, taken on a Sunday in summer, is the most interesting. Fig. 1 shows the cycle and motor cycle traffic at this point. It will be seen that the use of pedal cycles has decreased very steadily during the whole period. On the other hand, the use of motor cycles, which did not show much increase from 1905 to 1909, has gone up very rapidly since the latter date. The sudden drop at the end of the curve shows the effect of the war upon the use of motor cycles, and is something in the nature of an answer to those who would maintain that motor cyclists as a class have not borne their share.

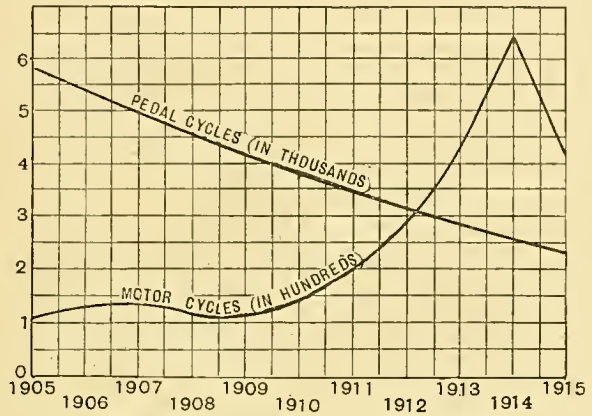


Fig. 2.—The progress of the motor cycle, as illustrated by the percentage of Putney Bridge cycle traffic "motorised."

Fig. 2, which also refers to the Putney Bridge results, shows very clearly how the motor cycle is affecting the use of pedal cycles. In 1905, the motor could only claim something less than two per cent. of the cycle traffic, but by 1915 its share had grown to about twenty per cent., and the shape of the curve indicates no probable diminution in the rate of increase for some years to come, unless it be due to an apparent set-back resulting from the abnormal conditions through which we are now passing.

FROM THREE WELL-KNOWN RIDERS.

WE have received the following letter from the Front: "Just a line or two from three of the boys to let you know that we are still going strong, and being now in our eighth month out here, during which time we have managed to stick together, with the exception of such times when we were sent out to the divisions or corps for a day or two. Although it is ride, ride, ride, from morn till night, we are still anticipating taking part in the next T.T. with as much enthusiasm as ever, provided we do not 'konk' out before, which we sincerely hope we shall not do.—HOWARD R. DAVIES (Sunbeam), GODFREY BOYTON (Triumph), and D. M. BROWN (Rover)."

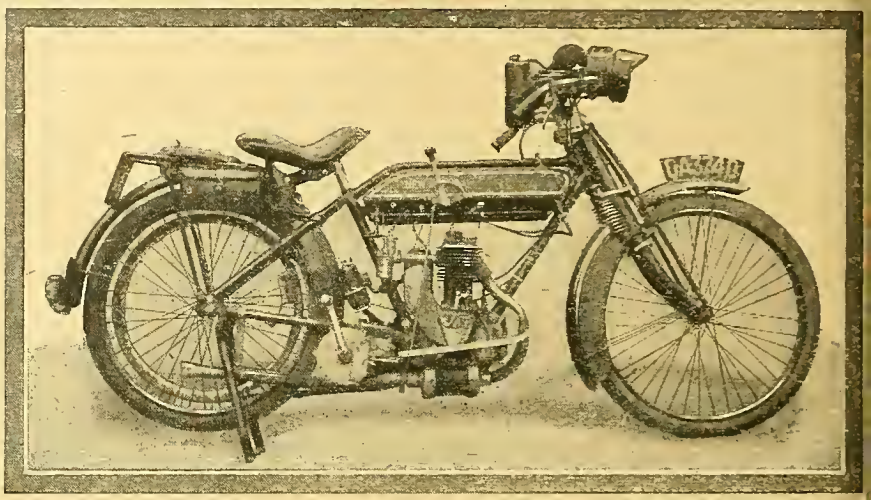
Former well-known competition riders—competitors in the last T.T. Race—who are now despatch riders at the Front. From left to right: D. M. Brown (Rover), H. R. Davies (Sunbeam), and G. Boyton (Triumph).

The Latest 2½ h.p. New Imperial.

THE New Imperial Co. have just produced a modified form of gear box complete with free engine and kick-starting mechanism for use with their light tourist model. This gear has been under test for some little time, and a few days ago we were invited to take a trip on a machine so fitted. The new gear is of the "dog clutch" variety, and provides two speeds. The dry plate clutch on the left side has five plates—two with cork insets. The kick starter mechanism is arranged on the opposite side, the sector and pinion being entirely enclosed.

With the help of the clutch, gear changing by means of the neat gate change lever and quadrant provided is greatly simplified, besides which the clutch is of such proportions that it is well able to move from rest a machine and rider of comparatively heavy weight. The gear is attached to the channel section bottom bracket by two studs and a corresponding plate fitting over the bracket.

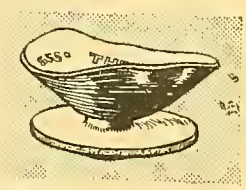
The 2½ h.p. New Imperial-Jap, with its 70 mm. × 76 mm. engine, is a wonderfully handy little mount, especially for traffic use. We were once again able to appreciate the value of such a machine from a business man's point of view by frequent stops and restarts during our trial. The ease of handling was largely contributed to by the controllability of the Zeta carburetter. The latest model New Imperial, we are glad to note, has an E.I.C. magneto, so that the New Imperial is now British in every detail from stem to stern.



Latest edition of the 2½ h.p. New Imperial, which is fitted with a countershaft two-speed gear, clutch and kick-starter. It is driven by chain and belt.

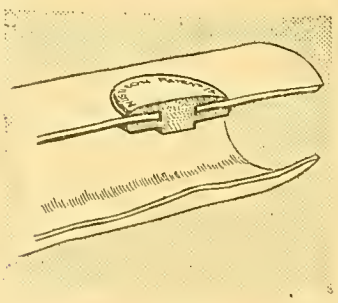
The Mustikon Tyre Repair Outfit.

A NEW and very effective method of dealing with punctures and small gashes has recently been introduced for motor cycles by Mustikon, Ltd., 20, New Street, Cardiff. The chief feature of the Mustikon system lies in the method of repairing a puncture from the inside of the air tube, so that it is practically impossible for the repair to develop faults during the whole lifetime of the tube.

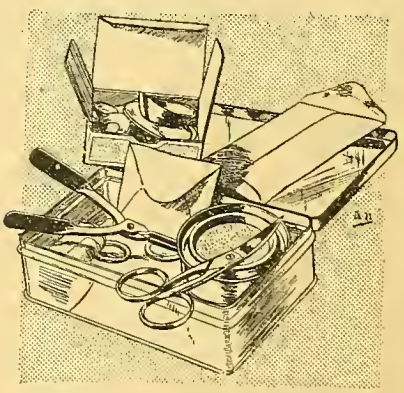


Mustikon repair stud.

The main feature is the stud, which consists of a small cup of rubber, below which is a rubber flange of approximately the same diameter; in starting on a repair the puncture orifice is enlarged to a certain size by a special cutter in order to receive the stud. After this the stud is held by a pair of special pliers, dipped in self-vulcanising solution, and simply pushed into the orifice in the tube. The outer or conical flange of the stud is afterwards given a coating of solution and pressed down on the outer surface of the tube, and the repair is finished.



Inner tube in part section, showing stud in position.

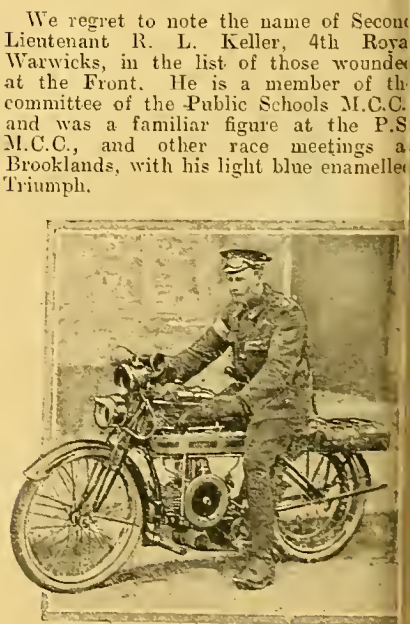


The Mustikon tyre repair outfit.

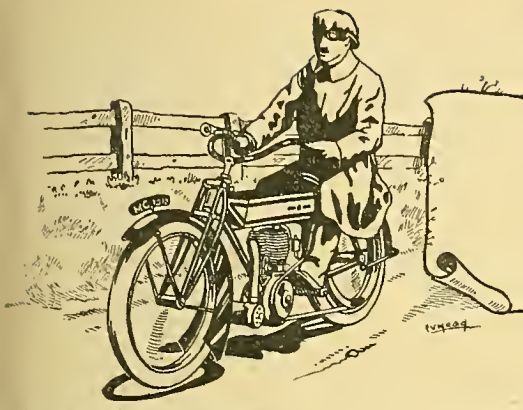
It will readily be seen that the air pressure tends to make the repair all the more effective, as the pressure in the tube keeps the inner flange of the stud up tight against the inner wall of the tube. Furthermore, it is claimed that heat generated by the tyre practically vulcanises the solution fixative, and thereby renders the repair additionally reliable. In an emergency the stud can be inserted without solution, and even so will make a fairly airtight joint.

Various size studs are supplied in the Mustikon outfit, including the necessary tools, solution, etc., and the price complete of the motor cycle outfit is 5s. 9d.

We regret to note the name of Second Lieutenant R. L. Keller, 4th Royal Warwicks, in the list of those wounded at the Front. He is a member of the committee of the Public Schools M.C.C. and was a familiar figure at the P.S. M.C.C., and other race meetings at Brooklands, with his light blue enamelled Triumph.



Despatch rider Corporal H. E. Hyett and his Douglas, on which he has put in some good work with the British Expeditionary Force in France, where the photograph from which our illustration is made was taken.



REAR SPRINGING.

By ERIC W. WALFORD.

IT would appear that the demand for improved springing is becoming a very pressing one, and most British manufacturers are finding that they are compelled to give serious attention to this subject in view of the fact that more than one machine on the market has for some considerable time been provided with rear spring suspension. This shows that it can be done, and that the clamours of the motor cycling community can and must be satisfied.

The problem is by no means an easy one, and considerable care must be exercised before adopting what at first may appear to be a satisfactory solution. The introduction of a spring between an axle, particularly a driving axle, and a frame introduces far more complications than would appear at first sight. I am not sure, therefore, that the best solution is not that of using a rigid frame and providing a spring support for the rider. The best known example of this kind is the Bat frame, which has been before the public for many years. I shall be describing this frame in further detail later, but, briefly, it may be stated that the frame is of the conventional type, but the seat-pillar and footrests are slung on springs.

Points to be aimed at.

An ideal spring suspension should prevent bouncing and be adjustable for load, and the motor car manufacturer is now giving attention to both these points, but possibly it is too early for the motor cycle designer to consider these features when there are many others far more important to be tackled first. It will not be out of place to specify the most important points in rear wheel suspension. These are:

(1.) The suspension must be stiff laterally to prevent rolling. It will be remembered that many of the early tricars were deficient in this respect. I remember breaking many a driving chain through taking a corner so fast that the consequent rolling of the body twisted the chain line.

(2.) There must be a minimum number of pivots, slides, etc., subject to wear. In some cases flexible spring plates can be used in place of pivot pins working in bushes, and later I will show a construction in which this arrangement is embodied.

(3.) The suspension system must not affect the tension of the belt or chain. With a rigid frame the distance between the centre of the engine, or countershaft, belt pulley and the rear wheel is always the same. With some systems of springing this distance varies as the suspension acts, causing variation in the tension of the belt, which should be avoided or made as small as possible. In any case loading of the frame should apparently reduce the tension in the case of a chain and increase it in the case of a belt.

(4.) The suspension should not be affected by the pull of the belt. If the distance between the pulley centres varies as the suspension moves it is obvious that the pull of the belt will tend to shorten the distance between these centres and cause the suspension to yield. The pull of the belt puts a separate load on the suspension, preventing it working properly. Thus the engine pull will tend to compress or release the springs, modifying their action considerably.

(5.) It must permit the use of a rear wheel brake, and some of the suggestions to which I am referring later would apparently prevent a rear wheel brake being used.

(6.) The suspension system must substantially resist driving and braking torque. This is a point very frequently overlooked by designers because the same difficulties do not arise in the case of a rigid frame. When the brakes are applied, there is an obvious tendency for the brake blocks to be carried round with the wheel. This is the braking torque. When the brake blocks are carried by a rigid frame, the support is obviously substantial and no difficulty is experienced. With a spring frame matters are very different, and it is important that designers should bear in mind this most important braking torque and make certain that the brake blocks, or the anchoring of the brake bands, are substantial and do not yield with the springs. Otherwise the braking torque puts a load on the suspension for which it has not been designed. In the case of a shaft-driven machine there is also a driving torque. The casing containing the bevel pinion or driving worm tends to rotate in the opposite direction to the road wheel, and the casing requires anchoring so as to resist this backward torque. In belt and chain drive, the driving torque is taken by the frame and can be ignored.

(7.) It must permit of constant mudguard clearance. It would look very unsightly to have a big clearance between the wheel and mudguard as is usual on motor cars. Such an arrangement necessitates a very wide guard increasing the weight, etc. The suspension must therefore enable the mudguard to be carried close to the wheel and to move with the wheel.

(8.) The attachment of a sidecar must be considered, and, probably, this is one of the most important points, so that manufacturers will be compelled to design their frames in order to take a sidecar; that is, to provide special points of attachment, otherwise users will fit sidecars in various ways, possibly interfering with and spoiling the suspension system.

Rear Springing.—

(9.) No construction is likely to be successful which adds very much to the weight or is very unsightly. Almost anything which is unconventional appears unsightly at first, but the objection on this score soon wears off if there are compensating practical advantages.

I think I have made it quite clear that the path is not easy for the designer, but it is well to point out the chief difficulties so as to show the motor cyclist that the solution of the problem is not a simple one, and this largely accounts for the fact that rear springing is not more general.

In order to find what different arrangements have been invented, I have examined the patent records for the past ten years or so, and I propose to illustrate a few constructions so that designers can see what suggestions have been made and how far these are applicable to modern requirements.

The systems shown are not necessarily very practical ones, but are chosen to illustrate the chief principles followed by inventors.

Some Patented Ideas.

The first construction (fig. 1) was proposed for a pedal cycle, and is of interest, as it shows the simple idea of fitting springs between the rear wheel

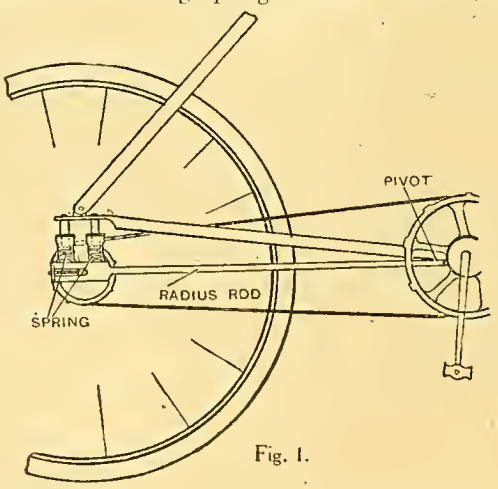


Fig. 1.

spindle and the adjacent part of the frame in conjunction with radius rods. Such an arrangement gives but little lateral stability, although it might be suitable for use on a pedal cycle, where the weights and speeds are low. To prevent roll, the wheel spindle must be supported at points as far as possible (up to 90°) from one another in a vertical plane.

Another simple construction, suggested for use on ordinary bicycles, is shown in fig. 2. The chain

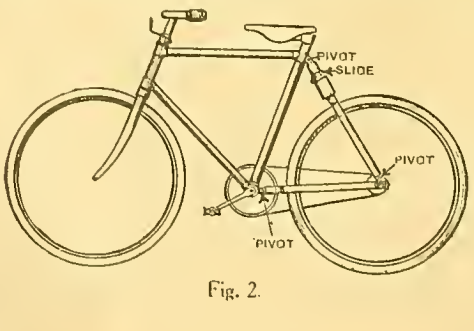


Fig. 2.

stays are pivoted to the bottom bracket, and the compression stays are telescopic just above the wheels, this telescopic part containing a spring. The compression stays are pivoted to the frame at the upper ends and to the chain stays at the lower ends. There are, therefore, six pivots as well as a slide. Similar arrangements have also been used experimentally on motor bicycles.

Another system which can be applied to a frame of the conventional type is shown in fig. 3, which

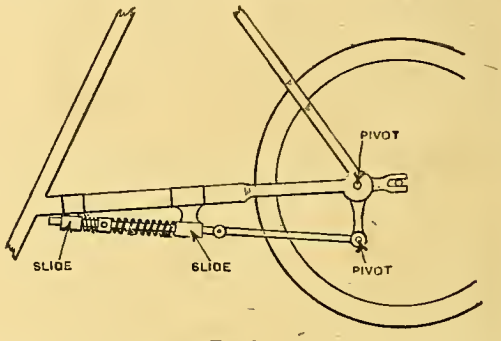


Fig. 3.

is almost self-explanatory. The wheel spindle is carried by a bell crank lever at each side, and these levers are pivoted to the ends of a fork, the left-hand end of which works in a slide on the frame against the action of springs. As soon as the axis of the rear wheel, the pivot of the bell crank lever, and the axis of the engine crankshaft move out of line when the spring yields, the pull of the engine puts a load on the spring and the belt slackens, which are objectionable features. It would appear difficult to fit a rear wheel brake and to arrange the mudguard so as to move with the wheel. Such "attachments" would not appear to be capable of fulfilling the chief requirements.

A particularly interesting system is illustrated in fig. 4. The wheel spindle is carried at each end by a vertical tube, which can slide in relation to the rear of the frame. These two sliding tubes are bridged across at the top and are supported on a leaf spring. This gives good lateral support, and

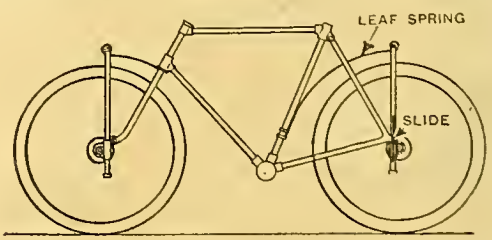


Fig. 4.

the design is simple, but slides are always objectionable, as the surfaces must always be partially and intermittently exposed, and consequently cannot be properly lubricated.

A construction which will be familiar to many is shown in fig. 5. The rear wheel spindle is carried by arms pivoted to the rear of the frame, and these arms are acted upon by springs arranged within a housing just beneath the saddle. This housing is pivoted to the frame at the top, and at the bottom it is connected with the arms by a fork member. The

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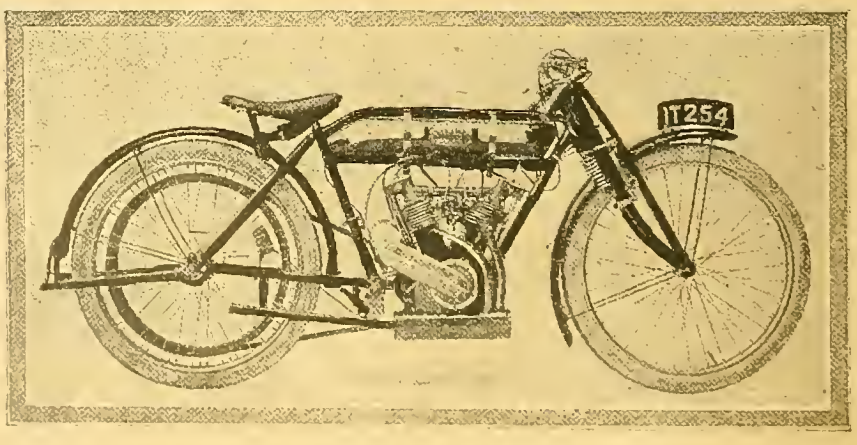

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Rear Springing.—

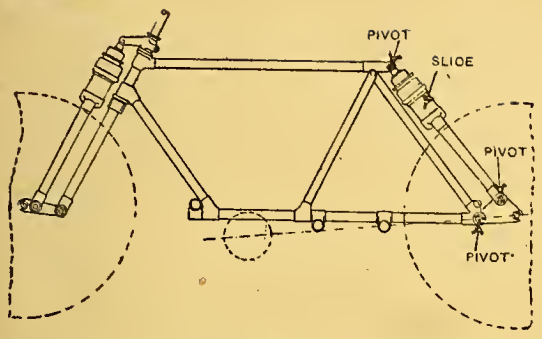

Fig. 5.

rear wheel spindle, engine centre, and the pivot of the arms are shown in line, but directly the springs yield they come out of line and the consequent objections previously referred to arise.

By duplicating the rear frame, a substantial support can be obtained, as will be clear from fig. 6. The wheel is carried by special compression and chain

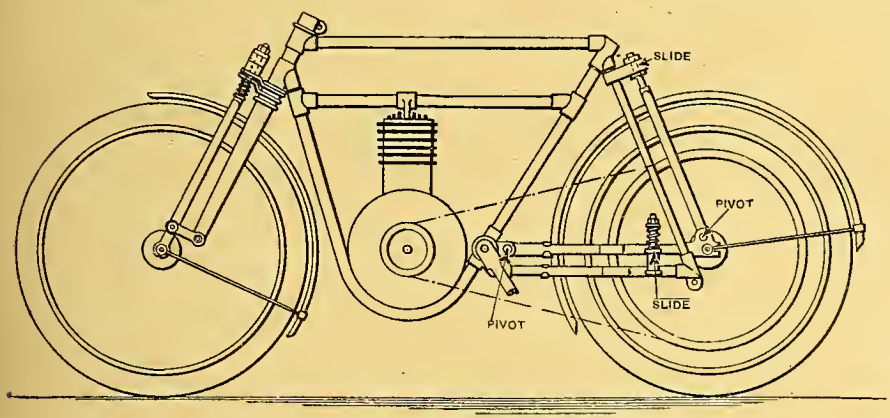

Fig. 6.

stays, which are pivoted at the front to the bottom bracket. This rear frame works in a slide at the top and slides at the bottom, at which point the springs are arranged. There are, therefore, two pivots and two slides at each side, and the increase in weight is considerable. In some respects the design is good.

A construction which has been in use for some years is shown in fig. 7. The wheel spindle is carried

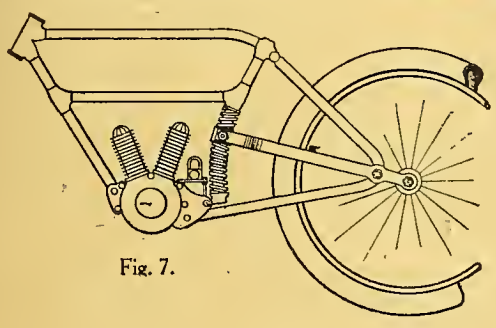

Fig. 7.

at the rear end of a fork pivoted to the rear of the frame and acted upon at its forward end by springs. In this arrangement the engine and wheel centres and the pivot do not always remain in the same straight line. There is only one pivot at each side, and in many other respects this arrangement would appear to have good points.

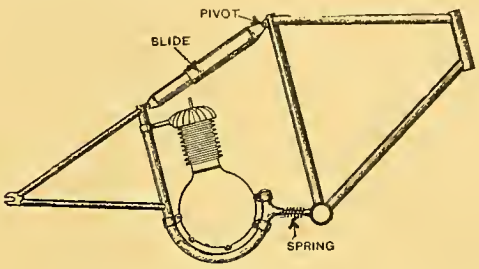

Fig. 8.

In fig. 8 the engine is carried on the rear wheel frame, and is therefore unsprung. Inside the telescopic slide above the engine is arranged a spring, and connecting the engine bracket with the bottom bracket of the frame is a flat steel spring which is worthy of some attention, as it enables a pivot and bearing surfaces to be dispensed with at this point. In this arrangement the belt line remains undisturbed, but it is very unlikely that the necessary engine position would be acceptable nowadays.

In the construction shown in fig. 9, which will be recognised by many, the rear wheel is carried in bearings in a casing which is connected to the top and bottom of

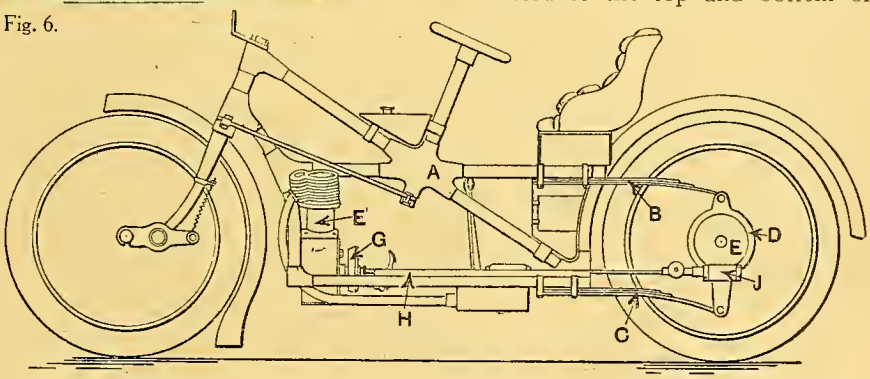

Fig. 9.

the frame by means of two leaf springs at each side, and these springs take the braking and driving torque. The arrangement necessitates the use of a band brake, or its equivalent. As shown, the wheel moves in relation to the mudguard, but this would not appear to be essential. It is possible that this system could be well applied to a frame of the conventional type and to a belt-driven machine.

Half-elliptic springs have been suggested more than once, and the next illustration (fig. 10) shows one scheme. The wheel moves in relation to the mud-

Rear Springing.—

guard, and a frame of very special design is required. A rim brake could not be used, but, of course, this itself is not objectionable. In fact, it is doubtful if the rim brake will survive much longer. The wheel spindle is guided in horn plates, which, being in the nature of slides, are objectionable, as previously mentioned. The wheel would not appear to be well supported laterally, and one would expect the machine to roll a great deal.

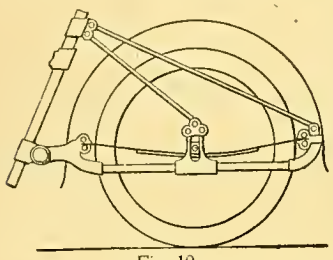

Fig. 10.

In fig. 11 is shown a substantial and simple construction; the rear frame, consisting of the chain stays and compression stays, is pivoted to the bottom bracket and works against springs at the top. At this point a very substantial guide is provided, consisting of curved guide plates carried by the rear frame and bearing against the sides of a guide block on the main

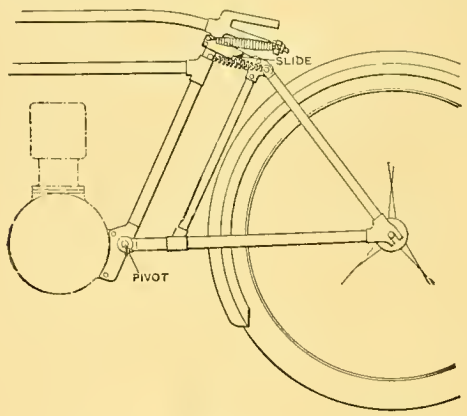

Fig. 11.

frame. Various and ingenious arrangements of springs are suggested, but unfortunately I am not able to go into details of these in the present article. There is only one pivot and one slide. The slide and the springs are practically out of sight, and the frame conforms, to a great extent, to conventional ideas. The pivot is close up to the engine or countershaft, and there is no difficulty about fitting brakes and proper mudguards.

The Bat type of spring frame is shown in fig. 12. Correctly speaking, it is not a spring frame, as the frame is rigidly carried from the rear wheel, and only the rider's seat and the footrests are on springs.

This arrangement overcomes most of the difficulties in the way of the designer, and I think it will be accepted that the frame, which has been in use in varying forms since about 1904, is very practical.

The unsprung weight, however, is large, but it is doubtful whether this is very objectionable in the case of such a light vehicle as the motor bicycle. The objections to "unsprung weight" may not be understood, and it may not be out of place to explain that the weight of the parts not supported on springs should be as low as possible, in order to reduce tyre wear, due to the wheel spinning, and vibration.

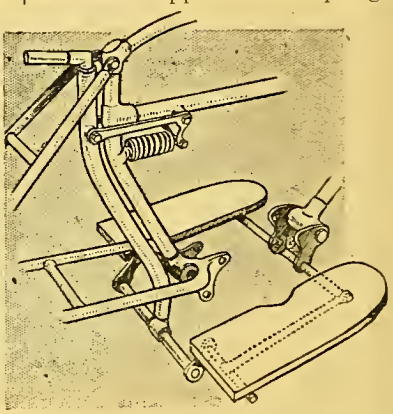

Fig. 12.

Let us consider the case of two wheels, one heavy and the other light, travelling over rough ground. When the heavy wheel strikes a bump it will not rise quickly, but when it does respond it will jump above the top of the bump, and the wheel will leave the ground. The light wheel will lift immediately, and will follow the bump without leaving the ground, so there will be less vibration and less wear on the tyre. Consequently the ideal in this respect is to arrange a spring between the wheel spindle and the frame, so that the wheel alone is unsprung, and is free to follow the contour of bumps and pot-holes without any exaggerated motion.

In the Bat type of frame it will be understood that the saddle moves in relation to the handle-bar. On a very rough road this might be slightly objectionable, but I should doubt it, and it is surprising that this system is not more general, particularly as I believe that with some systems of rear springing engine vibration is very noticeable.

HENRY FORD ON LIGHTWEIGHTS.

I SEE that Mr. Henry Ford has told the American traders that they will never really tap the potential motor cycle market till they perfect lightweight machines, and that they are artificially constricting their output by concentrating so exclusively on the high-powered heavyweight twin. If this is true of America, with its frightful town-to-town tracks and indifferent city roads, how much more is it true of England, with her highly developed roadways! For many a long year I contentedly tooled about on machines scaling between two and three hundredweight. Last winter I hardly ever mounted anything over 150 lb.; and I find that I have almost lost my zest for the heavyweight. I admit that it runs far more smoothly than the best lightweight and that the absence of fuss which characterises its 35 m.p.h. gaits and the greed with which it eats up hills are strong points in its favour. But, nevertheless, my lightweight experiences have inspired me with a marked distaste for hauling a 3 cwt. machine out of its shed, or hoisting it up on to its stand, and, whenever a run is in prospect, I have to fight down an inclination to select the baby two-stroke, and to leave the monsters rusting in their garage. If this applies to a veteran speed merchant like myself, how much stronger must similar inclinations be in the breast of a rider who has but few sporting instincts and few speed memories? IXION.

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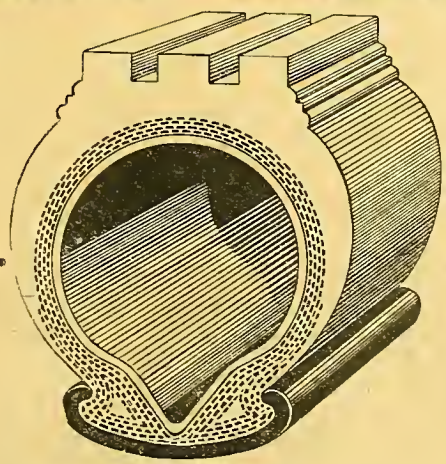

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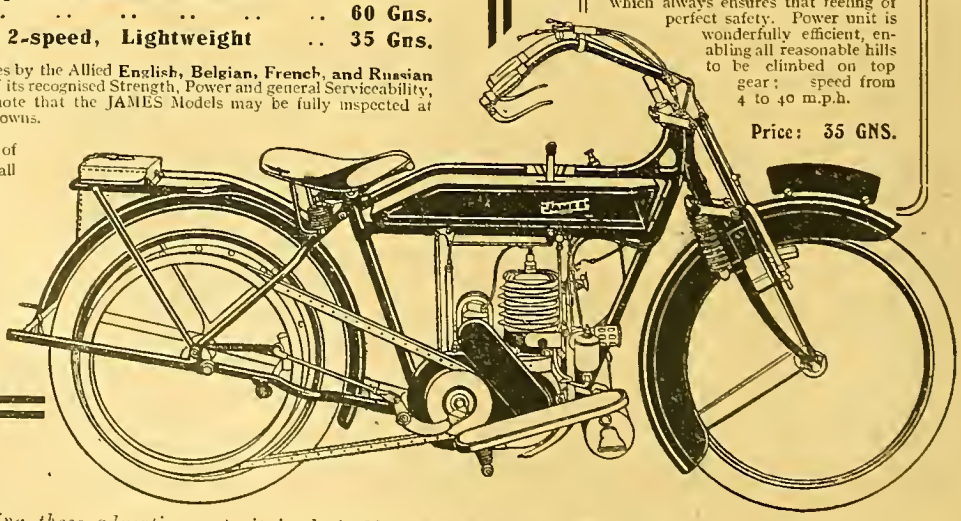
—an exceedingly attractive machine, easily manipulated and controlled, and allowing of a low riding position which always ensures that feeling of perfect safety. Power unit is wonderfully efficient, enabling all reasonable hills to be climbed on top gear; speed from 4 to 40 m.p.h.

Price: 35 GNS.



In answering these advertisements it is desirable to mention "The Motor Cycle."

"THE MOTOR CYCLE" RECRUITING SECTION.

Good Response to Motor Machine Gun Service. Patriotic Offer to Cyclists by a Motor Cycle Works Manager.

A SPLENDID batch of sixty-five to seventy men attended the inspection of recruits for the Motor Machine Gun Service last week, and the majority were accepted and attested forthwith. The men had come from all over England as the list published below of accepted recruits shows. The recruiting list cannot remain open very much longer, that is, if men continue to come forward as readily as they have done of late. Last week's new recruits were:

Alcock, C. A., Bootle.
Atkinson, R. H., Scarborough.
Bainbridge, W., Blackhill, Co. Durham.
Barkus, H., Loughborough.
Bauerstock, W. H., Tenbury.
Binks, S., Leeds.
Bird, C. J., Newark.
Blay, G. H.
Burgum, J., Moses Gate, near Bolton.
Crole, H. I. N., Ramsgate.
Crowther, H., Dewsbury.
Cunliffe, B., Rochdale.
Davenport, H. A., New Southgate, N.
Douglas, T.
Fowler, S.
Green, R. C. C., Leamington.
Gunn, W.
Hart, F., Bolton.
Hearn, G. S., Camberwell, S.E.
Hill, A., Liverpool.
Hudson, C., Leeds.
Hunter, W.
Jones, T. H., Cannock.
Keating, V. L., Aintree.
Lane, W. H., Manchester.
Lowe, C. F.
Lyle, Victor.
Macdonald, W. L., Manchester.
Massey, W., Leicester.
Melines, G. W.
Molle, G. W.
Moseley, K. M., Walthamstow.
Owen, A., Liverpool.
Penny, C. G., Ulverston.
Philipson, A. M., Retford.
Roberts, F. S., Sydney, N.S.W.
Russell, W. H., Higham.
Saunders, A., Taunton.
Shaw, A. J., Sheffield.
Shone, W., Chester.
Short, Wm., Coventry.
Smith, J. A., London.
Stevens, H., Gainsborough.
Stevenson, L. E., Newport Pagnell.
Stubbs, W. G., Ipswich.
Sykes, G. M., Bradford.
Thornett, C. A.
Tippett, F. H., Blackheath.
Tyldesley, E. C., Bolton.
Tyler, J. G. W., London, E.
Unthank, G. D., Yatton.
Walther, K. A., Newcastle-on-Tyne.
Walton, Frederick, Manchester.
Windridge, C. H.
Wolstenholme, John, Manchester.
Young, H., Hyde.

Of the above a number had had previous military training—a real advantage. A few pedal cyclists were included in the batch, but only men of good physique with some engineering knowledge were accepted. Any good cyclists with a knowledge of machine guns should mention the fact when applying.

The case of F. S. Roberts is worthy of special mention. This patriotic motor cyclist left a successful business in Sydney, N.S.W., to his partner and paid his own expenses to England to enlist. Though qualified for an artificer's position at 6s. per day, he preferred the ranks at 1s. 2½d. Having done eighteen months military training and been in the motor cycle trade since 1901, Roberts should be useful to the M.M.G.S., which section now boasts a large number of men of exceptional skill.

Another recruit just home from Sydney and accepted last week as a car driver is Wm. Short. Others came from Siam and Canada.

It shows the spirit with which some men enlist when we state that one man who was rejected by the doctor sobbed on being told of the fact.

A copy of a special poster giving terms of service in the M.M.G.S. will be gladly sent to any applicant who can exhibit it prominently.

A number of readers have applied stating that they will be free in three or four weeks' time. As it is not known how soon the requisite number of men may be obtained, motor cyclists should not apply until they are free to enlist.

THE DESPATCH RIDER IN TRAINING. He gets there and back with his message before the telephone wire is laid.

"The Motor Cycle" Recruiting Section.—

Friday morning's post brought eighty-two letters of application.

It is likely that there will be a call for despatch riders in the Royal Engineers ere long, as a large batch left for the Front last week. Only experienced motor cyclists able to perform all ordinary running repairs are accepted for the R.E.

A patriotic offer has been made by Mr. W. H. Carson, of Messrs. Fayliss, Thomas and Co., makers of Excelsior machines. Noticing that a limited number of well-developed cyclists will be accepted and taught to handle the sidecars used by the M.M.G.S., Mr. Carson has written to Mr. G. Smith offering to place his services at the Government's disposal in training possible recruits either mechanically in the Excelsior works or in driving motor cycles and sidecars. Mr. Carson is to be heartily thanked for his patriotic offer.

We repeat below the chief terms of service, and recommend those ready to enlist to fill in the form on this page and post it to Mr. Geoffrey Smith, Editor of *The Motor Cycle*.

The next inspection is on Wednesday, August 4th, 2.30 to 4 p.m., at the Recruiting Office, Masonic Hall, Coventry. Candidates may attend without necessarily writing beforehand.

General Particulars.

AGE.—19 to 38.

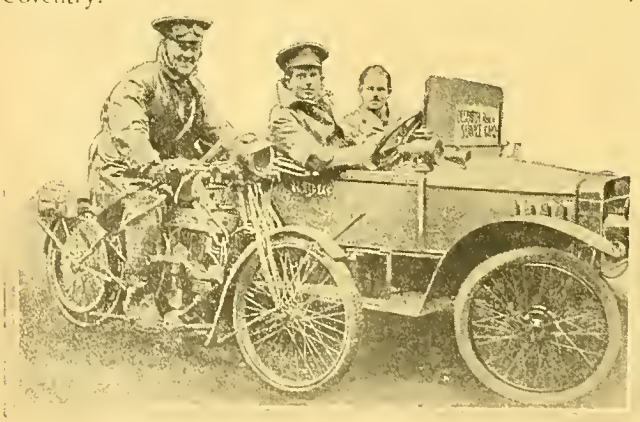
HEIGHT.—Not important so long as applicant is physically sound and well developed.

ENLISTMENT.—For duration of war.

EYESIGHT.—Glasses do not necessarily debar men from service, provided they can see quite well with them.

PAY.—1s. 2½d. per day; all found; usual separation allowance.

Readers who cut out and fill in the form referred to will, provided that the particulars are in order, receive a free railway warrant to attend the next inspection in Coventry.



A Douglas and a G.W.K. in France. At the wheel of the latter is Sergt. R. Gore, who gained a D.C.M. when riding a Douglas. The despatch rider on the Douglas in the picture is Corpl. E. Hooper.

Name .....

Address .....

.....

Age ..... *Height* .....

Chest measurement .....

How long have you been a motor cyclist? .....

Can you do running repairs? .....

Have you had any previous military training, and, if so, when? .....

.....

Are you medically fit? .....

Occupation .....

When free? .....

Date .....

After filling in the above particulars return to:

MR. GEOFFREY SMITH,
Inspecting Officer, R.E.,
South Midland Divisional Area,
19, Hertford Street,
COVENTRY.

The Editor has received a number of letters from men comfortably settled in the service, and others from men who found sleeping on the floor rather rough, but who took to the change good-naturedly!

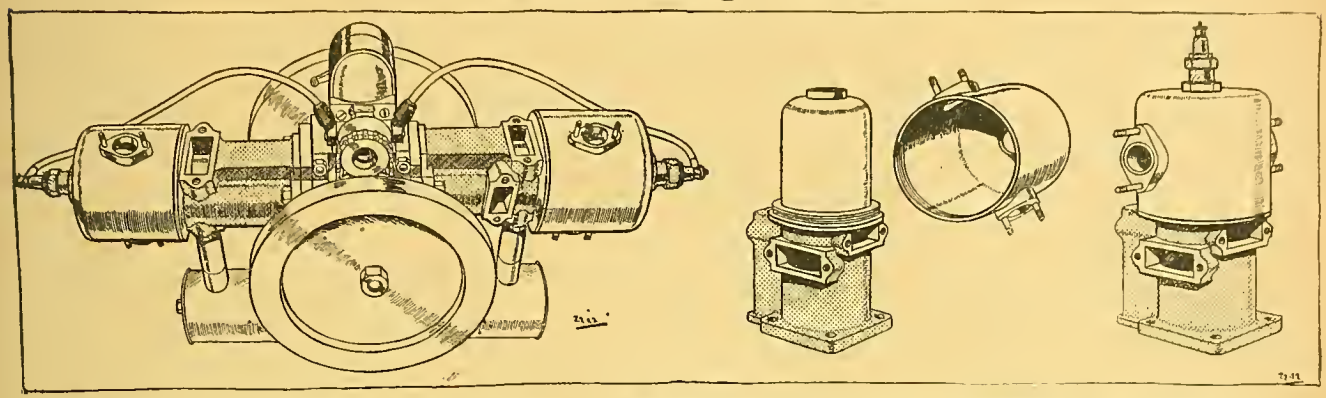
One of our contributors, Mr. H. W. Fortune, of Harrogate, offered himself for enlistment a few weeks ago, but was rejected on medical grounds and recommended to undergo an operation. This Mr. Fortune has done, and he is now well on the way to recovery, and hopes soon to be well enough to be passed by the doctor.

R. C. C. Green, before enlisting in the M.M.G.S., was works manager of the Coventry works of Waygood-Otis, Ltd., the big lift people, who have 400 employees serving with the Colours. Although engaged on important Government work, Green was anxious to serve in a more combatant way, and he obtained a man above the military age to take over his duties. He was the owner of a luxuriously equipped 1915 6 h.p. A.J.S. sidecar outfit.

Since we were authorised to recruit motor cyclists we have had many requests for transfers from various regiments to the M.M.G.S. and R.E. It has always been a difficult matter, and the difficulty has increased instead of decreasing. A few months ago transfers from the New Armies were forbidden, and now an Army Order, issued a few days ago, notifies that no enlistments from the Territorial Force into the Navy, Regular Army, Special Reserve, or Royal Marines will be considered unless on urgent public grounds

A Water-cooled Levis Horizontally-opposed Engine.

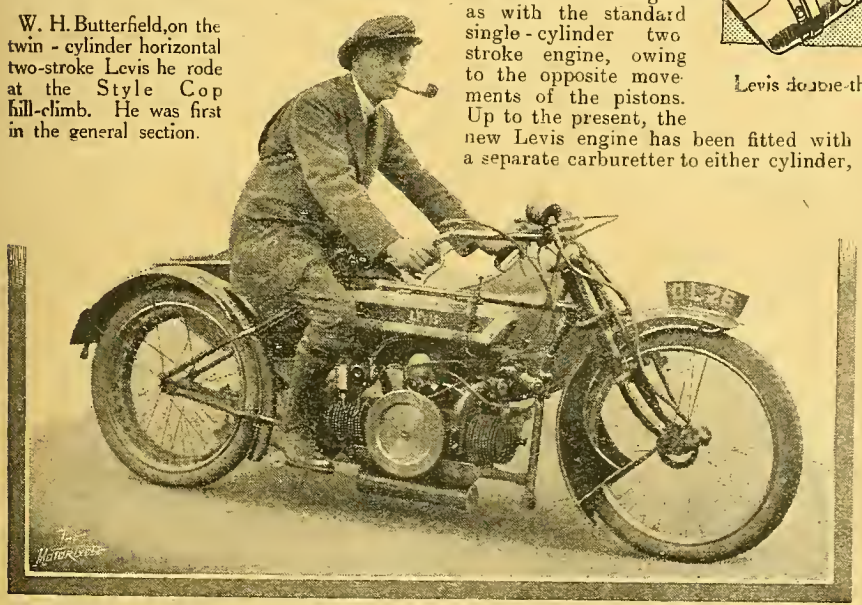
Novel Method of Making Water Jackets.



The Levis two-stroke two-cylinder water-cooled engine. The left-hand sketch shows the general arrangement of the engine, and in particular the two outside flywheels. On the right will be observed a cylinder with and without the novel aluminium water-jacket shell.

SINCE the short description of the Levis horizontally-opposed twin-cylinder two-stroke engine appeared in our issue of May 6th, some further improvements have been made in its design, more particularly in fitting water-cooled cylinders, in order to render this power unit thoroughly suitable for sidecar work. The chief features of this engine lie in the arrangement of the crankshaft, cylinders, and the two outside flywheels. Each cylinder is of the three-port type, being identical as regards bore and stroke, with the standard Levis cylinders of 2¾ h.p., but with the difference that the cylinders are fitted with water jackets, the ingenious construction of which is shown in one of the sketches. These cylinders are opposed to each other horizontally, being bolted to a small compact crank case which houses a double throw crank, having crank pins arranged at 180° to each other. The flywheels are arranged one on either side of the crank case, and the magneto is placed in a position directly on top of the crank case and chain driven from the crankshaft.

W. H. Butterfield, on the twin-cylinder horizontal two-stroke Levis he rode at the Style Cop hill-climb. He was first in the general section.

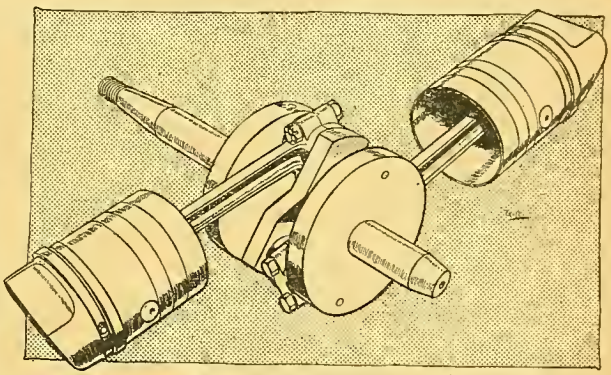


The Principle of Working.

As the engine works on the two-stroke principle, it will be seen that the firing in both cylinders occurs simultaneously at each revolution of the crankshaft, therefore the impulses are no more frequent than in the ordinary two-stroke single-cylinder engine. The great feature, however, of this engine is the practically perfect balance accruing from the arrangement of the crank pins and pistons. The flywheel on either side of the crank case also assists towards smooth running. The compression of petrol vapour in the crank case is also the same in this engine as with the standard single-cylinder two stroke engine, owing to the opposite movements of the pistons. Up to the present, the new Levis engine has been fitted with a separate carburetter to either cylinder, but a single instrument, in conjunction with a special induction pipe, will be fitted in future. It should be noted that the crankshaft is cut from a solid bar of steel, and drilled for lubrication on the Levis system.

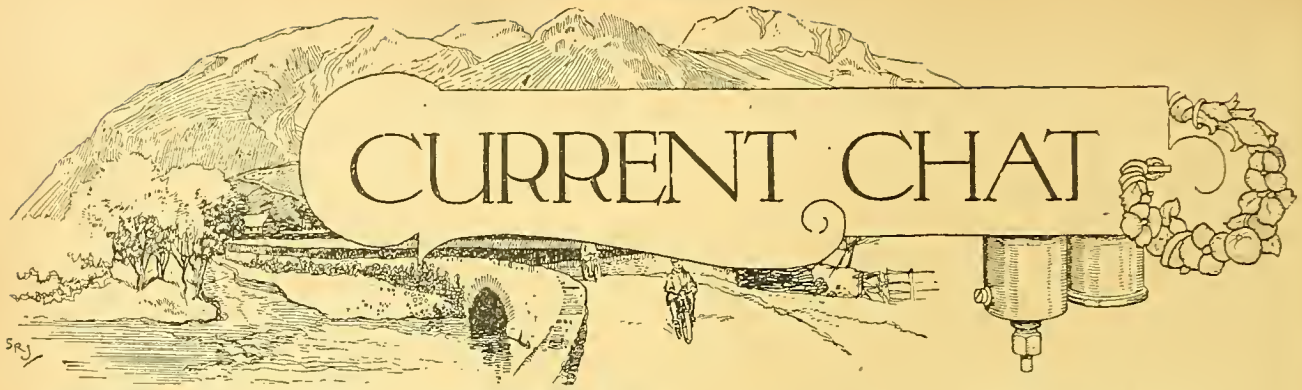
The Water Jacket.

The new Levis water jacket is a very ingenious piece of work. The jacket is cast separately in aluminium and machined all over, and attached by a threaded flange on the cylinder and also by a screw plug in the cylinder head. As the cylinders are also machined outside down to the flange, the weight can obviously be kept very low, whilst the aluminium jackets render the appearance of the engine very neat. The joints of the jacket are made watertight by the introduction of copper-asbestos washers.



Levis double-throw crankshaft with connecting rods and pistons.

It is the intention of Messrs. Butterfields, Ltd., to incorporate this engine in a luxurious sidecar outfit in combination with an Enfield two-speed countershaft gear. Although the engine is rated at 5-6 h.p., and possesses a cubical capacity of only 698 c.c., it develops over 12 h.p. on the brake test, and this constitutes a fine reserve of power. During all its tests on the road it has had a single gear of 5 to 1 in conjunction with chain and belt drive, and hills like Ankerdine it will ascend with the greatest ease.



TIMES TO LIGHT LAMPS.

July 29	...	...	8.53 p.m.
,, 31	...	...	8.50 ,,
Aug. 2	...	...	8.47 ,,
,, 4	...	...	8.43 ,,

Two Carburetters.

It is an interesting fact that W. H. Butterfield's twin horizontal Levis, which performed well in the Style Cop hill-climb, had one carburetter for each cylinder.

The Sale of Petrol.

We are often asked what licences are necessary as regards the sale of petrol. First of all, to store petrol a licence must be obtained from the local inspector under the Petroleums Act, and in order to sell the spirit a further licence is necessary, which costs 5s., and is obtainable from the Excise Authority.

Pillion Riding.

We have repeatedly drawn attention to the danger of pillion riding, and only last week we read of a fatal accident from this cause. There may be but little risk on dry roads with careful driving, so long as nothing unforeseen takes place. But in a sudden emergency, which may occur at any time, the extra weight of a passenger on the carrier may make all the difference between success in getting out of a tight corner and failure to do so. Certain of our readers will, we suppose, continue the practice in spite of all warnings. We only hope that they may not have cause to regret it.

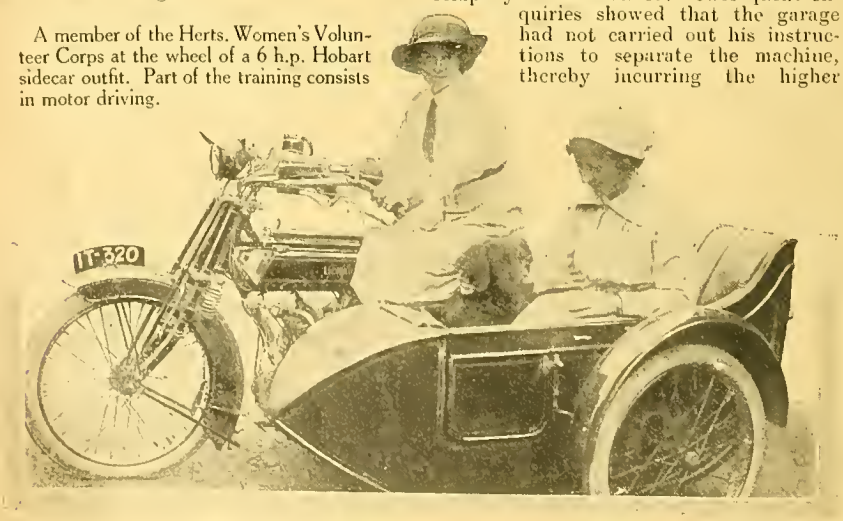
A.A. and M.U. Notes.

High Hedges at Corners.—In making his report concerning an accident which occurred recently on the Worthing Road, an A.A. patrol urged that the danger at the corner which was the scene of the accident would be greatly lessened if a thick hedge could be cut down to a reasonable height. The Association subsequently had the spot inspected and decided to approach the owners of the land. Instructions have since been given for the necessary cutting down to be done.

On the Leatherhead Road a similar danger existed at a bad corner, and the owner, upon receiving a communication from the Automobile Association, has kindly consented to cut the hedge down.

How to Send Motor Cycles with Sidecars by Rail.—Motor cyclists desirous of sending their machines with sidecars by rail should note that, if the sidecar is detached before despatching, a considerably reduced rate is charged by the railway companies. A case recently dealt with by the Automobile Association shows the importance of observing the regulations for the transport of such vehicles. An A.A. member enquired the cost of sending his cycle and sidecar from London to Inverkeithing. He was quoted 30s. if the sidecar were separated from the cycle. He therefore gave the necessary instructions to a garage where the machine was being stored, and subsequently received a bill from the railway company for £13 8s. 6d. Subsequent enquiries showed that the garage had not carried out his instructions to separate the machine, thereby incurring the higher charge. The member was reluctant to hold the garage proprietor financially liable for the larger amount he was asked to pay, and decided to place all the facts before the Automobile Association. The Association communicated with the two railway companies concerned, who generously reduced the charge from £13 8s. 6d. to £3 7s. 3d.

A member of the Herts. Women's Volunteer Corps at the wheel of a 6 h.p. Hobart sidecar outfit. Part of the training consists in motor driving.



SPECIAL FEATURES.

THE REAR SPRINGING QUESTION
Illustrations.
"THE MOTOR CYCLE" RECRUITING SECTION.
THROUGH FEMININE GOGGLES.

Clubs and the War Loan.

We have already mentioned several clubs whose committees have invested money in the War Loan. Mention must also be made of the Bradford M.C.C., which has put £200 in the Loan. The Bradford Club, by the way, has a quarter of its members serving in various capacities in H.M. Forces, and of the remainder a large number have joined the local volunteer corps. Quite a good record!

Spare Parts and the Holiday.

Motor cyclists in want of spare parts would be well advised to apply for them to-day, as a number of manufacturers will, after strenuous efforts in the works, be closing for a day or so for the August Bank Holiday. Strange as it may seem, some owners with machines temporarily held up by repairs make a practice of wiring to the makers of their machines during the holiday period, and expect their request to have prompt attention. A little forethought at this moment may save much inconvenience on the road next week.

The King's Visit to the Midlands.

Among those presented to His Majesty during his flying visit last Thursday to some of the Coventry factories engaged on Government work were Mr. A. H. Niblett (Humber), Mr. C. W. Hathaway (Triumph), and Mr. Alfred Bednell (secretary Motor Cycle Traders' Union), as members of the Armaments Output Committee. In the course of his rapid tour through the Rover works His Majesty the King saw motor cycles in course of construction, though at the present moment the greater part of the Rover Co.'s energies are concentrated upon work of a more important and pressing nature.

During his tour of the Birmingham factories His Majesty visited the B.S.A. works, and among those presented to him was Mr. C. A. Hyde, general manager of the cycle and motor cycle departments.

The "Khaki" Meeting.

The Motor Cycle's efforts to arrange an all-khaki meeting at Brooklands, as suggested to the Editor by a motor cyclist officer, have proved successful. The event will take place on August 7th.

Second-hand Prices.

We give below the average prices of the various second-hand models offered for sale in the last issue of *The Motor Cycle*, and also the average prices for the last eight weeks :

Make.	Year.	H.P.	Last week's average.	Average for past 8 weeks.
A.J.S.	1914	6 3-sp. sidecar	£70	£72
Bat	1913	6 3-sp. sidecar	£51	£51
Bradbury	1913	4 2-sp. sidecar	£29	—
B.S.A.	1914	3½ 2-sp. chain	£44	—
Calthorpe	1914	2 2-speed	£18	—
Chater-Lea	1913	6 3-sp. sidecar	£44	—
Clyno	1914	2½ 2-sp. 2-stroke	£27	£30
„	1914	6 3-sp. sidecar	£63	£67
Connaught	1914	2¾ 2-speed	£25	—
Douglas	1914	2¾ 2-speed	£43	£43
„	1915	4 sidecar	£68	—
Enfield	1914	6 sidecar	£64	£64
Humber	1913	2¾ 3-speed	£25	—
Indian	1914	7 sidecar	£64	£64
James	1914	4½ sidecar	£60	£58
Levis	1914	2-speed	£27	£31
„	1914	2-speed	£23	£23
Matchless	1914	7 3-sp. sidecar	£70	£73
„	1913		£54	£54
New Hudson	1914	6 3-sp. sidecar	£58	£59
„	1913	4 3-sp. sidecar	£44	£41
Premier	1914	3½ 3-sp. sidecar	£60	£54
„	1913	3½	£36	—
Rover	1914	3½ 3-sp. sidecar	£55	£53
„	1913	3½ 3-speed	£42	£44
Royal Ruby	1914	3½ 2-speed	£45	£45
Rudge	1914	3½ Multi	£34	—
„	1913	3½ Multi sidecar	£36	£37
„	1913	3½ Multi	£32	—
Scott	1914	3⅝ 2-sp. sidecar	£58	£56
„	1913	3¾ 2-speed	£32	—
Singer	1913	3½	£28	—
„	1913	2½	£25	—
Suobeam	1914	6 3-sp. sidecar	£75	£75
„	1914	3½ 3-speed	£55	£58
„	1913	2¾ 2-speed	£43	—
Triumph	1914	4 3-sp. sidecar	£57	£55
„	1914	4 3-speed	£45	£44
„	1913	3½ 3-sp. sidecar	£45	£43
„	1913	3½ 3-speed	£35	—
„	1914	2½ 2-speed	£34	—
Williamson	1914	8 3-sp. sidecar	£70	—
„	1913	8 3-sp. sidecar	£63	£54
Zenith	1913	6 Gradua sidecar	£44	£47
„	1914	3½ Gradua	£44	£37

IRISH "END-TO-END" WINNER.

R. Jones (B.S.A.), winner of the principal award, the Palmer trophy, in the Irish End-to-end trial. The full results will be found on page 116 of this issue.

The A.C.U. Official Touring Guide.

THE OFFICIAL TOURING GUIDE OF THE AUTO CYCLE UNION, 1915-16; 3s. 6d. post free from the Auto Cycle Union, 83, Pall Mall, S.W. This year's edition of the A.C.U. handbook, while remaining of a size suitable for the pocket, has been revised and much new matter added. The annual report gives some particulars as to how the Union has been of international service up to March last, and since that date the work in connection with recruiting, supplies, and assistance to the various Government departments has continued. The most valuable information of all is contained in that section devoted to touring. A number of favourite tours have been drawn up, and particulars can be instantly sent to members on application. A circular and comprehensive tour in England, Wales, and Scotland has been compiled, covering a total distance of 3,212 miles. Quite a novel feature is a distance table, giving the approximate number of miles between the important towns in England and Wales. Further useful information is a list of notable test hills, giving their approximate gradient and length. The list of ferries has been revised and brought up to date, and is of great use to the tourist, including, as it does, not only those in England and Wales, but in Scotland also. The list of officially appointed hotels and repairers has been completely modernised and rearranged in a clear and lucid manner. The legal section has also been revised, and the principal headings have been placed alphabetically. The Touring Guide, although sold to the general public at 3s. 6d., is free to members.

Swivelling Lamps.

There has been a lot of unnecessary fuss made concerning swivelling lamps on motor cycles. As we recorded last week, one magistrate advised the police to withdraw a summons. In any case, all that is needed is simply to solder the swivelling device, or to fit a pin right through, as described by a reader in our Letters page this week.

Racing in the Argentine.

A race meeting, in which British-built machines won the principal awards, was held at Buenos Ayres on May 23rd. The timing was over a kilometre of a straight road of good surface. Results :

LIGHTWEIGHTS :	1. N.U.T.	...	50 m.p.h.
	2. Singer	...	48 „
3½ H.P. CLASS :	1. Matchless	...	62 „
	2. Bat	...	55½ „
UNLIMITED :	1. Indian	...	75½ „
	2. Matchless	...	73½ „
SIDECARS :	1. Matchless	...	60 „
	2. Pope	...	53 „

These are high speeds, and our correspondent tells us that the timing was electrically controlled. The Indian lowered the previous record of 70 m.p.h. made on a machine of the same make.

A meet of the Burnley Motor Gipsy Club. The membership totals about seventy, the great majority of the members being possessors of sidecar outfits.

Where Spring Fr

AMES are NEEDED.

WHEREAS the state of British roads has in the past been the pride of motor cyclists, the deterioration of road surfaces, due collectively to the exceptional military traffic, the extension of motor 'bus routes, and the growing use of petrol and steam tractors, is very noticeable. Undoubtedly there is more pressing need for spring frames on motor cycles at the present time than ever before in their history, and "The Motor Cycle" this week devotes special attention to a study of the problem. The upper pictures show typical trials routes, the lower views depicting main roads cut up by heavy traffic.

THE ALL-KHAKI RACE MEETING.

Brooklands, Saturday, August 7th, at 2 p.m.

ENTRIES for this event are coming in quite well, and there is every prospect of its being an unqualified success. The original idea was that of Lieut. F. M. C. Houghton, 25th Divisional Cyclist Company, Aldershot, who suggested it in a letter to the Editor of *The Motor Cycle*, who immediately took steps to see how much of the track was available, and found, on investigation, that quite a sporting afternoon's racing might quite easily be arranged. The B.M.C.R.C. was approached, and this body, which has done more than any other to encourage motor cycle racing in the United Kingdom, has undertaken the organisation.

There are no fewer than eleven events on the programme, the first beginning at 2 p.m. At present the most popular events are Nos. 3, 4, 9, and 10, being respectively the medium-weight half-mile sprint race for touring machines not exceeding 500 c.c., the medium-weight half-mile sprint for racing motor cycles not exceeding 550 c.c., the serpentine slow race for machines of any description (in which competitors will ride about five hundred yards between posts without putting their feet down), and the medium-weight hill-climb for machines not exceeding 500 c.c. Another interesting item in the programme will be the quick change plug race for solo machines of any description. Competitors are to ride a quarter of a mile, change the sparking plug, ride a further quarter of a mile, dismount, turn round, return a quarter of a mile, again change the plug, and ride a quarter of a mile to the finish. Entrants should arrive provided with a spare plug.

Events are provided for all types of machines, and the meeting is one which will especially appeal to a competitor who has never entered a race meeting before. Any officer or man in the British Navy or Army, and the Allied Forces, wearing uniform, may compete.

Actual entries have been received fr

Captain G. L. Andrew	Lieut G. H. Walker
Lieut. J. H. C. Lindsay	Lieut F. M. C. Hough
Captain J. H. Storey	Pte. A. C. S. Irwin
Lt. V. Spencer Daniell	Pte. R. A. Waddy
Lance-Cpl. Collard	Lieut W. E. Collins
Lieut. H. W Tait	

Entries are also expected from following :

Asst. Paymaster Marcel, R.N.R.	Cpl. H. R. Whitmore
Lieut. J. Healy	Capt. A. H. Mawer
Br. C. C. Dixon	Lieut. R. G. Collingw
Lieut. F. Sowrey	Lieut. C. D. Siddeley
Lieut. H. C. H. Davies	Capt. Bordesley
Lieut. R. W. Brownhead	Lieut. J. Hutchings
Cpl. F. E. Barker	Lieut. E. C. Kemp
Pte. C. Punchard	Cpl. O. M. Baldwin
R. G. Parker	Lieut. C. E. H. Medl
Lieut. G. L. Love	Lieut. J. C. Barraclou
Lieut. A. Lindsay	Lieut. J. F. Blyth
Capt. P. T. Chevallier	Lieut. B. Sanderson

Entries, which close at noon Monday, August 2nd, should be s at once to Mr. T. W. Loughborough, Pall Mall, S.W. Entries cost 2s. per event, and 2s. 6d. deposit for privilege of using the B.M.C.R number plates.

ROADS TO AVOID.

Bad Stretches Notified by Readers.

OUR appeal to readers to send us accounts of roads which have suffered unduly from the passage of heavy motor vehicles since the outbreak of war has brought some useful information for which we are indeed grateful. The roads in the south and south-west seem to have suffered to the greatest extent. Round Oxford we learn that there are some exceedingly bad stretches, while in the north also certain roads have been severely cut up. Information is very hard to obtain, and it is quite possible that some of the roads which we are reporting as in bad condition have now been repaired. It is impossible to prevent such a contingency, as some of the county councils are doing their utmost to remedy the damage the roads in their districts have undergone.

The Winchester District.

We will begin at Winchester, which is an important centre where an exceedingly bad state of affairs exists. The fine old Roman road from Alresford has now ceased to be. It is a road no longer, being inches, if not feet, deep in dust in dry weather, and the same in mud in wet. The avoiding route is by Itchen Abbas and Kingsworthy, which is fairly good. It is perhaps better to go to Winchester from London through Basingstoke, but there is a very pot-holey stretch of about two miles east of Basingstoke. From Winchester, in the direction of Bishop's Waltham, there is a bad stretch of road in the direction of Twyford, while the road from Winchester to Romsey is in an appalling state, and travellers journeying west should proceed as far as Bassett, near Southampton, and then turn off and go through Shirley and Totton. The road from Totton to Lyndhurst is now in first-class condition.

As regards Salisbury, the road from Upavon through Amesbury to Salisbury was marked on the A.A. map as being bad. The road from Salisbury to Devizes *viâ* Shrewton and Lavington is bad between the two last-named places. Ludgershall should be avoided, as the roads are not only in very poor condition, but there has been lately a good deal of loose metal lying about. The road between Wilton and Shaftesbury is marked as being in bad condition, also a stretch between Warminster and Wylie.

Bristol and the West.

Farther west, between Chippenham and Bristol, the road is very bad by Warmley and Wick, while Pewsey to Devizes is rough going at the present time. The road from Bristol to Gloucester is very bad as far as Berkeley Road. All exits from Bristol are in poor condition. The road from Exeter to Bodmin *viâ* Okehampton is bad.

From Guildford to the foot of Hindhead is in bad condition (but this can be avoided by going through Farnham, Alton, and Petersfield), and so is the road between Merton and Sutton. In Kent the road between Farningham and Wrotham is in a shocking state, also between Farningham and Sevenoaks, while we have reports of a bad stretch between Ashford and Folkestone.

Sundry parts of Sussex have also suffered; for instance, between Lewes and Pevensey and each side of the coast road with Newhaven as a centre. There are also bad stretches in the neighbourhood of Shoreham.

The Midlands.

Approaching the Midlands, the Oxford-Woodstock road is in poor condition as far as Wolverton, and the Oxford-Banbury road is also in poor condition. All roads and streets in Oxford are in very bad order. The Coventry-Birmingham road is in a shocking condition at Meriden, near Coventry, and nearly by-roads should be avoided in the B mingham district. There are numer pot-holes on the Holyhead road betw Daventry and Fenny Stratford.

The worst road in the Nor apparently, is from Newcastle, *via* Ott burn and Carterbar, to Edinburgh, shortest route between Newcastle and Scottish capital. One of our reade reports says that the summit "is a loose, but not very rough, an irregu roughness which is much more comfo able than waves at high speeds. It quite good enough at fifty miles an h except on the bends." Another of our formants, however, gives a rather wo account than this.

In Wales, certainly the worst road which we have heard is between Corw and Cerrig-y-Druidion on the Holyh road. This is in very bad order, ow partly to a motor omnibus service a partly to traction engine traffic.

Eastern Counties.

The east coast main roads are, on whole, in very good condition. Howev an enthusiastic reader has sent us following reports: The road from Ca bridge to Bedford has a tarred surf to Eltisley, broken or loose at interv with good stretches, part of this r is being retarred, and is bad through town of St. Neots. Cambridge to E the first quarter of a mile is bad, t good to Milton village. There is a lo portion between the seventh milest and the bridge over the river Ely. road from Cambridge to Norwich very good on the whole, but rather lo in places. From Barton Mills, howev this is being repaired.

We would heartily welcome any s gestions, additions, or corrections to above, as well as further news conce ing bad roads not mentioned here.

Midland Motor Cyclists' Volunteer Corps.

HOW AN INGENIOUS SCHEME WENT WRONG.

ON the 25th inst. the corps paraded at Hodge Hill Common for a route march and manœuvres at Great Alne and Aston Cantlow. *En route* the men encountered floods owing to the recent rain. They were sent intentionally by this route to exercise the men in crossing country covered with water.

On reaching Henley, the boundary, the troop commanders took over their troops, Blues proceeding to their headquarters at Aston Cantlow Reds to their headquarters at Great Alne. Unfortunately rain commenced and continued through the whole of the operations, but the troops, although drenched, finished the day's work.

Members of the Midland Motor Cyclists' Volunteer Corps at a ford.

Troop Commander Butterfield commenced operations by sending out flanking patrols, who quickly returned, reporting a clear road. Leaving a portion of his troop to guard his headquarters, he made an advance on to the River Alne. This had to be crossed before an attack could be made on Blues.

The River Alne just now is in a state of flood. The bridges being out of bounds at Henley and Alcester, there were left only the fords and the bridge at Great Alne. The Reds got over by planks, and crossing the railway line got into Blues' territory.

Blues' Troop Officer Randolph put out his scouts, and these returned with the information that the fords were impassable and that Reds were in force at the bridge; therefore he decided to entrench and act on the defensive.

The section of Reds, after considerable difficulties, had advanced over the country and approached Blues' headquarters. Not suspecting an ambush, they went on and were captured.

At this period an interesting incident occurred. Trooper Richards, unseen by the Blues, slipped a note in the hand of a country lad with instructions to take it over the river and give it to the Reds. The country lad took the note, got to the river, saw some other inhabitants, and asked them if they had seen any volunteers about. No sooner had he asked the question than a head appeared out of a ditch, exclaiming "Yes, I am one." The lad gave him the note. Unfortunately for Reds, the owner of the head was a Blue scout.

Blues' officer now decided to rush the bridge and make an attack in force on Great Alne. This, after overcoming obstacles, he succeeded in doing, capturing the remainder of Reds.

ACETYLENE LAMP TUBING.

THE Leicester Rubber Co. have a good article in their acetylene lamp tubing, having devoted considerable thought and time to the evolution of satisfactory rubber tubing.

Two troubles to be avoided in acetylene lamp tubing are splitting at the end and kinking in some part (so causing the lamp to go out), and the Leicester Rubber Co. claim to have overcome them. It is common practice nowadays for front and rear lights to be fed by the same generator, and this necessitates a long length of tubing. This calls for all the more care in the making of the tubing and quality of rubber used.

The sample we have received is undoubtedly of fine quality, and should give excellent service.

NEW RACING TRACK FOR SYDNEY.

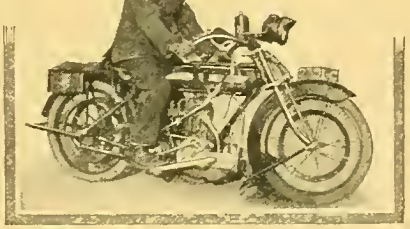
A QUARTER-MILE motordrome, built at an angle of 50°, the track proper being 30ft. wide, independent of an 8ft. runway, is in course of construction at Sydney, New South Wales. Previously several unsuccessful attempts have been made to erect a motordrome in or near Sydney, but a competent authority states that they have failed in every respect due to lack of experience in such matters. It is thought that the new motordrome will soon gain a big name, as motor cycling is at present in its infancy, though very popular in New South Wales, but it is generally recognised that there are tremendous possibilities for the motor cycle. As soon as the track is finished and available for racing it is proposed to match one or two of the leading British riders against the local cracks, and the promoter of the track is now endeavouring to fix up contracts with leading home riders. In this respect he may have some difficulty, as the best men, if not in the firing line, are engaged at home on Government work.

LIVERPOOL MECHANICAL TRANSPORT CORPS.

THIS corps continues to make progress in its training, and it has been very busy during the past few weeks. Drills are held every Tuesday and Thursday evenings at the North Haymarket, St. Anne Street. The heavy car and light car sections have operations every Saturday and Sunday, and the motor cycle and signal sections have been equally active.

A week-end camp has been arranged for the August Bank Holiday, and it will be held at Helsby, Cheshire.

Those wishing to join the corps (motor cyclists especially are wanted) should apply to the O.C. at the North Haymarket any Tuesday or Wednesday evening. Needless to say, they must have a good reason for not enlisting.



Sergt. T. Hubbard, whose name will be familiar to many of our readers as a competition rider in the days before the war. His mount is a B.S.A., and he is now at one of the R.E. despatch riders' training centres

Irish End-to-end Trial Results.

The Palmer Trophy Awarded to R. Jones (4¼ h.p. B.S.A.)

THE committee of the Ulster centre of the Motor Cycle Union of Ireland did not meet to consider the awards in the end-to-end of Ireland reliability trial until Wednesday of last week, and, after lengthy consideration of a number of points that were raised, they issued the following list of awards:

PALMER TROPHY FOR BEST PERFORMANCE.—1, R. Jones (4¼ h.p. B.S.A.); 2, W. H. Freeman (7-9 h.p. Indian); 3, J. Doleman (3½ h.p. Rover); 4, R. S. Russell (2¾ h.p. Douglas).

TEAM PRIZE. — Douglas riders: J. Stewart, R. S. Russell, and "Sou-wester."

SIDECAR PRIZE.—C. B. Franklin (7-9 h.p. Indian sc.).

GOLD MEDALS.—J. Stewart (2¾ h.p. Douglas), "Sou-wester" (2¾ h.p. Douglas), J. Browne (3½ h.p. Rover), T. Toole (4¼ h.p. B.S.A.), C. B. Franklin (7-9 h.p. Indian sc.), J. Dwyer (4 h.p. Triumph), A. W. Mooney (6 h.p. Bradbury sc.), and F. L. Dooly (4¼ h.p. B.S.A.).

SILVER MEDALS.—J. Farren (5 h.p. Indian), W. J. Henderson (7-9 h.p. Harley-Davidson sc.), J. Chambers (4¼ h.p. B.S.A. sc.), T. W. Ladd (6 h.p. Bradbury sc.), J. T. Woods (4¼ h.p. B.S.A.), and E. G. Jack (3½ h.p. Rover).

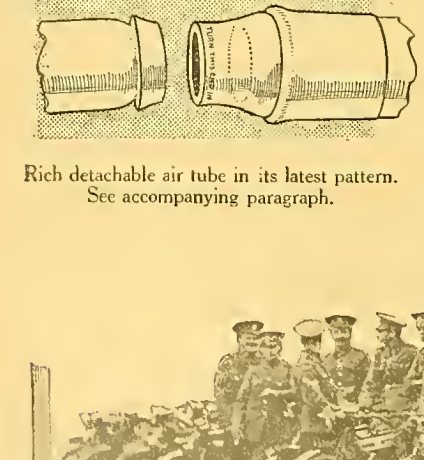
It was understood that the awards published prior to the meeting of the committee merely awaited the arrival of some of the checking sheets from the South to see that no marks were lost at the open and secret controls. These awards gave the first prize and the Palmer trophy to W. H. Freeman, on the assumption that Jones would be penalised for repairing his tyre while officially stopped at the foot of Iscar Hill while in a non-stop section. The committee decided that the repair was permissible, and as Jones's performance in the flexibility test was adjudged to have been the best of the twelve riders who secured full marks at the open and secret controls, he was awarded the first prize. As this put Franklin into fifth place, he was awarded the sidecar prize for the best unplaced sidecar performance, which would otherwise have gone to Mooney, who was the only other sidecar rider to qualify for a gold medal. As Browne's stop on the last series of hills was not officially reported although admitted by the rider, he was given his gold medal. Doleman was incorrectly reported as having failed on these hills. He was apparently mistaken for Browne, who was mounted on a similar machine.

THE LATEST PATTERN RICH DETACHABLE AIR TUBE.

THE accompanying sketch shows the latest pattern Rich detachable inner tube, the handling of which has been recently taken over by the Thames Rubber Co., 199, Upper Thames Street, E.C.

The lower one shows the tube as delivered by the manufacturers, ready to be joined up. The method of procedure is as follows: the left-hand portion is smeared with a special lubricant sold in a tin and supplied with these tubes, which allow easy manipulation and facilitate the rendering of the joint air-tight. The right-hand portion is then turned in to the position shown in the dotted lines. Instructions to this effect will be seen in the illustration. The object of it being delivered in the position shown is to ensure the rubber being preserved when the tube is kept in stock for a long time. The already lubricated portion is pushed into place and pulled up, so that the contact faces are close together. The outer sleeve is then pulled over, adequately protecting the joint of the tube in the manner shown in the upper of the two sketches. The tube is now ready to be placed inside the cover and pumped up.

The manufacturers of the tube have had eleven years' experience, and the tube has now reached a high state of perfection. It, of course, possesses an advantage over other butt-ended tubes, in that there is always a free passage of air round the whole tube.



Rich detachable air tube in its latest pattern. See accompanying paragraph.

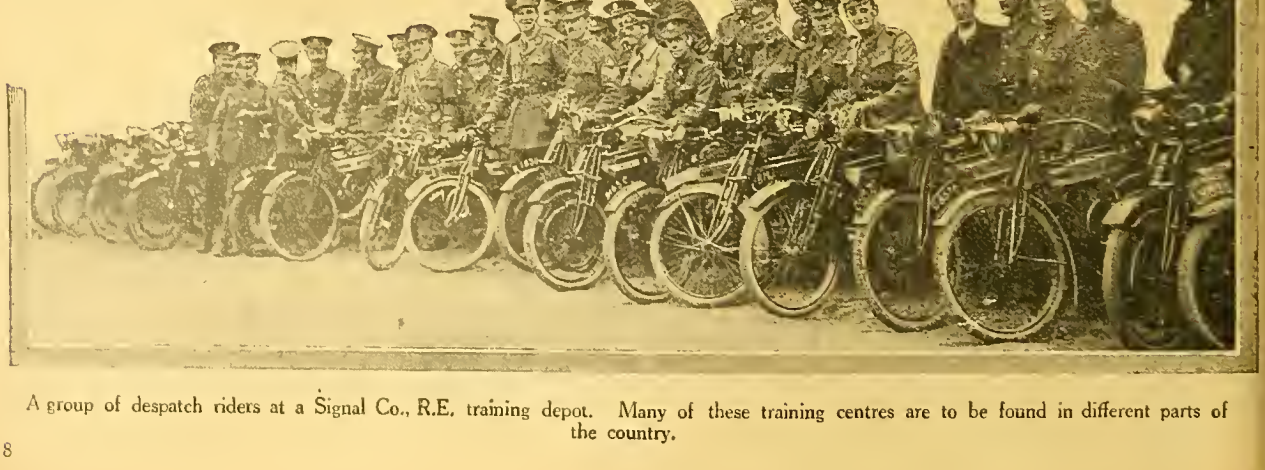
SEARLE UNBURSTABLE TUBES.

WE are informed by the Searle Unburstable Inner Tube Co., Ltd., Great Western Buildings, 6, Livery Street, Birmingham, that, in consequence of the large number of motor cycle tubes the War Office has been taking over from the firm, the output of Searle unburstable motor cycle inner tubes has been greatly extended, with the result that the cost has now been reduced by 25 %.

Searle tubes were used in the recent Irish twenty-four hours open trial by T. Toole (4¼ h.p. B.S.A.) and J. Doleman (3½ h.p. Rover), who gained gold medals, Toole also tying for the Rudge-Whitworth cup, and J. Browne (3½ h.p. Rover), who won a silver medal. None of these riders suffered from tyre troubles.

Repairs of Armstrong Three-speed Gears.

We hear that Messrs. Percival Bros. and Webb, Ltd., of 72, Moor Street, Birmingham, have decided to undertake repairs to Armstrong three-speed gears.



A group of despatch riders at a Signal Co., R.E. training depot. Many of these training centres are to be found in different parts of the country.

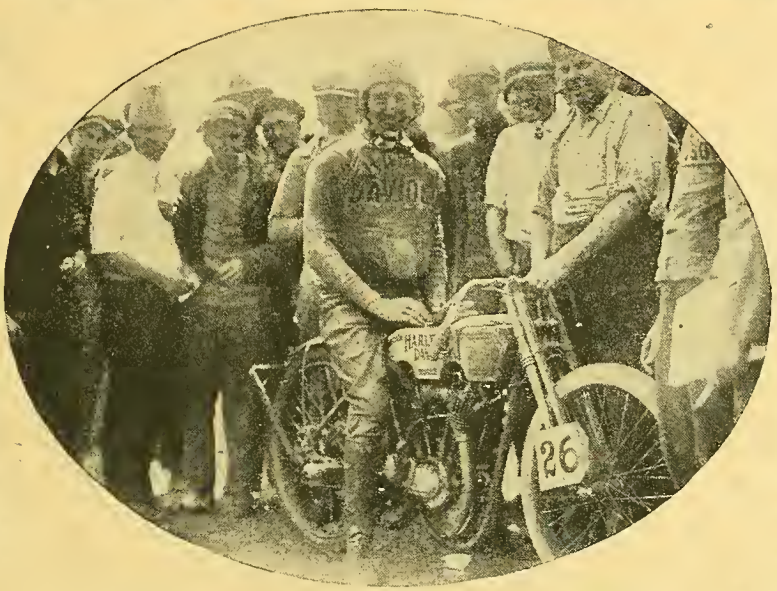
The heavy Military Traffic has simply played the "Cat and Banjo with the roads," writes E. N. Duffield in "Sporting Life"—quite so, and roads like that require

HARLEY-DAVIDSON

Stamina, Speed, and Power, in short—Harley-Davidson design, engineering, and workmanship

Finishes on Time and wins Medal in IRISH END-TO-END July 13th and 14th

In this two days' 500 miles Reliability Trial—The Harley-Davidson Model 11F. and sidecar (rider W. J. Henderson) proved superiors to the roads, correctly described "desperately bad" and a trial that was "considerably severe." The machine which can show such remarkable powers of endurance has substantiated its claim to Strength and Stamina beyond the normal



The man who broke all previous World's Records in International 300 Miles Grand Prize Championship Race, July 3rd.—Otto Walker—Time: 3 hours, 55 minutes 45 seconds—average 76 3/10 m.p.h. 6 Harley-Davidsons finished in first 7 places; 8 started. ALL BROKE WORLD'S RECORD

Wins 2 Gold Medals in Glasgow 12 hrs. Reliability Trial, July 3rd

Two Harley-Davidsons with sidecars were entered for this gruelling test. Both won Gold Medals. F. E. Martin rode 11F. Model with sidecar. Daniel M. Brash (Manager of The Harley-Davidson Scottish Agency, 98, Great Western Road, Glasgow), rode a 11J. (electrically equipped model) with sidecar. To quote from press comments, 'The Harley-Davidsons were most highly commended and did well'

On road and track, has put up an unapproachable reputation for RELIABILITY

The Road's the Test.—You may select the roughest and longest roads, hairpin bends and elbow corners, but—you will never be able to "take it out of" the Harley-Davidson.—For solo or sidecar work, in town or country—put it to the most strenuous test, the hardest possible "going," give it a real good "doing" and even then you will find no visible signs of wear in the vital parts of the machine. All parts of generous proportions, and built to limit gauge

Our Model No. 11J, for £76 13s., 7-9 h.p., 3-speed countershaft gear, chain drive, 28x3 tyres, electric pilot, head and tail light, electric horn, Brooks saddle, Renolds chain, together with full tool kit complete. Will do 60 miles to the gallon, and general maintenance cost is proportionately low. Built for strenuous work, having previously unheard-of speed and power, robust construction, free from faults and frailties, finished in Harley-Davidson grey, with nickel-plated parts on double coat of copper-plate—this is the machine of superlative excellence

We are here to give you all information possible about the Harley-Davidson Motor Cycle. Call, write, or 'phone—your enquiry will receive courteous and prompt attention

FULLY ILLUSTRATED CATALOGUE 11J POST FREE

HARLEY-DAVIDSON MOTOR COMPANY, 59, NEWMAN STREET, LONDON, W

Telephone—Museum, 2070 (3 lines). Telegrams—"Hardavmocy, Ox, London."

In answering this advertisement it is desirable to mention "The Motor Cycle." B21

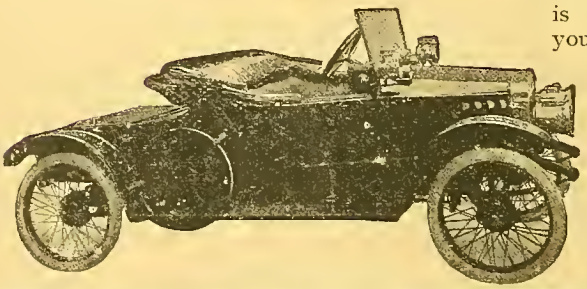
"Low running cost is one of the strongest points . . . in favour of the light car."

"The Light Car," July 7th.

ECONOMY

is one of the features of the

G.W.K.



light car which have made it so popular with owners. G.W.K. economy is not found in low price and inferior materials, but in simplicity of design, high-class workmanship, reliability and durability of operating parts, minimum oil and petrol consumption, long life of tyres, and immunity from repair expenses. Compared with a high-powered sidecar combination the cost of running is practically the same. The difference is that you get all the comfort and protection of a car. The need for economy is being urged by prominent statesmen. With a G.W.K. you can economise *without* curtailing your motoring pleasure.

Standard Model - - 175 gns.

(N.B.—This price is liable to increase shortly.)

G. W. K., LIMITED,
CORDWALLES WORKS, MAIDENHEAD.

Telegrams—"Cars, Maidenhead." Telephone—562 Maidenhead.

JOHN PIGGOTT'S JULY SALE

LAST WEEK!

The "J.P." Tourist Overall Motor Suit. Strong and Waterproof. Made of extra stout untearable Fawn Twill.

Write for pattern and full particulars

Usual Price, 40/-

SALE PRICE—

30/6

The "J.P." Ideal Waterproof Motor Overall Suit. Double Texture Fawn Paramatta. Complete with Leggings.

Usual Price, 29/6

SALE PRICE—

24/-

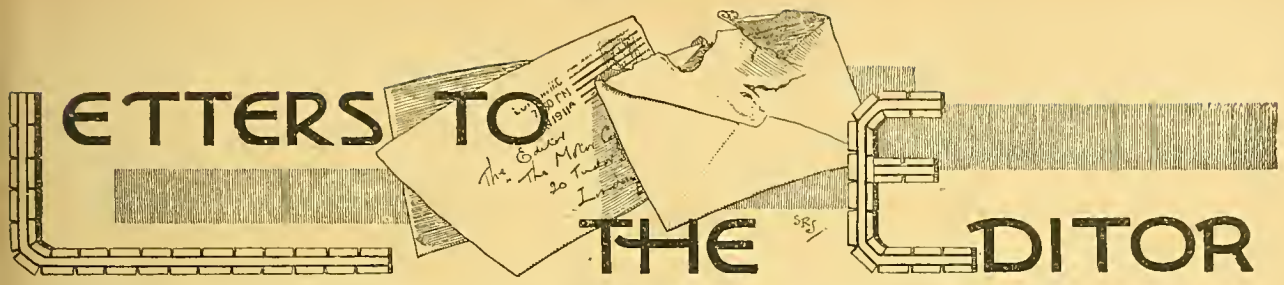
SPECIAL CLEARANCE LINE.

"PETER UNION" MOTOR CYCLE COVERS.

LEATHER & STEEL STUDDED.	RIBBED PATTERN.	RUBBER STUDDED.
26in. x 2¼in. Usual Price 50/- SALE PRICE 40/-	Usual Price 31/9 SALE PRICE 26/3	Usual Price 36/- SALE PRICE 28/9
26in. x 2½in. „ 53/- „ 42/-	„ 34/3 „ 27/6	„ 38/- „ 31/-

WRITE FOR 68 PAGE CATALOGUE POST FREE.

JOHN PIGGOTT, LTD.,
117 & 118, CHEAPSIDE, AND MILK STREET BUILDINGS,
LONDON, E.C.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

How to get to the Front.

Sir,—I have read in your last issue a letter from "Oilcan," and write to give him some information on the first question in his letter.

Applications for commissions (A.S.C.) will only be considered from men who have been right through the "shops," and have a thorough practical knowledge of all petrol engines.

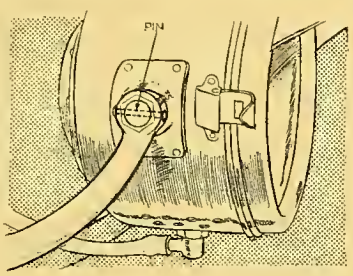
I may add I was unsuccessful owing to never having been in an engineering shop, although I have had seven years' experience with all makes of cars and motor cycles, and am no novice with the lathe.

The time taken from date of application to date of interview is roughly eight weeks.

I would point out to "Oilcan" that no difference, as regards qualifications, exists between the motor cyclist section and car section A.S.C. F.J.W.

Swivelling Lamps.

Sir,—I saw in last week's *Motor Cycle* a note *re* the soldering of a swivelling lamp. I do not consider this satisfactory, as the vibration is likely to shake it loose; and, unless done very neatly, it is bound to spoil the lamp. I have overcome the trouble by drilling with a $\frac{3}{32}$in. or $\frac{1}{8}$in. drill right through the bracket and nut, and riveting it, being careful to burr over the ends. This does not spoil the appearance of the lamp, and the rivet can be removed when things become normal.



T. CHICK.

Carbonisation of Two-stroke Engines.

Sir,—As a regular reader of your valued paper, I have seen from time to time numerous accounts of two-stroke engine behaviour, and also complaints of the rapid carbonisation of the cylinder heads and pistons. In this connection I think my experience will certainly prove a record. My New Hudson two-stroke, purchased in October last, has up to the present done over 7,000 miles without the engine being taken down once. The machine has been used solely for business purposes in the Black Country, and has had very heavy usage, and the carbon deposit is very slight from the amount one would expect after such a lapse of time, although the exhaust port is practically choked up. The engine has given every satisfaction, and is exceptionally powerful even in this condition, and I consider the reason for such splendid running is due to the amount of oil which I use. My oil consumption works out at fifty or sixty miles to the pint, which may seem on the heavy side, but when one takes into consideration the state of the engine and bearings it certainly seems most profitable to over-lubricate in this manner. My petrol consumption works out at 90 to 100 miles per gallon over very heavy country.

I beg to add the usual disclaimer.

E. VICTOR ABEL.

Improving the Consumption on a Two-stroke.

Sir,—In the issue of your paper dated July 15th there is, among other "Letters to the Editor," one from "N.B." thanking you for publishing an article on "improving the consumption of a two-stroke."

He refers with some enthusiasm to an arrangement which can be made to fit on the jet, made out of a valve from an inner tube and a needle.

I would be much obliged if you could give me particulars of the "tip" mentioned. I run a two-stroke myself, and anything in the nature of a petrol saving device interests me, but, as I missed your publication referring to the device, perhaps you will let me know when this was published.

FRANK LATIMER (Lieutenant).

[We have received many letters on this subject. The article was published on April 15th, page 377.—ED.]

Does an Engine Run Better at Dusk?

Sir,—I should like to suggest to "G.P.G.K." that the real reason for this well-known phenomenon is the rotation of the earth on its axis. Owing to this a road, which at noon lies quite level, will at dusk slope downwards at an angle of about 45°. This enables the machine to travel at a tremendous speed. At daybreak, on the contrary, the slope will be upwards, and it is this that makes it so hard to get up in the morning.

Of course I may be wrong. It may be CO_2 after all. If so, let us plug up our exhaust pipes to prevent the escape of any burnt gas, thus keeping the cylinder constantly full of undiluted carbonic acid gas. It will be found that the engine will then pull as well uphill as on the level.

By the way, talking about woodchucks, can anyone say:
While the "Two-stroke" *versus* "Four-stroke" controversy's to the fore,
When a "two-stroke" engine "four strokes" too, what does it "four-stroke" for? Y 2895.

Motor Cyclist Volunteers.

Sir,—I think it is about time someone entered a mild protest against the childish futility of the Motor Cycle Volunteer movement. At a recent hill-climb we had a beautiful picture of exquisitely garbed, athletic, young men playing themselves on their motor cycles the whole afternoon. A glance at a contemporary of yours shows some of this redoubtable force advancing to the attack. The picture bears far more resemblance to a party of exuberant Bank-holidayers on Hampstead Heath. Doubtless it was all very exciting, recalling as it would do memories of their not far distant days of hide and seek. They will learn considerably more of matters military by responding to Lord Kitchener's last appeal, and, in addition, will have opportunities for enjoying the finest of sports. One small group of irresponsibles took a great delight in exploding some toy pistol every time a certain competitor passed. Such conduct might have been the cause of an accident, by misleading the driver into thinking something had gone wrong with his machine. Their conduct struck me as being just on a level with the whole organisation—to wit, childish. M.B.

[As so many criticisms of others have appeared in the press from writers who themselves are not in the Service, we think it only fair to state that "M.B." writes from Aldershot, and holds a commission in the Army.—ED.]

Automatic Carburetters.

Sir,—I was much interested in reading "Ixion's" report on petrol consumption, and gratified to find he got much greater mileage when my carburetter was used; but, speaking of multi-jet carburetters generally, I notice he says that the small jets are liable to get choked up. This may be so on some; but on my latest carburetters the petrol is filtered after it leaves the float chamber, and has to go through copper muslin which will stop water passing; consequently, if your filter is in place it is an absolute impossibility for the jets to get choked up.

Regarding the enormous differences shown in the petrol consumption on a motor cycle and a motor car, as far as weight is concerned, this is easily accounted for in the design of the engine. If motor cycle engines were made with a smaller bore and a much longer stroke, and each connecting rod was on a separate bearing of adequate proportions, and had a proper flywheel, which it has not got at present, different results altogether would be got. The length of stroke I regard of extreme importance. The flywheel, of course, is a difficulty, as a flywheel 16in. diameter would be awkward to enclose, and would add a very considerable amount of weight to the motor cycle, which would be an objection, whereas it is not a great objection on a cycle car.

Referring to the long stroke question again, it is not surprising that the Norton 3½ h.p. single-cylinder with its long stroke should do such an enormous mileage per gallon.

I have dozens of letters from gentlemen who have this particular machine and who use my carburetter, and from which they say they get from 150 to 170 m.p.g.

C. BINKS, LTD.

Sir,—"Ixion" asks for experiences with the Claudel-Hobson carburetter. I have been using one of these carburetters on my 1909 3½ h.p. Triumph for nearly three years; in fact, I believe it was almost one of the first made for motor cycles. My machine weighs about 220 lb. in touring trim, and my weight is 12 st. The petrol consumption on a straightaway run usually is about 150 m.p.g. The controllability is greater than with any motor cycle carburetter I have ever used. There is no lack of power, as my machine will do about 67 m.p.h. The carburetter is of the 20 mm. size. Slightly better petrol consumption and acceleration at slow speeds could be obtained with a 17 or 18 mm. carburetter, which would be more suitable for ordinary use, but I wanted the maximum power outfit at extra high engine speeds. I should add that I have considerably altered my engine with this end in view.

As sent out the petrol damping screw at the top of the jet was adjusted for a four-cylinder engine, with the result that the mixture tended to get richer at high speeds. I overcame this by making a slightly longer hollow tipped screw to increase the damping factor. As I sent full particulars of this screw to Messrs. Hobson at the time, it is possible that they could supply the jets so fitted if they are to be used for a single-cylinder engine. The size of jet fitted in my carburetter is 95. This figure, of course, refers to the diameter of the jet in hundredths of millimetres and not in thousandths of an inch as is usual with English motor cycle carburetters.

The chief disadvantage of this carburetter is that it is not supplied complete and ready to fit; also it is expensive. I had to fit my own controls, for which I used a Bowden magneto control. I bought an elbow pipe from Messrs. Hobson for an induction pipe, and made a flange with a contracting ring and nut to attach to the inlet nipple. To this the induction pipe and carburetter are bolted. The flange nut supplied with the carburetter I reduced to a plain nut of half the thickness, and use it as a lock nut for the induction pipe, which screws on to the carburetter. For cold weather I have a hot air pipe, which collects hot air from round the exhaust pipe. Without some form of heating I do not think any carburetter can give satisfactory results in cold weather.

The only trouble I have had was that on one occasion the flat spring holding the float chamber lid slipped off, with the result that I lost the lid. To guard against this I got Messrs. Hobson to supply me with a spring having a knob on the top and a projection underneath as fitted to their car carburetters. The projection underneath engages with the lettering on the float chamber lid, thus preventing the spring from slipping off.

J. REED.

Overseas Prices.

Sir,—We notice in your issue of April 15th last a letter from "Interested" of this city, below which you append the local prices of several of the best known makes of motor cycles, extracted from "catalogues" sent to you by him. We are at a loss to understand how the prices of "Indian motor cycles" as published in your paper can be shown in any catalogue. We enclose our 1915 list, from which you will see that the prices here are altogether lower than those you published, namely, Indian 7 h.p., two-speed (South African cash price), £85 (not £91 17s. 6d.); Hendee Special (South African cash price), £100 (not £115 10s.)

The prices last year were the same as for this year's similar models, with the exceptions of the 7 h.p. single-speed and the Hendee Special, which were £2 10s. and £7 10s. higher respectively.

We trust in fairness to us you will give this letter the same prominence you gave to that from "Interested," whom, by the way, we should be very pleased to interview at our depot to discover the cause of these curious errors.

WILLIAMS, HUNT AND CO.

Johannesburg, S.A.

The Business Man's Sidecarrier.

Sir,—Reading between the lines of your leader on this subject, one can see that the writer regrets the conservatism of the average Britisher, and also, perhaps, regrets that the efforts of *The Motor Cycle* to popularise the use of the side-carrier have met with rather poor results. I am only a working farmer, but I can assure you that I, at any rate, appreciate your efforts, and, in the hope that I may be of some use to the "movement," I purpose telling my own experiences in the use of a motor cycle and sidecar.

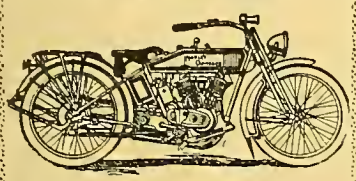
Towards the end of 1913 I purchased a 3¾ h.p. 1911 Kerry-Abingdon two-speed and sidecar. This outfit was geared 4½ and 8 to 1—too high for sidecaring in Cornwall! However, I made this do for some time, serving my novitiate. Then I sold it. Up to this time (March, 1914) I had used a pony and trap for taking goods to market and for the usual light work connected with a farm. I now, however, made up my mind to sell out and invest in a motor cycle and sidecar, making it do *all* my work previously done by the pony, etc. To this end, I purchased a 4¼ h.p. Sun-Precision S.A. three-speeder, new. I attached a roomy wicker sidecar to this. My gear ratios are 4½, 6½, 10½ to 1 (approximately). This outfit has, since April, 1914, done the whole of my light carrying. This includes delivery of feeding stuffs, sporting ammunition, parts of agricultural machinery, etc. Every Saturday morning, without once failing, I take my wife with her dairy and farm produce to catch the 7.35 train to Plymouth. Frequently my load has been nearly 4 cwt.; distance to station, two and a half miles. Recently I brought back from the station 2¼ cwt. of sporting cartridges. Distance run to date over 3,000 miles. As yet I have had no punctures. The same tyres are still in use. The outfit has been used in all weathers, and through the winter I have had many a bitter drive. Up to date, I have had the following stops: (1.) Slipped timing magneto; fifteen minutes delay, torrents of rain and nearly dark. (2.) Sparking plug shorted owing to central electrode working loose. I frequently take my wife and two little girls, age six years and four years, for a spin. The engine takes the hills splendidly. I have only once met my Waterloo, and then I think it was my own fault and not the engine's. I have had more solid enjoyment out of the machine in a year than I should have got from a horse in twenty years. Apart from this, the saving of time is very great. I can truly say that I am more than satisfied. I find the motor cycle much more economical than a pony outfit. I have done seventy miles with a 200 lb. passenger (I weigh 150 lb.) on one gallon of benzole.

You probably know what our Cornish roads are like. Hills all the time, and, taking this into consideration, if a motor outfit succeeds here surely it should be an unqualified success in the more level parts of the country. I find I can do most of my repairs myself, although the little I know of mechanics I have picked up gradually.

I always do what I can in advising my farmer friends to invest in a motor as I have done, but they all seem afraid that "the bally thing might bust!"

CHEWBACON.

IMMEDIATE DELIVERY of all Models.



Model 11J, 7-9 h.p., 3-speed, electric dynamo lighting equipment, **£76 13 0**

Model 11F, 7-9 h.p., 3-speed, chain drive, kick starter, **£68 5 0**

Model 11C, 4¼ h.p., single-cylinder, 2-speed **£58 0 0**

Special GLORIA & CANOELET Sidecars in stock—chassis and body painted HARLEY - DAVIDSON Grey, 28 x 3 inch Dunlop heavy R.S. tyre, from **£15** to **£27.**

TRIAL RUN and TUITION FREE. EXCHANGES or EASY PAYMENTS

HARLEY-DAVIDSON

The Sidecar Machine.

"The Silent Grey Fellow" is the fastest and most comfortable machine on the road. May we send you particulars—or better still, take you a Trial Run ?

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for the Counties of Warwickshire, Worcestershire, Staffordshire, Shropshire and Herefordshire :—

THE PREMIER MOTOR CO.,

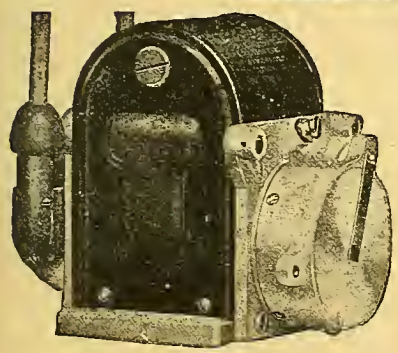
ASTON ROAD, BIRMINGHAM.

Telegrams—"PRIMUS," Birmingham. 'Phone—Central 4310

Guaranteed Ignition.

An intense spark at all speeds; Breaker points adjustable whilst magneto is running; Oil away from platinum points—these are the strong features of the

DIXIE 20TH CENTURY MAGNETO

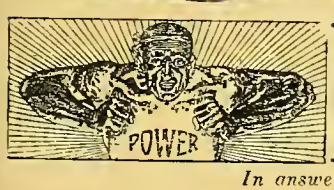


SPARES

Always in stock in London. Any part sent by return

Dixie 20.

A new type high-tension Magneto suitable for light weight twin Motor Cycle engines. Gives a very hot spark at very low speed, and of same intensity whether advanced or retarded. Dixie 10 is a similar model, suitable for lightweight singles.



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THE PERFECTION OF AIR-COOLING.

The Harcourt Radiators maintain the full efficiency of engine under the worst conditions: OIL CONSUMPTION HALVED, OVERHEATING ABOLISHED.

WHAT USERS SAY.

The Rev. T. Walton, Hoddesdon, Herts., September 5th, 1914.

(1911 T.T. Triumph with sidecar.) "I have now given your radiators a thorough trial during the summer, and find them thoroughly efficient, and doing all that you claim: less lubricating oil, more power, cooler running. I took my exhaust valve out yesterday after the summer's run, and it scarcely needed grinding in."

PRICES: Motor Cycles (singles) 15/-, (twins) 18/-, Cycle Cars 18/-.

FULL PARTICULARS ON APPLICATION.

WYLIE & LOCHHEAD, Ltd.,

Byers Road, GLASGOW.

Agents—The Service Co., Ltd., 289-293, High Holborn, London, W.C.
J. Barran-Ackroyd, 147-9, Hyde Park Road, Leeds.
H. V. Prescott, 199, Deansgate, Manchester.
Robins & Day, Ltd., The Motor House, Rochester.

"Dagonet's" Advice.

From

"Mustard and Cress"

"The Referee," July 18th, 1915.

"Have you read 'Overheard at the Front,' by Mr. C. G. Harper? It is published by Messrs. Iliffe & Sons, of Tudor St. The volume is filled with stories of the war in comedy and in deadly earnest. If you want a heart to heart talk with our Tommies in the trenches in Flanders and France read 'Overheard at the Front'"

Copies of "Overheard at the Front" can be obtained from leading booksellers and bookstalls (Price 1/- net), or post paid 1/3, from the Publishers: Iliffe & Sons Ltd., 20, Tudor Street, London, E.C.

OVER-SEAS

Built to endure the most exacting touring conditions —which it does with unremitting consistency.

TWO MODELS.

6 h.p. Twin Cyl. 3½ h.p. Single Cyl.

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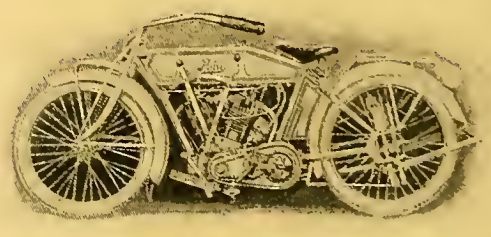
FOR SPEED, COMFORT, AND RELIABILITY

THESE MACHINES SMILE AT HILLS AND POT-HOLE ROADS

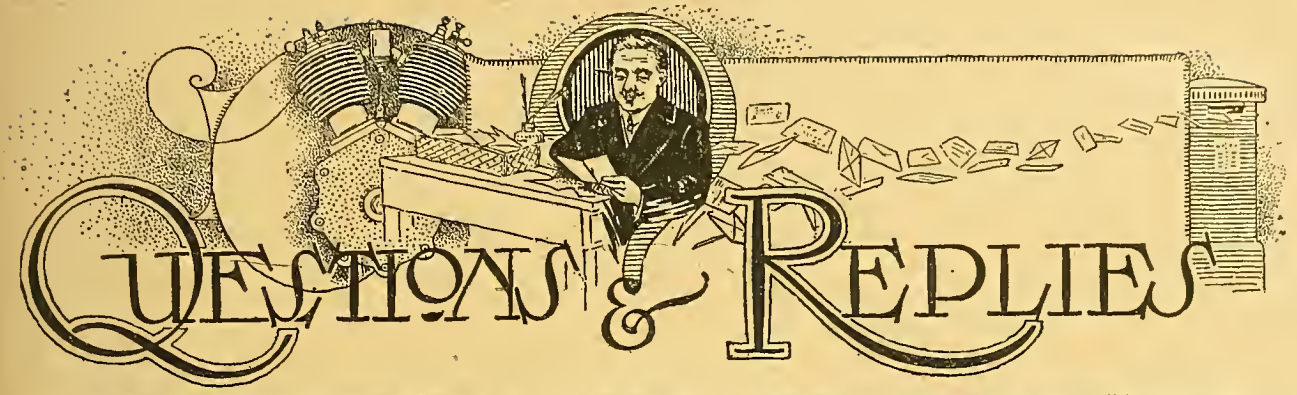
Send or call for prices and particulars.



THE BIG TWIN

THE POPE MOTOR CYCLE AGENCY,

Telephone—London Wall 1137. **55, BANNER ST., E.C.** Telegrams—"Acarobox, London."



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Speedometer Readings.

I shall be much obliged for your help in the following matters: I have removed my speedometer from my old machine, which had 26in. × 2¼in. tyres, to my new Williamson, which has 26in. × 3in. tyres. Will you please tell me precisely how much per cent. it now reads slow?—W.G.

There should be no difference in the reading of your speedometer, but owing to the fact that tyres do vary occasionally, if there is a difference the speed shown will be in inverse proportion to the diameter of the wheel.

Slipping Clutch.

I have a 1914 6 h.p. machine with a two-speed Roc gear. I have ridden several thousand miles, and had no trouble with the gears, merely adjusting them when necessary, but now the top gear slips on the slightest gradients. Does it require a new pin or washing out with petrol? If the latter, will you please inform me how? I might say the adjusting pin is not quite at the end of the thread—about two threads left.—H.C.

We should advise you to wash out your gear with paraffin. To do this the paraffin must be run through the gear at every available opening, until it runs out practically clean, after which the gear should be oiled. You can then decide if a new plunger is necessary.

Oil Leakage.

I have a 3½ h.p. machine. Oil leaks out behind the pulley through the ball bearing, and is thrown over the belt, etc. The spindle is not quite true, so that a tight fit with the crank case cannot be made. I have tried a leather washer on the outside without effect. I have at present got the crank case apart, and am thinking of putting a felt washer between the bearing and the crank case. Can you suggest any other method? Is there any belt which is not harmed by oil?—F.W.I.

We should strongly advise you to have the mainshaft carefully trued up and an extra relief valve fitted. We do not advise a felt washer between the bearing and the crank case. See page 61 (July 15th), where you will find a tip to prevent oil splashing. A leather belt is not harmed by oil.

Valve Lift.

My present 3½ h.p. engine has a maximum valve lift of ⅛in. Is this correct? I am rather doubtful on this point, since the machine will not take me up steep hills without knocking, and in many instances stopping. In all other respects the engine appears to be in perfect order.—W.S.

The valve should lift about ¼in. Carefully examine your tappet clearance, and also see that the cams are not worn. If these points are looked to we think you will find a great improvement in the running of the engine.

Faulty Lubrication.

I have been troubled with unequal oiling in the crank cases of a 1914 Scott fitted with the usual sight feed lubrication, and I should very much like to know if you or any of your readers have experienced the same thing and have found a way to remedy it. After seeing that the levels in the crank cases were the same, I rode sixty miles, and then found that the level in the right-hand crank case was about half an inch below the door, and in the other had fallen nearly to the bottom of the sump, the big end was hot, being almost dry. I find there is considerable wear in the small end bushing, and the engine is inclined to knock at high speed. The lubricator is adjusted to take one pumpful every five miles.—GREASER.

The trouble you have with unequal lubrication in the cylinders of your engine is, in all probability, due to a choked oil feed pipe. We advise you to unship the left-hand feed pipe from the sight feed to the crank chamber, and clean out with petrol any dirt deposit that may exist in the pipe. At the same time, also, squirt out with petrol or paraffin any dirt that may exist in the oil channel leading directly to the left-hand crankshaft bearing. We have known of cases in which insufficient lubrication has developed through a leak in the union on the oil feed pipe. Perhaps the union on your engine has slackened off. The wear in the connecting rod small end bush is directly due to insufficient lubrication, as, owing to the piston always being under compression on the connecting rods in this engine, the small end bushes are normally free from knock for long periods, if the lubrication is correct.

The International Pass.

I hold a motor licence here in Havre, but desire to spend a month in England and to bring my motor bicycle over with me. What should I have to do with reference to licences, etc., as, naturally, I do not want to pay in full for just one month?—F.G.

Your best plan would be to apply for an International Pass from the Touring Club de France, 4, Avenue de Villiers, Paris, or from the Automobile Club de France, 8, Place de la Concorde, Paris. They will supply you with an F *plaque* and the necessary papers for about 10 fr., which will exempt you from taking out licences for one year in England.

Compression Ratio.

Will you kindly inform me of the amount of compression space, which should be allowed in a small four-stroke engine, with overhead valves (a.o.i.) 57 × 70 mm., with outside flywheel, and which I intend to use for a light-weight motor cycle? The inside of the cylinder head is flat, and the head, together with the cylinder, is held in position by two long bolts to crank case. What would be the approximate h.p.?—J.T.W.

A 2¼in. × 2¾in. engine = 57 mm. × 70 mm. = 219 c.c., which should approximately equal 2 h.p. The compression space should be about 50 to 70 c.c. The former will give a fairly high compression, the latter a medium one.

The Local Taxation Licence.

I hold a £1 revenue licence for a motor cycle, and having sold mine and bought a 9 h.p. Swift car, I should like some advice as to how I should proceed for having the £3 3s. reduced by the £1 paid for the motor cycle.—W.R.J.

Inform the licensing authorities that you hold a £1 local taxation licence for your motor cycle, that you have bought a car, for which the tax is £3 3s., and that you presume you are in order in sending a cheque for £2 3s. We think they will accept this without trouble. Perhaps you had better enquire at your local P.O., and if any reluctance is shown to conform with this suggestion, write direct to the London County Council, Local Taxation Licences Branch, 40, Craven Street, Strand, London, W.C.

A Question of Age.

I am fifteen years and three months old. Does the law allow me to drive: (1) An 8 h.p. three-wheeled Morgan Runabout, (2) an A.C. Sociable, (3) a 6 h.p. motor cycle and sidecar?—M.S.

The law would allow you to drive any one of the machines referred to in your letter provided it is registered as a motor cycle. You are not entitled to drive a vehicle bearing car numbers, which is legally a motor car and not a motor cycle, until you are seventeen years of age.

Decarbonising.

(1.) Would you recommend me to use scrapers for removing the carbon from my Douglas through the holes above the valves? If so, what are these instruments called, and where could I get them? (2.) I have two spare inner tubes. How should they be kept so as to preserve them—flat or blown up?—R.D.H.

(1.) There are numerous scrapers on the market, obtainable from the large accessory firms. In ordering, however, it should be distinctly stated that they should pass through the valve ports of a Douglas motor cycle. As a matter of fact, a suitable scraper can be made from a worn hacksaw blade, which may be softened by heating and bent to the required shape. They may be a little difficult to use owing to the narrow space in which you have to work. (2.) For carrying on the machine an inner tube should be kept flat by folding the tube in half, removing the inner part of the valve and rolling it up. When you have rolled it up as far as the valve, and all the air has been excluded, replace the inner portion, and the tube may then be folded flat, or else wrapped round the handle-bars and tied into position with a tape or strap. For storing at home we prefer to inflate slightly, and keep the tube wrapped up in a spare cover.

Increasing the Speed.

I have often read that drilling the piston and connecting rod greatly increases the speed of a machine, but surely this must upset the engine balance. I have never noticed this matter mentioned. Could you let me know how to re-balance the engine if drilling the piston, etc., upsets it? I also presume that placing thin copper tubes through the radiating fins of the cylinder would tend to keep the engine much cooler.—G.H.

Any steps taken to lighten the reciprocating parts of the engine will increase the speed thereof. It is quite possible by this means to upset the balance, but those who undertake the lightening of the reciprocating parts are careful to re-balance the engine correctly. We publish a special pamphlet on balancing, entitled "The Balancing of Motor Cycle Engines," which may be obtained from these offices, price 7d. post free. Placing thin copper tubes through the radiating fins would be of some assistance to cooling.

Inner Tubes.

I have a 1914 3½ h.p. machine, and have had trouble with the inner tubes in the back wheel splitting. The outer cover is a 26in. × 2⅝in. to fit a 2¼in. rim, and the inner tube a 26in. × 2¼in. I was recommended to try a larger inner tube, but was unable to procure a 26in. × 2⅜in., and was therefore persuaded to purchase the next size, a 26in. × 2½in. to fit a 2¼in. rim, which I was informed would answer my purpose. Would you kindly advise me if there is any danger in running with a tube a size larger than the outer cover?—R.M.

There is no harm in fitting a tube which is slightly too big provided that it is not creased when put into the cover. The splitting seems to indicate that the tube has been kept too long and that the rubber was inclined to become perished.

EXPERIENCES WANTED.

"C.D.R." (Ramsey).—Omega, O.K. two-stroke, Mark V. two-speed. Reliability, hill-climbing, frequency of cleaning, and general cleanliness of engine.

"A.E.S." (Nottingham).—Experience of speedometers fitted to two-stroke Triumphs. Vibration of needle.

"W.H.S." (Edinburgh) and "H.W." (Hounslow).—We regret that we cannot recommend the pulley you name, so we refrain from publishing your request.

ROUTES.

BRISTOL TO DONCASTER, avoiding heavy traffic, and mileage.—C.E.B.

Bristol, Tormarton, Acton Turville, Malmesbury, Cricklade, Faringdon, Oxford, Kidlington, Brackley, Towcester, Northampton, Kettering, Stamford, Grantham, Newark, Tuxford, Retford, Doncaster. Approximately 212 miles.

CARDIFF TO COLWYN BAY.—O.W.N.C.

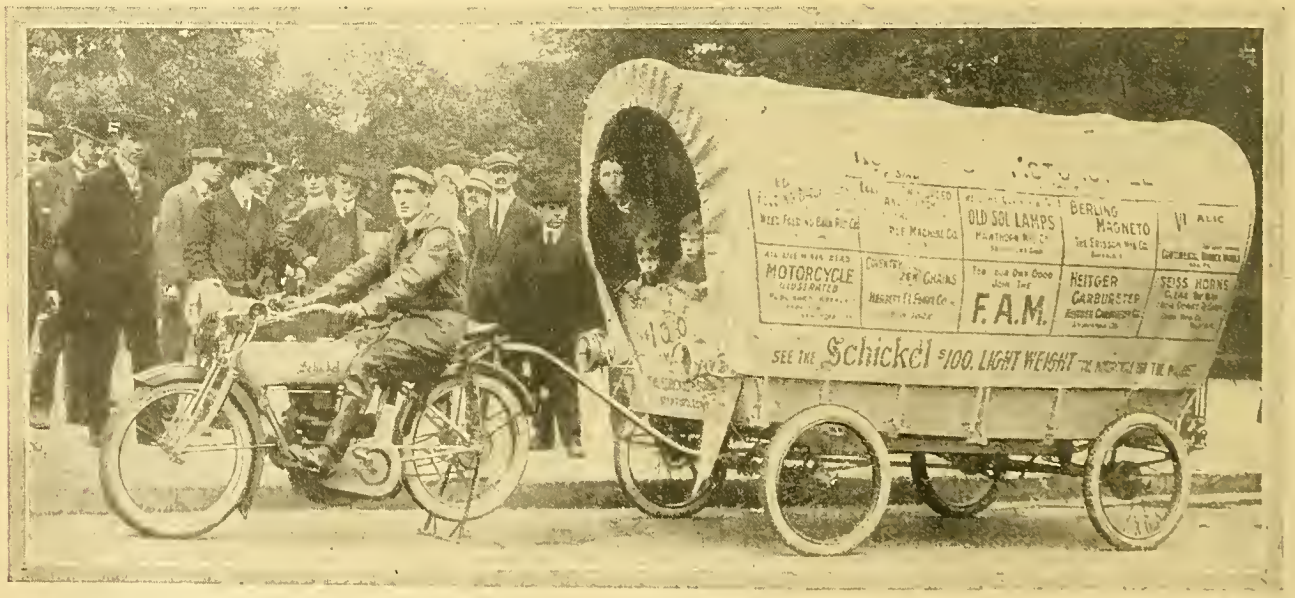
Cardiff, Newport, Pontypool, Abergavenny, Hereford, Leominster, Craven Arms, Shrewsbury, Ellesmere, Overton, Wrexham, Mold, St. Asaph, Abergele, Colwyn Bay.

WALSALL TO SOUTHAMPTON, avoiding roads cut up by military traffic.—G.H.H.

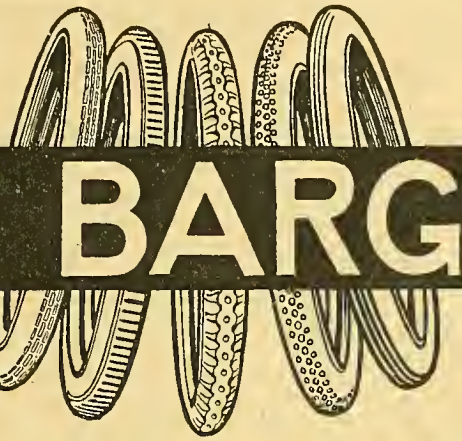
Walsall, Birmingham, Henley-in-Arden, Stratford-on-Avon, Shipston-on-Stour, Enstone, Oxford, East Ilsley, Newbury, Whitchurch, Winchester, Southampton.

CHATHAM TO READING AND CIRENCESTER, avoiding London, and approximate distances.—R.T.D.

Chatham, Malling, Brasted, Westerham, Redhill, Reigate, Dorking, Guildford, Farnham, Odiham. Reading, Goring, Wantage, Faringdon, Lechlade, Fairford, Cirencester; 94 miles to Reading, and 150 to Cirencester.



A remarkable motor cycling outfit on which an American rider and his family recently set out to cross the continent to the San Francisco Exposition. The four-wheeled trailer, which provides accommodation for the family, is hauled by a 6 h.p. single-cylinder motor bicycle.



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We guarantee all these goods to be quite new and not damaged or repaired.

All goods sent on 7 days' approval against remittance. Carriage forward unless postage is sent.

SPECIAL CLEARANCE LINES.

GIVEN AWAY, 3/- OUTFIT TO ALL PURCHASERS OF GOODS TO THE VALUE OF £1 AND OVER.

COVERS.

CONTINENTAL—		Our Price.	Usual Price.
Ribbed	26×2¼	12/6	15/-
Standard	26×2	14/-	19/6
"	26×2¼	14/6	22/6
T.T. Basket Pattern	26×2	16/9	23/3
" "	26×2¼	19/-	26/6
" "	26×2⅜×2¼	20/-	28/-
" "	26×2½	20/9	28/9
" "	26×2½×2¼	20/9	28/9
Basket Pattern Heavy	26×2	20/9	29/9
" "	26×2¼	24/6	34/-
" "	26×2½	27/-	37/6
" "	26×3	29/9	42/3
" "	28×3	35/-	48/3
Combination	26×2¼	36/-	50/-
"	26×2½	39/6	54/6
"	26×3	45/-	62/9
"	28×3	49/6	66/3
Autobi Basket Pattern	650×65	29/3	39/6
Autobi Rubber-studded	650×75	31/6	44/3

KEMPSHALL—			
26×2½ heavy anti-skid		26/-	38/6

BEST ENGLISH MAKE (1913 Pattern)—			
26×2½ W/O rubber studded		20/-	42/-
26×2½ W/O ribbed		18/6	37/6

COVERS.

BEST ENGLISH MAKE (1913 Pattern)—	Our Price.	Usual Price.
26×2 W/O rubber studded	16/-	30/-
650×65 Pillion	18/-	50/-

STELASTIC— 26 x 2½ extra heavy 27/6 50/9

HUTCHINSON (1913 Pattern)—		
26×2¼ Passenger	25/-	41/3
28×2½ "	32/6	43/6

CLINCHER—		
26×2¼ (for 2½) Dreadnought	31/6	47/3
26×2½ Dreadnought	32/6	50/10
26×2½ de Luxe	25/6	30/9
26×2⅜ (for 2½) de Luxe	23/6	41/-
26×2¼ A Won, wired-on, Ribbed	18/-	—
26×2¼ de Luxe, wired-on, R/S.	21/-	—
26×2 De Luxe, B.E.	12/6	18/6
26×2¼ ribbed	13/6	
26×2¼ rubber studded	15/6	
26×2¼ " "	21/-	35/-
26×2½ " "	22/6	37/6
26×2 A Won, B.E.	18/6	30/6
26×2⅜ " "	22/6	36/6

COVERS.

GOODYEAR—	Our Price.	Usual Price.
26×2¼ heavy rubber studded	19/-	32/3
26×2⅜ for 2¼ heavy rubber studded	23/-	40/9

TUBES.

CONTINENTAL—	Our Price.	Usual Price.	
26 × 2	5/3	7/3	Butt ends 1/6 extra.
26 × 2¼	6/-	7/9	
26 × 2⅜	6/6	8/6	
26 × 2¼ × 2¼	6/9	8/9	
26 × 2½	6/9	8/9	
26 × 3	8/9	10/6	
650 ×65	7/9	11/6	
650× 75	10/-	14/-	

ELITE BEST QUALITY (guaranteed)—		
26 × 2	4/6	Butted 1/3 ex.
26 × 2¼	4/9	
26 × 2½	6/-	
26 × 3	7/3	
28 × 2½	7/3	
28 × 3	8/3	

BELTS.

CONTINENTAL—		Our Price.	Usual Price.
1¼in. section	foot	1/4	2/6
1 in. "	"	1/3	2/2
⅞in. "	"	1/-	1/11
¾in. "	"	11d.	1/7

CLINCHER FLEXIS—			
1⅜in. (for ⅞in. pulleys)	"	1/-	2/2

SHAMROCK-GLOFIA—		Our Price.	Usual Price.
1¼in. section (7ft. 6in. only)	foot	1/3	2/6
⅞in. " " "	"	1/-	1/11
¾in. "	"	11d.	1/7

AVON 1914 PATTERN—		Our Price.	Usual Price.
⅝in. Section	foot	10d.	1/3
¾in. "	"	11d.	1/6
⅞in. "	"	1/2	1/9
1¼in. " (7ft. 6in. only)	"	1/6	2/6

RETREADING.

SPECIAL HEAVY - - - - - - 15/-

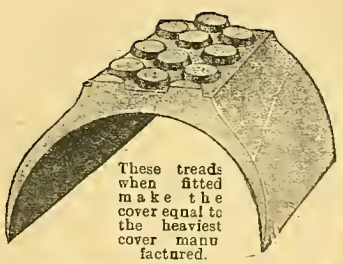
HEAVY - - - - - - - - - - 12/6

MEDIUM - - - - - - - - - - 10/-

ALL MAKES OF TYRES IN STOCK.

15% allowance made for old covers, clearance lines excepted.

These treads when fitted make the cover equal to the heaviest cover manufactured.



These treads when fitted make the cover equal to the heaviest cover manufactured.

ELITE RUBBER Co., TUDOR WORKS,

266, Vauxhall Bridge Road, Victoria, S.W.

One minute from Victoria Station.

'PHONE: VICTORIA 6553.

MISCELLANEOUS ADVERTISEMENTS.

IMPORTANT NOTICE.

Owing to the August Holidays, the issue of "The Motor Cycle" for August 5th must be closed for press earlier than usual. All copy and instructions for Miscellaneous Advertisements in that issue must therefore be in our hands not later than first post on Thursday, July 29th.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle" Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, 2d. will be charged for registration, and three stamped and addressed envelopes must be sent for forwarding replies. Only the number will appear in the advertisement. Replies should be addressed, "No. 000, c/o 'The Motor Cycle,' Coventry"; or if "London" is added to the address, then to the number given, c/o "The Motor Cycle," 20, Tudor Street, E.C.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

Abingdon.

ABINGDON King Dick, 3½h.p., F.E., 1912, perfect, £21; or with sidecar £24.—J., 117, Angell Rd., Brixton, S.W. [9333

ABINGDON King Dick, 1913, 3½h.p., 2-speed clutch; £31.—Redfearn, 111, High Rd., Chiswick. 'Phone: 787. [8085

Aero-Jap.

AERO-J.A.P., 3h.p. T.T., fast, Bosch, Amac, tyres new, lamps; £14/10, no offers.—33, Mandeville Rd., Enfield Wash [9186

THE BEST PLACE FOR THE BEST

Selection of Best Makes, New or Second-hand, ready for immediate delivery, at lowest prices for cash or easy terms,

IS

WAUCHOPE'S

HERE ARE A FEW SELECTIONS FROM TO-DAY'S LIST. **LIBERAL EXCHANGES. EVERY MACHINE FULLY GUARANTEED.**

9682.	3	h.p. 1913 2-sp. **ROYAL ENFIELD**	£37 10
9683.	6	h.p. 1914 3-sp. **A.J.S.** & Sidecar	£80 0
9691.	3½	h.p. 1912 2-sp. **HUMBER** & Sc.	£32 10
9703.	3½	h.p. 1912 T.T. **RUDGE** Multi ..	£32 10
9706.	3½	h.p. 1913 3-sp. **HUMBER**	£37 10
9708.	2½	h.p. 1914 2-sp. 2-stroke **CLYNO**.	£38 0
9713.	6	h.p. **WALL** Tricar	£67 10
9656.	2¾	h.p. twin **N.S.U.**	£17 10
9660.	3½	h.p. 1915 **RUDGE** Multi	£82 10
9663.	7-9	h.p. 1914 **EXCELSIOR** and Sc..	£55 0
9664.	3½	h.p. 1910 **TRIUMPH**	£22 10
9303.	3½	h.p. 1908 **TRIUMPH**	£22 10
9423.	5-6	h.p. **AUTO-CARRIER**	£37 10
9429.	7	h.p. 1913 **PREMIER** and Sidecar	£57 10
9446.	1	h.p. lady's **MOTOSACOCHE** ...	£10 10
9448.	2¾	h.p. **FAIRY**	£10 10
9449.	8	h.p. 1915 2-seater **SUPER** Car.,	£65 0
9539.	6	h.p. 1913 2-sp. **ENFIELD**	—
9542.	2¾	h.p. 1915 2-sp. **SUN VITESSE** and Sidecar	£42 10
9565.	6	h.p. 1912 **CLYNO** and Sidecar..	£37 10
9633.	2½	h.p. 1912 **PREMIER,** vari. gear.	£18 10
9641.	3½	h.p. 1913 3-sp. **HUMBER** & Sc.	£42 10
9617.	3½	h.p. 1913 2-sp. twin **N.S.U.**	£28 10
9597.	6	h.p. 1911 **ZENITH** and Sidecar.	£37 10
9584.	8	h.p. 1914 2-sp. water-cooled **WILLIAMSON** and 2-seater Sidecar	£87 10
6421.	3½	h.p. 1908 **MINERVA**	£15 0
6842.	3½	h.p. 1912 F.E. **RUDGE**	£27 10
6863.	3½	h.p. 1910 **BAT**	£20 0
7521.	5-6	h.p. 1911 4-cyl. **F.N.** and Sidecar	£22 10
7589.	3½	h.p. 1910 **N.S.U.**	£16 0
7708.	3½	h.p. 1908 **N.S.U.**	£15 0
7992.	3½	h.p. 2-sp. **FAFNIR** and coach-built Sidecar	£22 10
8165.	6	h.p. **BAT** and Sidecar	£22 10
8175.	6	h.p. 1913 2-sp. **N.S.U.**	£40 0
8197.	3½	h.p. 1911 **N.S.U.**	£20 0
8320.	3½	h.p. 1911 **ARIEL,** variable gear.	£20 0
8504.	5-6	h.p. 1909 2-sp. **REX** and Sidecar	£28 10
8561.	3½	h.p. **VINDEC** and Sidecar	£17 10
8654.	3½	h.p. 1910 standard **TRIUMPH**..	£22 10
8682.	6	h.p. 1913 2-sp. **V.S.-J.A.P.** & Sc.	£45 0
8718.	3½	h.p. 2-sp. **FAFNIR** and Sidecar.	£22 10
8741.	3½	h.p. 1912 **TRUMP-J.A.P.**	£30 0
8785.	6	h.p. 1912 2-sp. **ENFIELD** & Sc.	£47 10
8832.	1½	h.p. 1909 **MOTOSACOCHE**	£9 0
9076.	5	h.p. 1907 F.E. **ROC**	£20 0
9155.	1½	h.p. 1910 **MOTOSACOCHE**	£10 10

ASK FOR A COPY OF FULL LIST.

9, SHOE LANE, FLEET ST., LONDON, E.C.

'Phone: 5777 Holborn. Wires: "Opificer, London."

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S., new 1915 2¾h.p. 3-speed model actually in stock.—Moss, Wem. [X2589

6h.p. A.J.S. Combination, in stock; list price secures. —Cross, Agent, Rotherham. [X2564

1912 A.J.S., 2¾h.p., 2-speed, clutch; any trial; £22. —Tomblin, 91, Burghley Rd., N.W. [9081

A.J.S., 2-speed, hand clutch, coachbuilt sidecar, perfect condition; £37/10.—Chilton, High St., Watford. [X2611

A.J.S. 6h.p. 1913 Combination, new 1914, in splendid condition; cheap, £58.—Box 9,016, *The Motor Cycle* Offices, Coventry. [X2551

1913 6h.p. A.J.S., 3-speed, thoroughly overhauled; 48 gns., very big bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X1971

1912 A.J.S., 5h.p., 2-speed combination, comfortable wicker sidecar, tyres all good; bargain, £42.—Skaife, Summer Bridge, near Leeds. [X2331

A.J.S. 6h.p. 1914 Combination, Lucas lamps, good tyres, recently overhauled by makers, perfect condition; £78.—Styles, Bloxwich, Walsall. [X2524

1914 2¾h.p. A.J.S., 2-speed countershaft, clutch, enclosed chain drive, with lamps, horn, and speedometer, etc.; 40 gns.—34, Lune Grove, Blackpool. [9189

A.J.S. 1914 6h.p. Combination, hood, screen, side curtains, fine turnout, new condition; £77/10.—Edwards, Bridge House, Kington, Herefordshire. [X2575

1914 A.J.S., 5h.p., complete with Rudge coachbuilt sidecar, in perfect order and nice condition; only £67.—Embro Cycle and Motor Co., Charlotte St., Hull. [9263

1915 6h.p. A.J.S. Combination, absolutely in stock, with hood, screen, etc., complete outfit; £100/16/11.—Julian, Broad St., Reading. 'Phone: 1024. [X2595

A.J.S., 1913, 2¾h.p., 2-speed, gate change, Lucas lamp, Cowey, Clincher tyres (one new), tourist handle-bars, Binks, excellent condition; £42.—Buck, Park Rd., Heaton Chapel. [X2500

Alldays.

ALLDAYS, 2½h.p., good condition; £7. — Cauler, Builder, Clacton. [9142

ALLDAYS 2-stroke, not ridden 200 miles, perfect; £23.—Walbro, Lynn Rd., Ely, Cambs. [X2406

ALLONS, immediate deliveries, also Grosvenor sporty sidecars for same.—Edwards, Motors, Taunton. [X1871

ALLDAYS Allon 2-stroke; £31/10 cash, or fifth down, 2½% on balance.—Referee Cycle Co., 332, High Holborn, W.C. [2772

ALLDAYS Matchless, 8h.p., 1915, 3-speed, coachbuilt sidecar, in fine condition; cost £85; owner enlisted; accept £60.—Sydney Hall, Stevenage. [X2607

1914½ Alldays, 2-stroke, 2½h.p., splendid condition, very fast, tyres and tubes unpunctured, all accessories; £21.—18, Maidmans St., Burdett Rd., Bow, E. [9136

1915 Alldays Allon 2-stroke, 2-speed, and clutch extra heavy Dunlops, lamp, etc.; cost £45 2 months ago, £33/10; any trial.—Deane, Matlock Bath, Derbyshire. [X2515

ALLDAYS 2½h.p. 2-stroke, 1914, new December, with Dunlop tyres, 3-speed gear, speedometer, horn, lamps, etc., first-class condition, only ridden 1,300 miles; £35, original price, complete, £43.—Box L1,032, *The Motor Cycle* Offices, 20, Tudor St., E.C. [9342

Ariel.

ARIEL, 3½ and 5-6h.p., counter-shaft models in stock.—Jones, Broadway, Muswell Hill. [7655

ARIEL, 1914, 3-speed, kick starter, with coach sidecar, speedometer, Lucas lamps and horn; 65 gns.—Lamb's, 151, High St., Walthamstow. [9103

ARIEL, 3½h.p., 3-speed, counter-shaft, kick starter, combination in stock; large deposits secure special terms.—Lamb's, 151, High St., Walthamstow. [9105

ARIEL, 3½h.p., 3-speed, full complement of best class accessories, speedometer, etc., nearly new; cost £75, bargain, £45.—Washington, Middlewich. [X2546

3-SPEED 3½h.p. Ariel, 1912, just overhauled and done up by makers at cost of £11, and running as good as new; price £27 10; with wicker sidecar £30. —Westland, Camp, Scouce Hills, Newark. [X2327

Arno.

ARNO, 1914 model, with coachbuilt sidecar, 2 speeds, and free engine, speedometer, hump set, etc.; bargain, £38.—Speechley's, 45, Church Rd., Acton [9346

Auto-Wheels.

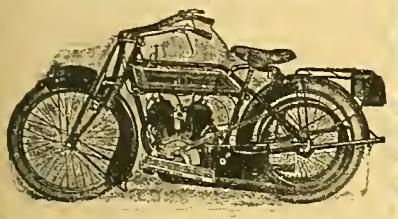
WALL Auto-Wheel; £14 14 cash, or 26/8 down and 26/8 monthly.—Seen at 248, Bishopsgate, London, E.C. [9128

Halifax Motor Exchange

68, HORTON ST., HALIFAX.

'Phone: 766. Telegrams: "Perfection."

WHY PAY 5% EXTRA



When we can offer you a Brand New (just delivered from makers) **£65 6 h.p. 2-speed REX,** or a **£72 10s. 6 h.p. 3-speed Chain Drive REX** at 10% discount? If you have no customer for your present machine, we give you this discount in addition to a liberal exchange allowance. With Rex Coach-built Sidecar, **£12 10s.** extra.

LIGHT CARS.

1915 de Luxe **MORGAN,** M.A.G. engine..	£114 10
1915 10 h.p. **DOUGLAS,** electric lighting set	£200 0
1915 4-cylinder **CALTHORPE** Minor.....	180 gns.
1915 Grand Duke Michael **CALTHORPE**..	190 gns.
1915 **G.W.K.,** 2-seater, detachable wheels	170 gns.
1915 **WILLIAMSON** CY-CL-CA..... from	£113 8
SABELLA-J.A.P., 8 h.p., very speedy	£42 10
BEDELIA, 8-10 h.p., twin, 2-seater	£36 10
1914 W.-C. **CROUCH** Carette, 3-seater	£98 10

SPECIAL BARGAIN.

New and unused 4 h.p. 2-speed Free Engine REX, chain drive. Maker's price, £61 5s. Our Bargain Price, 42 Guineas.

SOLO MACHINES.

1915 4 h.p. 3-sp. Countershaft **BRADBURY**	£60 0
1915 3½ h.p. **RUDGE** Multi, 100 miles only	£52 10
1915 2½ h.p. 2-speed (New) **RYDER-J.A.P.**.	32 gns.
1915 2½ h.p. **ROYAL RUBY** (New)	£26 5
1915 2½ h.p. 2-speed **ROYAL RUBY** (New)	£31 5
1914 4 h.p. 3-speed **BRADBURY**	£46 10
1913 8 h.p. 2-speed **V.S.**	£39 10
1913 4 h.p. 2-speed **REX,** chain drive....	£36 10
1913 3½ h.p. 3-speed **PREMIER**	£36 10
1911 2¾ h.p. 3-speed **HAZLEWOOD**	£22 10
1911 3½ h.p. 2-speed **REX,** N.S.U. gear	£23 10
1910 3½ h.p. 2-speed **REX**.....	£19 19
1910 3½ h.p. Magneto **TRIUMPH**	£22 10
1909 3½ h.p. Magneto **TRIUMPH**	£21 0
SCOTT, W.C., 2-speed, 2-stroke	£22 10
5½ h.p. magneto **REX,** spring forks.....	£15 10
J.A.P., 3½ h.p., M.O.V., magneto, very low	£16 10
M.M.C., 3 h.p., magneto.....	£11 10
N.S.U., 3½ h.p., magneto.....	£9 10
MOTOSACOCHE, magneto, lightweight, runs well	£10 15

SIDECAR COMBINATIONS.

1914 Late W.C. **WILLIAMSON** Combinat'n	£99 5
1912 3¾ h.p. 2-speed Twin **PREMIER** and Sidecar	£34 10
1912 4 h.p. 2-speed **SINGER** and Sidecar..	£34 10
1912 3½ h.p. 2-speed **N.S.U.** and Sidecar .	£27 10
1912 6 h.p. 2-speed Free Engine **REX,** chain drive, with high-class cane Sidecar	£36 10
1911 6 h.p. 2-speed **REX** and Sidecar	£29 10
1911 2¾ h.p. **HAZLEWOOD** & light Sidecar	£28 10
1910 7-9 h.p. **V.S.,** 2-speed, and Sidecar....	£25 10
PHANOMEN, 6 h.p., 2-speed, and Sidecar..	£24 10
1910 5-6 h.p. 2-speed **REX** and Sidecar ..	£27 10
1909 5-6 h.p. 2-speed **REX** and Sidecar ..	£25 10
6 h.p. 3-speed **PEUGEOT,** fine condition...	£26 10
BRADBURY, 3½ h.p., 2-speed, and Sidecar	£26 10

MISCELLANEOUS.

Vinot 4-cyl. Car new Bosch magneto	£19 10
3½ h.p. 2-speed Rex, wants attention	£15 0
Mag.-Moto-Reve Lightweight, wants attention	£7 10
Shop-soiled Cane Perfection Sidecar.....	£6 15
Auto-wheels, merely shop-soiled	£9 15
New Upholstered Sidecar Bodies ..	12/6, 14/6, 15/6
Triumph Pattern Horns	5/9 and 6/9
Pair Lucas Side Lamps for light car	19/6
Second-hand Wicker Sidecar Body.....	4/9
New Mechanical Horns. Special price	15/11

WANTED.—1914 Douglas and Enfield Motor Cycles, Calthorpe and Singer Light Cars, for spot cash.

MOTOR CYCLES FOR SALE.

Douglas.

1914 2¾h.p. Douglas, 2 speeds, footboards, head and tail lamps, horn, etc., in good condition throughout; £43.—Saint, Manor Farm, Wentworth, Ely. [X2615

1915 2-speed Douglas, as new, Lucas lamp, rear lamp, horn, speedometer, etc., only in use 3 weeks; nearest offer £50.—Brown, Homeville, Willowfield Rd., Eastbourne. [9029

1912 Douglas, 2¾h.p., kick-start, 2-speed, excellent tyres, lamp, horn, speedometer, engine just overhauled; £27/10.—Robinson's Garage, Green St., Cambridge. [0613

DOUGLAS, 2¾h.p., 1914, perfect, clutch model, 2-speed, £40; Douglas, 1915 Colonial model, 3 speeds, £50; all accessories on both.—Allely, Regent St., Birmingham. [X2552

1913½ 2-speed Douglas, with new aluminium lightweight sidecar, lamps, horn, etc., complete, fast, and powerful climber; nearest £46.—Ramsden, 56, Seaside, Eastbourne. [9030

1915 Douglas, 3-speed, T.T., 2 months old, in perfect order, new Dunlop back tyre, 3 spare valves, tools, etc.; best offer over £49.—Turner, c/o White's Garage, Camberley, Surrey. [X2410

1914 T.T. Douglas, Lucas lamp set, horn, large Brooks saddle, nearly new Kempshall and Dunlop covers, heavy, condition as new; £45. — Leavis, Downham Market. [9154

DOUGLAS, 2¾h.p., 2-speed, speedometer, lamp, horn, Brooks valise, with overalls, unexpired policy 10 months, spares, etc., excellent condition; £49 cash.—Bailey, Southview, Devizes. [9022

1914 Douglas, 2-speed, clutch, kick starter, Amac carburetter, lamp, generator, speedometer, horn, tools, etc., spare belt, as new; £48.—Write, Rex Mundy, 19, Grafton Mews, Warren St., W. [9138

DOUGLAS, 1913, 2-speed, and clutch, mileage under 2,500, speedometer, large lamp set, pan saddle, horn, exceptional condition, absolutely like new; £35.—57, Clabon Mews, Cadogan Sq., London. [9168

DOUGLAS (1912-13), 2¾h.p., kick start, clutch, 2 speeds, scarcely ridden, splendid condition, tyres, plating, enamelling as new, speedometer, all accessories; any examination and trial; £35.—Springfield, New Cubhington, Leamington. [X2407

1914 Douglas, model V, 2-speed; engine and gear box overhauled, condition guaranteed, Jones speedometer, Lucas 50/- lamp, horn, Dunlop tyres quite new, Lycett La Grande saddle, spares; £42/10.—Robinson's Garage, Green St., Cambridge. [6864

DOUGLAS Agents · Eastern Counties.—Although Douglas deliveries are temporarily suspended due to the action of the Government, we are prepared to accept orders now for delivery on the recommencement of supplies.—Tel.: 3883. T.A.: Bicycles.—Robinson's Garage, Green St., Cambridge. [6866

Enfield.

ENFIELD Combination, 1915, in stock; 80 gns.—Ratcliff Bros., Frinton-on-Sea. [X2624

1915 3h.p. Twin Royal Enfield, shop-soiled; £45.—Brockbank, Green St., Heywood. [X2361

ROYAL Enfield, 3h.p. twin, good condition, very fast; £36.—Newington, Edenbridge, Kent. [9183

1915 6h.p. Enfield Combination, brand new; £84; immediate delivery.—Ginger, Motors, Banbury. [X1817

1915 6h.p. Enfield Combinations in stock; immediate delivery; £84.—Celtic Motor Works, East Hill, Wandsworth. [9292

1914 Enfield 6h.p. Combination, speedometer, wind screen, lamps, perfect condition; 65 gns.—Osborne, 177, New Park Rd., Brixton. [9135

WHAT Offers for 1915 6h.p. Enfield combination, as new; also 1914 ditto, splendid condition.—Wilkes, Castle Foregate, Shrewsbury. [X2563

ENFIELD Agents.—1915 2-stroke; 38 gns.; in stock, instant delivery.—T.A.: Bicycles. Tel.: 388.—Robinson's Garage, Green St., Cambridge. [6867

1915 (June) 3h.p. 2-speed Royal Enfield, perfect condition, done 20 miles only; seen and tried; £45.—Box 9,018, *The Motor Cycle* Offices, Coventry. [X2472

ENFIELD Agents.—1915 3h.p. T.T.; 50 gns.; in stock, instant delivery.—Tel.: 388. T.A.: Bicycles.—Robinson's Garage, Green St., Cambridge. [0612

ROYAL Enfield 3h.p. Twin and 6h.p. Combination, from stock.—The Exeter Motor Cycle Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0571

ROYAL Enfield, 1915, 3h.p., 2-speed, twin-cyl., forced lubrication, tyres excellent, P. and H. lamp, Stewart horn, full tool kit; £44.—Lieut. Holmes, Rockleaze, Nightingale Rd., Southsea. [9212

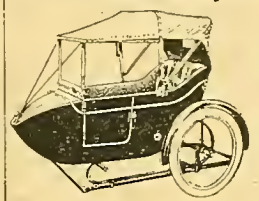
ENFIELD 1914 6h.p. Coachbuilt Combination, Binks 1915 carburetter, lamps, horn, accessories, excellent condition; 50 miles trial; tyres all good; £65.—Rawlings, Houghton-le-Spring. [X2421

1915 Enfield, 3h.p., 2-speed, kick-start, all accessories, not scratched, only done 100; cost £57, take £46, exchange Douglas or 2-stroke entertained.—Louvant, Manorgate Rd., Kingston Hill, S.W. [9320

FARLOW SIDECARS.

Built throughout in our own factory.

Farlow Sidecars have that pleasing style, exquisite finish, and lasting qualities which are the buyers' ideal.

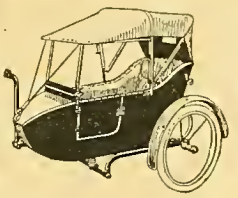


MODEL 3.

Underslung Chassis with Luggage Carrier combined.

Splendidly made and built for hard work.

£10 15 0



This is Model No 1.

A BEAUTIFUL LIGHT SIDECAR.

PRICE : **9 Guineas.**

Hood **£2.** Screen **£1.**

Delivery from Stock.

Your Agent will supply

NOT OVERDUE

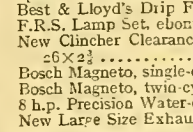
or "expected shortly,"

But Actually Here!!

1915 6 h.p. **A.J.S.** Combination, quick detachable wheels all round, hood, screen, and luggage grid	92 gns.
1915 6 h.p. 3-speed **J.H.** Combination..	84 gns.
1915 6 h.p. **NEW HUDSON** Big Six, with countershaft 3-sp. gear, kick starter, etc.	72 gns.
1915 2½ h.p. **IMPERIAL-J.A.P.,** 2-sp. model	£35 0
1915 2½ h.p. **NEW HUDSON,** 2-sp., Model C	£36 0
1915 4 h.p. **WOLF-J.A.P.,** countershaft 3-sp.	49 gns.
1915 12 h.p. **TRUMBULL** Cycle Car, 4-cyl., water-cooled, detachable wheels, all on	105 gns.

SECOND-HAND BARGAINS.

6 h.p. **CHATER-LEA,** countershaft 3 speeds, Millford coach-built Sidecar	£40
4 h.p. **BRADBURY** N.S.U. gear, nice Sidecar	£25
6 h.p. 1914 **ENFIELD** coach-built Combination	£65
3½ h.p. **BRADBURY,** 2-speed, etc.	£20
3½ h.p. 2-speed **N.S.U.** and torpedo Sidecar ...	£20
3½ h.p. 1908 **REX,** M.O.V., Bosch, B. & B. carb.	£16
3½ h.p. **N.S.U., 2 speeds and free engine,** Bosch	£17
3½ h.p. 1909 **REX** de Luxe, **2-sp.,** handle starting	£19



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1915 8h.p. Enfield Combination, purchased new 28th last month, dynamo lighting set, unpunctured; cost £110, price £100. Easy terms £2 extra.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0681

1915 Enfield Combination, T.T. and ordinary bars, lamp and generator, Stewart alarm signal, and many spares, very fast, new 6 weeks ago; good reasons for selling; offers wanted.—32, Low St., Wigan. [X2340

ENFIELD 1915 6h.p. Combination, coachbuilt sidecar, the finest combination made, all complete; £84; just arrived from works; immediate delivery.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9043

6h.p. Enfield and sidecarriage, with hood and screen, electric light, and speedometer, only run 392 miles; owner buying small car; insurance policy transferable; accept £95 for quick offer.—Dr. J. Hepworth, Beaumaris, Anglesey. [X2342

Excelsior.

EXCELSIOR 2h.p. Lightweight, very low position, thoroughly overhauled, with accessories; £8.—After 6, 33, Gateley Rd., Brixton, S.W. [9257

3½h.p. Excelsior, spring forks, low frame, B. and B. carburetter, adjustable pulley, Hellesens ignition, footboards, tools, etc.; photo; £9/10.—Godman, 55, Pageant Rd., St. Albans. [9070

Fafnir.

3¼h.p. Fafnir, low frame, spring forks, waterproof mag., excellent condition; £14.—29, Hightown Rd., Maidenhead, Berks. [9338

F.N.

4h.p. F.N. Motor Cycle, 4-cyl., perfect order; £12.—Frossell, Wootton, Beds. [X2364

2½h.p. F.N., wants overhauling; £4/10.—169a, Lower Clapton Rd., N.E. [9273

F.N., 2½h.p., 2-speed, F.E., splendid condition; £14.—Motor Cycle Depot, High St., Purley. [9226

F.N., 4-cyl., 1914, 2-speed gear and new pistons fitted last season.—Ruffell, Thames Terrace, Cliffe, Kent. [9139

4-CYL. F.N., 3 speeds, clutch, accessories, enamel, plating new; £30.—619, Garratt Lane, Earlsfield. [9296

F.N., 4-cyl., just thoroughly overhauled by makers, perfect condition; £20.—Cherry, Leinster Place, Bayswater. [9179

SMART 2¾h.p. F.N., long bars, dropped seat, brass tanks, Hellesen ignition; 8 gns.—Railway Garage, Staines. [9218

F.N., 5-6h.p., 1913½, thoroughly overhauled, wicker sidecar, lamp, horn, mirror, etc.; £36.—Particulars, apply, Jones' Garage, Droitwich. [X1841

F.N., 1914, 5-6h.p., 2 speeds, clutch, footboards, lamp, horn, tools, complete, new Dunlop, perfect; £35.—Graham, Balcarres, Shotts, Lanarkshire. [X2020

F.N., 2¼h.p., 2-speed, engine overhauled, fast, splendid climber, practically new tyres; bargain, £15, no offers; bought combination.—33, Richmond Park Rd., East Sheen. [X2489

F.N., 1911, 4-cyl., 2-speed, perfect, B. and B., variable, stand, carrier, wheels, gears, all 1914, Dunlop, Hutchinson, lamp, horn, accessories; £27/10.—Pearson, Edge Rd., Matlock. [X2511

4-CYL. F.N., B. and B. carburetter, Bosch, head and tail lamps, generator, horn, Brooks saddle, footboards, tubular carrier, pump, good tyres, very flexible; £14.—Sinclair, 45, Horseferry Rd., Westminster. [9318

Grandex.

GRANDEX Special, 4½h.p. J.A.P., Mabon, wicker sidecar, good condition; £30.—L., 12, Bessborough Place, Pimlico. [9269

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HARLEY-DAVIDSON 7-9h.p. Twin and 4h.p. in stock.—Turpins, 29, Preston Rd., Brighton. [0713

1915 Harley-Davidson in stock; also combination, slightly used, for sale.—Nelson, Gloddaeth St., Llandudno. [X2503

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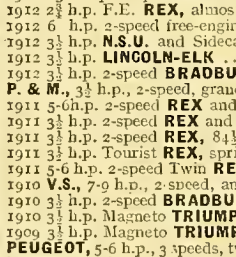

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HAZLEWOOD, 5-6h.p., 1915, soiled, Ivy sidecar, accessories; £68.—Osborne, Bore St., Lichfield. [X2579

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HENDERSON, 1914-15, 4 cyls., 8-10h.p., long coach-built sidecar, extra space for child, rear drive Stewart speedometer, lamps, whistle, spares, only run 2,000 miles; cost £104, price £80; seen any time by appointment.—Westbrook, 37, Priory Rd., Kew. [X2473

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HOBART, 1915, 2¼h.p., only done 10 miles; £24.—Walton Lodge, Surbiton Rd., Kingston. [9322

HOBART, 5-6h.p. J.A.P., Enfield 2-speed gear, complete with Wolbrown cane sidecar, new October, 1914, equal to new in every way, exceptionally fast; a bargain, £65.—Embro Cycle and Motor Co., Charlotte St., Hull. [9262

Humber.

HUMBER, 1913, 2¾h.p. twin, perfect condition, as new; 20 gns.—Rupert Smith, Thrapston. [X1802

10h.p. Humber, 1910, 2-seater, dickey, 5 detachable wheels, mag.; £65.—Vincent, 40, High St., Acton. [9054

HUMBER, 1911, 2-speed, good running order; £29/10.—65a, Rosendale Rd., West Dulwich. [X2665

HUMBER, 5h.p., 2 speeds, mag., sidecar; £12.—Almutt, 134, London Rd., Manchester. No postcards. [X2031

3½h.p. Humber, new tyres and belt, 1913; any test; £30.—Box No. 8,098, *The Motor Cycle* Offices, Coventry. [X2326

3½h.p. 1912 Humber Motor Cycle and sidecar, 2-speed, handle start; £30.—Morris, Copthorne, Wolstanton, Stoke-on-Trent. [X2332

HUMBER, 2¾h.p. Twin, clutch model, 3 speeds, splendid condition, reliable; £25, or offer.—Write, Driscoll, 58, Woodfield Rd., Ealing, W. [9284

HUMBER, 2¼h.p., twin, 3-speed gear and clutch, in tip-top order, accessories included; £27.—Colmore Depot, 31, Colmore Row, Birmingham. [X1985

1913 Humber and sidecar, 3½h.p., 2 speeds, free engine, 1915 B. and B. carburetter, almost new; £36, bargain.—Harold, 12, Studley Rd., Stockwell, S.W. [X2370

3½h.p. Humber, 1911, tyres and condition excellent, just overhauled makers considerable cost; good bargain, £24, cash wanted.—Rev. Godwin, S. Luke's Vicarage, Reigate, Surrey. [X2522

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INDIAN, new 1915 5 and 7h.p. models in stock; exchanges arranged.—Moss, Wem. [X2590

1914½ T.T. Clutch Indian, do 75, speedometer, spares; £44.—62, Park Av., Barrow-in-Furness. [X2427

1914 Indian, 7h.p., 2-speed, electrically equipped, Gondola sidecar; £54.—Rev. Bartlett, Melksham. [9329

INDIANS, immediate deliveries, all models.—Edwards, Motors, Taunton. 'Phone: 191X2. [X1669

INDIAN Combination, 7h.p., model C, mileage 3,500, perfect condition; £55, no offers.—Ratcliffe, Frinton-on-Sea. [X2625

1913 Indian, wicker sidecar, speedometer, watch etc.; £45.—Smith, 144, Creswick St., Walkley Sheffield. [X2534

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P. and M., 3½h.p., 2-speed, free engine, just been overhauled, with coachbuilt sidecar; £35.—V. and M., 34, High St., Chesham. [9286

1909 P. and M. Combination, perfect, lamp, new gear and tyres; £32; photo 2d.—Robert Williamson, Victoria Chambers, Lerwick. [X2269

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P. and M., late 1911, 2-speed, 1914, 12 gn. sidecar, just been overhauled, any trial; bargain, 30 gns.; expert examination.—Mitchell, The Wrythe, Carshalton. [9014

LATE 1913 P. and M. Combination, little used, 20 gn. Millford sidecar, hood, wind screen, electric light, beautiful turnout; £57.—After 6, 10, Tanza Rd., Hampstead. [9252

P. and M., 1914, recently overhauled by makers, and P. and M. coachbuilt sidecar, new, with grid, mat, storm apron, spare tubes, accessories; £60.—West View, Fleet. [9306

PHELON and Moore, Ltd., 4, Percy St., W., have several good second-hand P. and M. machines for sale, which have been overhauled, and are in perfect order.—Can be seen at above address. [0131

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6h.p. Peugeot, coachbuilt sidecar, fine condition; £35.—55, Childebert Rd., Balham. [9356

Precision.

PRECISION, 1913, and sidecar, Brampton gear, free engine, fully equipped; £28.—Speechley's, 45, Church Rd., Acton. [9344

8h.p. Precision, chain drive, 3-speed gear box, comfortable sidecar, perfect condition, climb anything; £59.—Central Garage, 31, The Parade, Golder's Green, N.W. [9134

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1914 3½h.p. 3-speed Countershaft Premier, in new condition; £42.—Earle, Ironmonger, Devizes. [9277

PREMIER, 3½h.p., 2-speed counter-shaft, with Bramble C.B. sidecar, splendid condition; £48.—23, Broad St., Bath. [X2254

PREMIER, 3½h.p., and C.B. sidecar, N.S.U. speeds, perfect condition; £27/10.—Shire, 17, Johnson St., Notting Hill Gate, W. [9108

PREMIER, 1912, 3½h.p., engine just been thoroughly overhauled, new tyres and belt, in splendid order; £22.—Corwen Motor Co., Corwen. [9050

PREMIER, 1914-15 model, countershaft 3-speed, clutch, kick starter, fully equipped, £45; with sidecar £48/10.—Speechley's, 45, Church Rd., Acton. [9345

1913 (August) Premier, 3½h.p., 3 speeds, excellent condition, just overhauled, new heaviest Dunlops and belt, lamp set, horn, large footboards; £35.—7, Vale Terrace, King's Rd., Chelsea, London. [X1829

1913 Premier, 3½h.p., 3 speeds, clutch, and 1915 coachbuilt sidecar, 4-point suspension, absolutely like new throughout, machine having been overhauled, re-plated, and re-enamelled this year, new Dunlop tyres, fully equipped, accessories, and spares; £48; would consider solo machine part exchange, Douglas preferred.—Ivydene, Dukesthorpe Rd., Sydenham, S.E. [X2634

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4½h.p. Quadrant, 1914 model, and Cannelet sidecar; £45.—169a, Lower Clapton Rd., N.E. [9272

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QUADRANT, 3½h.p., Bosch mag., new tyres, excellent condition; £12.—106, Catford Hill, Catford. [9190

QUADRANT, 1915, 4½h.p., 3-speed B.S.A. gear box, £57/15; combination, £69/17/6; 3-speed Sturmey-Archer gear, model £49/12/3; delivery from stock.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0481

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1914 Radco 2-stroke, in excellent condition; £15/10.—Mastin, Gosberton, Spalding. [X2620

RADCO, 1914¾, 2½h.p., 2-stroke, little used, lamp, and horn; £18/10; any trial.—Hancock, 6, Pavilion Rd., Aldershot. [9141

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REVERE 2 strokes immediately delivered from stock. Write for lists.—Brook, Motor Cycle Specialist, Barnham, Som. [9026

Rex.

REX Motor Cycle Combination, 6h.p., 1913, perfect.—178, Upper Clapton Rd. [9063

REX, 3½h.p., new condition, little used; any trial; £15.—Nicol, Friockheim, Scotland. [X2038

REX Combination, 2-speed gear, handle starting, good tyres, etc., complete; £27, bargain.—Buckingham, Tindal St., Chelmsford. [9169

6h.p. Rex Sidette Combination, new condition, little ridden; cost £75, bargain, accept £45, immediate sale.—Best, Coulsdon, Surrey. [9240

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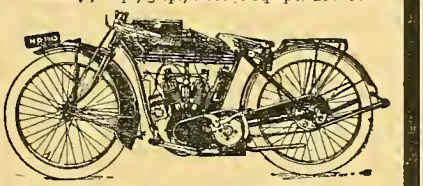
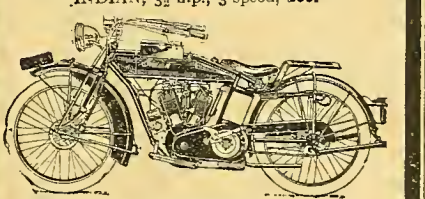


INDIAN, 3½ h.p., 3-speed, £60.



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1913 6h.p. Twin Rex and Millford cruiser sidecar, good condition; £30.—The Premier Motor Co., Aston Rd., Birmingham. [9362

1906 Twin Rex, 5-6h.p., Bosch mag., Mabon pulley, Kempshall back, both tyres good, excellent running order; £10.—Cliff and Son, Eltham. [9195

REX 6h.p. Sidette, almost new condition, only done 1,500 miles, all accessories; owner on war service.—E. Vigar, 33a, Emmanuel Rd., Balham, S.W. [9089

1914 6h.p. 3-speed chain drive Rex sidette, luxurious sidecar, overhauled and guaranteed perfect; £50.—The Premier Motor Co., Aston Rd., Birmingham. [9363

REX Sidettes.—1914 model, brand new, countershaft 3-speed gear, chain drive, free engine, kick-start, handsome turnout; for £96; exchange or easy terms arranged.—Wauchope's, 9, Shoe Lane, London. [X2482

REX 6h.p. Coachbuilt Combination, 2-speed, belt drive model, brand new, just delivered, wonderfully silent, powerful, flexible, and reliable; accept £66 cash, or consider part exchange.—A. Holland, Earlsdon, Coventry. [X2640

1914 Rex, perfect condition, coachbuilt sidecar, 6h.p., 2-speed, kick starter, free engine, tyres as new, horn, lamp, spares, extra new tyre, extra spring seat on luggage carrier; cost with accessories £82, bargain, £50.—Housden, 81, South Norwood Hill, London, S.E. [X2431

REXES.—Why pay 5% extra? We give immediate delivery and 10% discount from new 6h.p. belt or chain drive De Luxe models, just delivered from makers. Rex luxurious coachbuilt sidecar, £12/10 extra. Exchanges quoted.—Motories, 68, Horton St., Halifax. [0707

Rex-Jap.

1914 Rex-Jap, 6h.p., 3-speed, chain drive, and £18/18 coach sidecar, turnout like new; 60 gns.—Bradshaw's, The Motor House, Preston. [X2457

6h.p. 1912 Rex-Jap, perfect condition, coachbuilt sidecar, new 1914, lamp, horn, electric sidecar and tail lamps; any trial; £45.—The Premier Motor Co., Aston Rd., Birmingham. [8673

1913 6h.p. 2-speed Rex-Jap and coachbuilt sidecar, new 650×65 Dunlop rubber-studded tyres, Lucas lamp, horn, overhauled; £55.—The Premier Motor Co., Aston Rd., Birmingham. [9364

REX-J.A.P., 1912, 8h.p., fitted 1914 Roc 2-speed gear, kick starter, new Cancelet sidecar, every accessory, small mileage; satisfactory reason selling; £54.—Perkins, 242, Coton Rd., Nuneaton. [X2600

Rover.

ROVER, 3½h.p., late 1913, tip-top condition; £32, absolute bargain.—7, Surbiton Rd., Kingston. [9323

1915 Rover, 3½h.p., 3-speed counter-shaft gears, delivered June; £60, or nearest offer.—S. Metcalf, Bridge St., Mold. [X2264

3½h.p. Rover, 1914, Sturmey-Archer 3-speed gear, footboards, excellent condition; £45.—Rover Depot, George St., Croydon. [9025

1913½ Rover and Sidecar, clutch, all accessories like new; £35 quick sale, will sacrifice.—20 Derby Rd., W. Croydon. [9312

1913 3½h.p. Rover and sidecar, 3-speed, free engine, speedometer, lamp, horn, etc.; 33 gns.—Julian, Broad St., Reading. 'Phone: 1024. [X2594

1913½ 3½h.p. T.T. Rover, Philipson pulley, recently overhauled, excellent condition; owner on active service; £29.—Galloway, Swalcliffe, Banbury. [X2413

ROVER, 3½h.p., 3-speed, 1913, and Millford sidecar, all in splendid condition, accessories included; £42/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X1981

1915 Rover, 3½h.p., countershaft 3-speed gear; delivery from stock; £63; exchanges or extended terms.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0480

ROVER, 1913¾, 3½h.p., Senspray, new tyres and belt, enamel and plate as new, in perfect condition; any trial; £35. — A.S., 26, Cunliffe St., Streatham, S.W. [9314

1913-14 Rover, 3½h.p., recently overhauled, splendid condition, very little used, lamps, horn, quantity accessories; 40 gns.—Coombebury House, Kingston Hill 'Phone: 184 Kingston. [9224

ROVER, 1912, 3½h.p., free engine, 3 speeds, excellent condition, used 2 seasons only, complete with cane sidecar, lamp, horn, tools, etc.; bargain, £40.—Wright, Brooklyn, Newmarket. [9324

Royal Ruby.

2½h.p. Royal Ruby, 2-stroke, Villiers engine, 2-speed counter-shaft model, new August, 1914, condition as new; expert examination granted; 25 gns.—Snape, 261, Padiham Rd., Burnley. [X2430

ROYAL Ruby, 3½-4h.p. J.A.P., 70×64½ twin, side valves, ball bearing to pulley side, Sturmey-Archer 2-speed hub gear, price £42; one ditto, with overhead valves, and Jardine 2-speed counter-shaft gear, chain and belt drive, price £48.—The Royal Ruby Cycle Co., Manchester. [0704

MOTOR CYCLES FOR SALE.

Rudge.

1913½ 5h.p. Rudge and Sidecar; £45. — 1, New Village Rd., Cottingham, Hull. [X2530

1912 Rudge Multi and Sidecar, overhauled; £27.—7, Pemberton Gardens, Holloway. [9198

1913 5-6h.p. Rudge Multi and Sidecar; a bargain at £42.—Mastin, Gosberton, Spalding. [X2618

5-6h.p. Rudge Multi Sidecar Combination, speedometer, watch, etc.; £45.—47, Newland Av., Hull. [X2529

RUDGE Multi, new 1915 standard model in stock, new T.T. model ready next week.—Moss, Wem. [X2587

1912-13 Rudge, 3½h.p., clutch model, and racing Millford sidecar; £28.—40, St. Leonard's St., Bow. [9150

RUDGE Multi, late 1913, in new condition, and sidecar; bargain, £39/10.—7, Bolina Rd., South Bermondsey. [9299

1913 5-6b.p. Rudge Multi and Rudge sidecar, excellent condition; £45.—K., Imperial College, South Kensington. [9119

RUDGE Multi, 5-6h.p., 1913, speedometer, lamps, etc., with wicker sidecar; £40.—26, Clifton Terrace, Brighton. [9304

1915 Rudge Multi, I.O.M. T.T. model, used 300 miles, as new, lamp set, horn; £50.—Leavis, Downham Market. [9153

1913 3½h.p. Free Engine Rudge, Lucas lamp, horn, and speedometer, in splendid condition; £30.—Thos. Booth, Frodsham. [X2480

RUDGE Multi, 1912½, recently overhauled, new back tyre, cane sidecar; £30, or near offer.—Horrocks, Coity Rd., Bridgend, Glamorgan. [X2584

RUDGE, 5-6h.p., 3-speed, with Rudge sidecar, speedometer, lamps, horn, hood and screen on sidecar, only 3 months old; £60 cash.—Rawson and Sons, Tunbridge Wells. [9122

5-6b.p. Rudge Multi, 1913, 1915 engine, coachbuilt sidecar, wind screen, foot gong, 3 lamps, horn, luggage carrier, guaranteed perfect; £60.—Washington House, Knaresbro', Yorks. [X2330

RUDGE Multi, 1913½, with sidecar (wicker), lamp, horn, mirror, speedometer, overalls, spare covers and tyres, etc.; £40, or nearest offer.—W. Burridge, 50, Lewin Rd., Streatham, S.W. [9254

1914¾ Rudge, 5-6h.p., 3-speed gear, Rudge sidecar, with hood and wind screen, done only 1,100 miles; cost £92, accept £66, bargain. — Richardson, Church St., Shildon, Co. Durham. [9151

RUDGE Multi, 1915, 3½h.p., done 500 miles, large Lucas lamp set, Lucas horn and rear light, machine guaranteed as new; £55.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0552

1915 Rudge Multi, T.T. Isle of Man racing model, hand controlled clutch, multi gear, torpedo sidecar, speedometer, 3 lamps, all accessories, as new, very smart; £52/10.—Box L983, *The Motor Cycle* Offices, 20, Tudor St., E.C. [9004

Sarolea.

3h.p. Sarolea, very low, powerful; bargain, £10.—Washington, Middlewich. [X2544

Scott.

SCOTT Combination, cost £85, condition like new; £48.—23, Cromwell Rd., Rugby. [X2652

1912 Scott and Sidecar, very powerful, splendid condition, Binks, accessories; £40.—52, Lower Hastings St., Leicester. [X2542

LATE 1913 Scott, practically new, mileage under 1,000, £35; large portable motor shed, 50/-.—22, Ellerton Rd., Surbiton. [X2596

1911 Scott, 2-speed, 2-stroke, condition perfect, lamp, horn, etc.; 18 gns.; sidecar £2. — 80, Bispham Rd., Southport. [X2647

1914¾ Scott, complete with coachbuilt sidecar, speedometer, 2 lamps, etc., run 2,500; £55, complete.—Bradshaw's, The Motor House, Preston. [X2456

1914 Scott and Mills-Fulford Empress Sidecar, best lamps, and equipment; cost nearly £90, bargain, £57.—Deane, Matlock Bath, Derbyshire. [X2516

Singer.

SINGER, 1913, 3½h.p., free engine, as new, perfect order; £28/10.—Rupert Smith, Thrapston. [X1803

SINGER, 1914, 3½h.p., T.T. model, little used, speedometer, spares; any trial.—Westnidge, Duffield, Derby. [X2035

Sunbeam.

1914 3½h.p. Sunbeam, splendid condition, as new; £63.—Gore, Radley, Hungerford. [X2411

SUNBEAMS, new 1915 3½h.p. models actually in stock; exchanges arranged.—Moss, Wem. [X2586

1914 6h.p. Sunbeam, with model 5 Gloria sidecar, complete.—Nelson, Gloddaeth St., Llandudno. [X2502

1915 Sunbeam, 3½h.p., in stock ready to ride away; exchange considered.—Leavis, Downham Market. [9152

SUNBEAM, 1914, 2¾h.p., almost new; 50 gns.—Warnes, 14, Pennant Mews, Kensington, S.W. [9161

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SUNBEAM, 1913-14, 2-speed, 2¾h.p., kick starter, Lucas accessories; 41 gns.—Lamb's, 151, High St., Walthamstow. [9104

SUNBEAM, 3½h.p., 1914, as new, everything perfect, very little used; best offer over £58.—Jamieson, Kenton, Northumberland. [X2449

1915 Sunbeam, 3½h.p., complete with £16/16 sidecar, Lucas lamp, horn, etc., absolutely unscratched, run 400 miles; 80 gns.—Bradshaw's, The Motor House, Preston. [X2456a

SUNBEAM Agents.—Early deliveries 3½h.p. models; lists on application; exchanges entertained.—Tel.: 388. T.A.: Bicycles.—Robinson's, Garage, Green St., Cambridge. [6865

LATE 1913 2¾h.p. Sunbeam, 2-speed, F.E., kick start, lamp, horn, tools, etc.; £44.—Morris, 24th E.L. Co., Royal Engineers, Nell's Point Battery, Barry Island, Glam. (D) [X2531

3½h.p. Sunbeam, late 1914, in excellent condition, Lucas bead and tail lamps, horn, and generators; £58; seen by appointment.—Shepley Grange, Barnt Green, Birmingham. [X2585

1914 6h.p. Sunbeam, with No. 5 Gloria sidecar, fitted extra child's seat, wind screen, and coachbuilt luggage carrier, pillion seat, spare tyre, speedometer, horn, Lucas lamps, all perfect, and as new, only run 2,600 miles, guaranteed; price 85 gns.—Apply, Townly, Highcliff, Marine Av., Westcliff-on-Sea. [X2536

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1915 2¾h.p. Sun-Villiers, 2 speeds, clutch, like new; £35.—619, Garratt Lane, Earlsfield. [9295

Swift.

SWIFT, 3½h.p., with variable gear, complete with accessories, spare parts; any trial; £20, or near offer.—Baker, 2, Grove Villas, Muswell Hill, N. [9015

Triumph.

1915 Junior, in stock.—The Premier Motor Co., Aston Rd., Birmingham. [9365

1911 Triumph, Bowden 2 speeds, complete; £26.—Cross, Agent, Rotherham. [X2567

TRIUMPH, 3h.p., 1906, good running order; £11.—Marshall, Castle St., Cambridge. [X2490

TRIUMPH, 3h.p., reliable mount; bargain, £6.—Tinson, Wellington Place, London, N.W. [X2556

TRIUMPH, 1913, 3-speed, 3½h.p., in excellent condition; £36.—54, Rathfern Rd., Catford. [9191

TRIUMPH, 1911, J.S. hub, and sidecar; £40.—Hackett, 487, Kempshaw Lane, Stockport. [X2540

3-SPEED Triumph, 1913, excellent condition; £40, or near.—Moody, 6, Susan's Rd., Eastbourne. [X2337

1914 T.T. Triumph, 3-speed, and accessories, in good condition; £46.—Seen, 223, High Rd., Kilburn. [8866

TRIUMPH, 1919, 4h.p., 3 speeds, coachbuilt sidecar; £55.—Ashworth, 105, Walmersley Rd., Bury, Lancs. [X2367

1912 Clutch Triumph and wicker sidecar; £40.—Thompson, Railway St., Barnetby, Lincolnshire. [X2437

3½h.p. Triumph, in fine order, easy starter; £15/15.—Richardson, 306, Whalley Range, Blackburn. [X2508

3½h.p. Triumph, Mabon clutch, purchased February, 1910; £20.—Parker and Son, St. Ives, Huots. [9360

1911 Triumph, free engine, new cylinder, lamp, belt, tyres, splendid condition.—Walley, Frankton, Oswestry. [X2539

TRIUMPH 1913 T.T. Roadster, type E, Cowey, new, 1,643 miles, cost £61.—Merrick, 130, Lancaster Rd., W. [9057

1911 3½h.p. Triumph, semi T.T., in perfect order, all accessories; £24.—W. H. Powis, Store St., Llandovery. [X2422

TRIUMPH, 1914, 4h.p., 3-speed, Gloria coachbuilt sidecar, done 2,000 miles.—The Case is Altered, Wealdstone. [9261

1913¾ Clutch Triumph, as new, excellent condition throughout; £37, or near offer.—88, Princes Av., Watford. [X2519

TRIUMPH, 1911, with 1912 engine, 3-speed, Rom combination tyres; £35.—65a, Rosendale Rd., West Dulwich. [X2666

TRIUMPH, late 1911, clutch, speedometer, lamps, horn, splendid condition; £26.—Grisby, London Rd., Kingston, Surrey. [9147

TRIUMPH, 1915, 3½h.p., 3 speed, speedometer, lamps, Gloria cane sidecar; £39.—Jack, 5, Grantham Rd., Chiswick. [9202

TRIUMPH, about 1908, just overhauled and renovated, good running order, tyres good, belt new; £15.—Cliff and Son, Eltham. [9197

1915 Junior Triumph, 2-speed, 2-stroke, ridden about 200 miles; accept £39.—W. D. Julian, 4, Pydar St., Truro, Cornwall. [X2660

TRIUMPH, 3½h.p., 1912, free engine, good condition, lamp, horn, spare tyres, belt; bargain, £27.—Keen, Germain St., Chesham, Bucks. [9347

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CLEARANCE.—8-10h.p. Sabella-Jap, 2-seater, £42/10, runs well; 10h.p. twin Bedelia, handle starting, fine condition, £36/10.—Motories, 68, Horton St., Halifax. [0709

3-WHEEL Motorette Sociable, 6-7h.p., engine, in good condition, tyres unpunctured, 3 lamps, horn, jack, etc.; very cheap.—W. Whyte, 130, Admitt Rd., Northampton. [9164

CYCLE Car Chassis, wheels, and tyres, scuttle dash, fitted differential ball bearing countershaft, expanding pulleys for belt drive; £18, or offer.—Boyle, 75, Osborne Rd., Forest Gate, E. [9256

8h.p. Water-cooled Humberette, fitted with electric horn, hood, screen, tools, electric lamps; any severe trial given; cost originally £150, take immediate sale £85.—Seen at Wauchope's, 9, Shoe Lane, London. [X2485

8h.p. J.A.P. Water-cooled Engine, back axle, with 2-speed gear and connections, set of wheels complete with Palmer tyres, pair of side frames, silencer, and radiator, ready for being assembled to make a cycle car; what offers?—The Royal Ruby Cycle Co., Manchester. [0705

CYCLE CARS.

SAXON Light Car, 1914, 11h.p., 4-cyl., fitted English radiator and running boards, done 2,000 miles, and is better than new; £90; take B.S.A., Douglas, or Levis exchange.—50, Evesham St., Redditch. Tel.: 91. [X2651

ROLLO 3-seat. Light Car, 8-10h.p. J.A.P. engine, Gradua gear, going order, smart turnout, speedometer, 3 lamps, horn, tools, jack, etc.; £45, or exchange good combination, cash adjustment.—Laundry, 71, South Row, North Kensington. [9187

VIOLETTE, 8h.p., water-cooled, 2-seater, detachable wheels, with spare, hood, screen, lamps, horn, tools, spares, in exceptional condition; £55, or exchange motor cycle or combination.—Seen any time, 3, Green Terrace, Rosebery Av., E.C. [9133

HUMBERETTE, 1913 model, purchased June, 1914, hood, screen, clock, Stewart trip speedometer, 3 lamps, oversize 700×80 and new spare 700×80 tyres; 66 gns., or good motor cycle part.—Wyatt, Ardmore, Upper Cumberland Walk, Tunbridge Wells. [9287

CHATER-LEA Material, built entirely car practice, girder frame, 3 speeds and reverse, side lever, foot pedals, chain drive (Renolds), 3 wheels, 650×65, wheel steering, ready for engine and body, real good lot; bargain, £14.—Knight, 93, Park Rd., Crouch End. [9223

1915 Baby Pengeot de Luxe, dark blue, with luggage carrier, and spare tube, done 1,000 miles, condition better than new; good reason for selling; tyres unpunctured; cost £142, will take £115; might accept first-class 1915 Baby 2-stroke, 4h.p. Triumph, or 7h.p. Indian in part payment.—Letters only, B. H. Davies, 15, Royal Terrace, Northampton. [X2466

TRUMBULL Light Cars, the most economical, quietest, fastest, most powerful light car on the market. Complete with 3-speed gear, hood, screen, electric lamps, 4 detachable wheels, £110; spare wheel extra £5.—Apply for trial run (distance no object) to George Clark, Motor and Carriage Works, Arrow, Alcester; or Frank Heath, Rushford Garage, Salford Priors, Evesham. [X2597

CARS FOR SALE.

FORD 1913 Touring Car; £75; any trial here.—21, Tindal St., Chlemsford. [9170

PALMER'S Garage, Tooting.—14-16h.p. Singer touring car, 4 cyls., gate change; £85.

PALMER'S Garage, Tooting.—12-14h.p. F.I.A.T. landaulets, three immediately available; prices £175, £200, £225.

PALMER'S Garage, Tooting.—12-14h.p. F.I.A.T. chassis, suitable for 2-seat., 4-seat., delivery van, etc.; £125.

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PALMER'S Garage, Tooting.—14-16h.p. Gladiator cab-landaulet, 4 cyls., gate change; £65.

PALMER'S Garage, Tooting.—24-36h.p. S.P.A. chassis, gate change, powerful lot, £85; also 28-36 h.p. Daimler chassis, £65.

PALMER'S Garage, Tooting.—10h.p. De Dion, modern type, 4-seat., bargain £50; 12h.p. Sizaire sporting 2-seat., fast; £35.

PALMER'S Garage, Tooting.—14-16h.p. light Argyll 4-seat., runs like new; £85.

PALMER'S Garage, Tooting.—15h.p. K.R.I.T. touring car, £110; 12-16h.p. Star 2-seat., £55.

PALMER'S Garage, Tooting.—10-12h.p. Darracq 2-seat., £27/10; 10-12h.p. Opel Darracq cab landaulet, £27/10.

PALMER'S Garage, Tooting.—15-20h.p. Flanders 4-seat., nice order, accessories; £85. [9352

HUMBER, 10-12h.p., 4-cyl., 1906, 2-seat.; £32/10.—Marshall, Castle St., Cambridge. [X2493

1914 Singer Light Car, dynamo set, complete lamps, speedometer, etc.; £165.—Cross, Agent, Rotherham. [X2569

PHŒNIX 2 or 3-seat. Car, 8-10h.p., mag., Stepney, lamps, all complete; £40.—Buckingham, Tindal St., Chelmsford. [9171

DARRACQ, 10-12h.p., 1908, 2-seater, dickey, lamps, Stepney, head lamp, just been thoroughly overhauled and re-painted; £30, or exchange.—Below.

ARGYLL, 10-12h.p., mag., 2-seater, dickey seat, quiet running, gate change, painted yellow, lamps, Stepney, all tyres splendid; £27/10.—Butterworth, Garage, Mill Lane, Brixton Hill. [X2454

8-10h.p. J.A.P., Multi gear, new tyres and tubes, 2-seat, and dickey, fine condition; £70, or exchange.—Dawson, 60, Regent St., Cambridge. [X2659

ALLDAYS, 10-12h.p., smart side entrance, mag., hood, screen, lamps, etc., good order; £30, bargain; part exchange modern lightweight.—96, Crown St., Ipswich. [X2622

10h.p. Hurtu Light Car, small 4-seat, torpedo body, hood, screen, side curtains, Stepney, 5 lamps, this is a grand little car, in perfect order, 35 miles per gallon guaranteed, and a real bargain at £110.—Leavis, Downham. [9157

SAXON and Ritz Light Cars at motor cycle prices. 4-cyl., water-cooled, 2 speeds, reverse, hood, screen, all on, 100 gns. and £120 respectively; motor cycles in part exchange; deferred payments; promptest delivery.—Lamb's, 151, High St., Walthamstow. [0533

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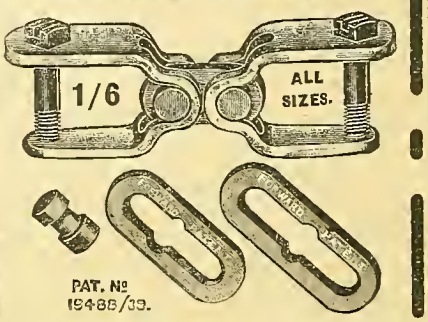

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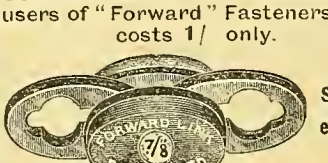

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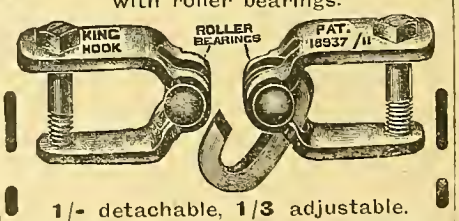

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"KING HOOK" Leather-covered Link, the only make that will fit all our hook fasteners.

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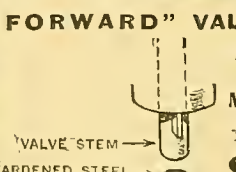

Made in 3 sizes. 5/16" 3/8" and 7/16"

6d. the set of four.

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SIMPLE YET PERFECT.

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CARS FOR SALE.

1914 R.M.C. 2-seat., double dickey, Brolt starter, Rushmore lighting set, detachable rims, spare, 3,000 miles only, been well kept; any trial; £185.—Leavis, Downham. [9159

1913 5-seat. Ford, just re-painted and overhauled, Stepney, Master vibrator, best electric head lamps, 2 new covers and tubes just fitted, speedometer, etc.; £85.—Leavis, Downham. [9158

BARGAIN.—28h.p. Daimler brake, mag. ignition, 4-speed forward, chain drive, detachable rims, in perfect order; £80; would take cheap sound landaulet part.—Ward, Stoke Ferry, Norfolk. [9117

EXTENDED PAYMENTS.

EXTENDED Payments.—All makes supplied; lowest terms.—Service Co., 292, High Holborn, London. [0618

PAYMENTS by Instalments, any make of motor cycle or car. Details arranged to suit customer.—Colmore Depot, 49, John Bright St., Birmingham. [8105

ENGINES.

F.N. Engine, 5-6h.p., complete with clutch.—Roberts, Lisvane, Ebbw Vale. [9059

PRECISION Spares.—Sole London stockists, Grandex, 83, Gray's Inn Rd., W.C. [3235

6h.p. Rex Engine, mag., and back wheel; £9, or offers.—Dinnage, Amberley, Sussex. [X2023

3½h.p. Ariel Engine only, splendid condition, £5; B100 saddle, as new, 10/-; 7ft. 6in.×2½in. Whittle belt, 7/6.—J.B., 12, Albion Place, Winchfield, Hants. [9204

6h.p. Twin Brown Engine, complete with inlet and exhaust pipes, new bearings throughout, perfect condition; £8/10.—Boyle, 75, Osborne Rd., Forest Gate, E. [9255

8h.p. J.A.P. Engine, 1912, perfect, re-bushed, Bosch waterproof mag., Binks carburetter, £17; new 500 cc. Spack engine, single-cyl., Bosch mag., £13.—1a, Bloomfield Rd., Plumstead. [X2436

8h.p. New J.A.P. Twin, air-cooled, £18/10; new Premier 4h.p. twin, mag., carburetter, silencer, £12; 4½h.p. Stevens, single-cyl., splendid condition, £6/10; 3½h.p. Minerva, m.o.v., £4; 3h.p. N.S.U., £3; 3½h.p. Rex, £3/10; new J.A.P. cylinders, 70 mm., 76 mm., 90 mm., 20/- each.—Murray's, 37a, Charles St., Hatton Garden, Holborn. [X2637

IGNITION APPLIANCES.

U.H. Magneto, single; £2/10.—Cliff and Son, Eltham. [9196

PARKER and Rice, Magneto Specialists.—Experts on all magnetos, Bosch, Eisemann, etc.

PARKER and Rice.—Re-winding, re-magoetising, overhauling, etc.; repairs executed with expedition and unapproachable workmanship; low quotations.

IMPORTANT.—Parker and Rice give 12 months' written guarantee with each repair.

PARKER and Rice, John's Place, Kieg St., Acton, London.—State your trouble. Let us quote you. [4292

SEND Your Magneto Repairs to the Runbaken Magneto Co., Ltd., Camp Street Works, Deansgate, Manchester. 'Phone: 8266 City (3 lines) T.A.: Runmag, Manchester.

REPAIRS.—The Runbaken Magneto Co., Ltd., have the largest and best equipped works in this country for dealing with this class of work. Moderate charges. Can return within 24 hours.

SPARES Department.—We can supply from stock all spare parts for Bosch, Eisemann, Mea, U.H., etc. Send for illustrated booklet.

THE Runbaken Magneto Co., Ltd., Camp Street Works, Deansgate, Manchester. 'Phone: 8266 City (3 lines). T.A.: Runmag, Manchester. Call or write. [0404

BOSCH Magneto, twin, waterproof, 1914, brand new; £5/15.—110, Willow Rd., Birmingham. [X2663

BASTONE'S for Magnetos, singles and V type 2-cyls., and right prices.—228, Pentonville Rd., King's Cross, London. [8041

MAGNETO Repairs and all spare parts.—The Runbaken Magneto Co., Ltd., Camp St. Works, Deansgate, Manchester. Tel.: 8266 City (3 lines). T.A.: Runmag, Manchester. [0715

MAGNETO Repairs to any kind of magneto by Bosch specialists; expedition and moderate charges; 1 and 2-cyl. magnetos in stock.—The Magneto Mart and Repairing Co., 142, Wardour St., W. [9339

JEBRON, registered 291298, greatly superior to platinum, unequalled for blades, screws, etc.; cures misfiring; 2/6 each rivet; Jebron screws, fit Bosch magnetos, 5/6 pair; old screws Jebronized, 2/6 each.

JEBRON Contacts, used by Messrs. Collier Bros., Colver, Martin, making world's records.—Jebron, 38, Herbert Rd., Woolwich, London, S.E. [X4331

BIRMINGHAM.—Magneto Repairs.—Re-winding, re-magnetising, and overhauling promptly executed; moderate charges.—The Electrical Trades Supply Ltd., 41, Gt. Charles St., Birmingham. T.A.: Motors, Birmingham. [5610

THE MOTOR CYCLE
ESTABLISHED IN 1903
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Telephone: 10 Coventry (five lines).

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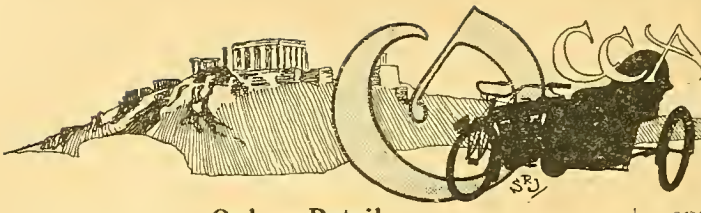
Single-geared Machines and Hill Climbing.

MOTOR cyclists may be divided into two classes, those who search for hills, and those who seek to avoid them. It is a curious statement to make in these days of the motor cycle industry, now, roughly speaking, twelve years old, but there seems to be a distinct increase in the number of readers who ask us for routes and who specially mention that they wish to avoid hills. It is inconceivable to the owners of the most perfected high-class machines that motor bicycles should exist which will not climb any main road hill in the kingdom. The average rider has every right to expect any machine of well-known make he purchases not only to take every main road hill in the country, but to enable him to do a little mountain climbing off the beaten track, where he may get "far from the madding crowd" and enjoy the beauteous views which cannot be reached otherwise.

The state of the roads at the present time, damaged as many of them are by military traffic, often entails the traversing of avoiding routes which are exceedingly hilly. Take, for instance, the road from London to Exeter. The roads through Salisbury, Amesbury, and suchlike military centres are in places unrideable, but, apart from this, the scenery on these roads is poor in comparison with that by the coast road through Bridport and Lyme Regis. From Dorchester onwards there are numerous steep ascents, none of which, however, should cause the least anxiety to the rider of a 1915 model. This particular road happens to be the only one we can recommend to the west country, and we do not doubt for a moment that eventually complaints will come in that we have recommended a certain road the hills on which are unclimbable by modern single-geared lightweights. Again, the Exeter-Okehampton-Launceston-Bodmin road, never very good as far as Okehampton, is reported to be in bad condition, and the alternative route over Dartmoor, *via* Moretonhampstead and Tavistock, is one succession of long and steep hills, or if a detour is made *via* Plymouth the road is by no means level, and the Hamoaze has to be crossed by the Torpoint ferry. Such instances could be increased if necessary.

The Motor Cycle has done so much to introduce the necessary change-speed gear to motor cycles, and its efforts have been crowned with so much success, that, for the last two years or so, very few single-geared heavyweights were made. Yet now, in 1915, it is with considerable surprise that we have to record that makers are actually listing low-powered single-geared machines which should have at least three speeds, and the public buy them, thinking that they will go anywhere and climb any hill that may be encountered. It is up to the prospective motor cyclist to bear in mind that the lower powered the machine, the greater the necessity for a change-speed gear, and, further, the smaller the engine the more gears are necessary. If it is found desirable that the 3½ h.p. machine should have three speeds, it is all the more desirable that the 2¼ h.p. should have four speeds. Four speeds are perhaps too many to expect in the case of a cheap lightweight, but three at least are required, while, of course, two are immeasurably better than one. The prospective purchaser should therefore remember that his new mount should be capable of taking him anywhere within reason. He will often buy with the object of travelling not more than sixteen miles an hour, and never taking a journey longer than twenty miles in length, but such are the fascinations of the pastime that it is not many weeks before the tyro is touring far afield and driving his machine within a very little of its maximum power. It is the duty of the buying public, therefore, to see that they get machines which will enable them to enjoy, to the fullest extent, touring in this beautiful country of ours.

An index to the advertisements in this issue will be found on the page facing the back cover.



OCCASIONAL COMMENTS

BY "IXION"

Only a Detail.

In the dim pre-historic past of the motor cycling era you could always identify a motor cyclist by the abrasions on his hands. Every machine on the market was made of assembled bits, and such items as the valve lifter and brake handles were bought by the hundred and screwed into place with spiky brackets, sharp-edged nuts and bolts, and not infrequently miniature little bayonets and *chevaux des frises* in the form of spring catches. The rigid forks and unbalanced engines kept the driver's hands in a state of violent and perpetual vibration, until at last his hands became so calloused and scarred that further wounds could not be inflicted by any smaller tool than a steam hammer. We pioneers were a sturdy and long-suffering race; we had undergone similar tortures on the earlier push-bicycles, and we knew that as each manufacturer settled down to construct his own machine from stem to stern, he eliminated these petty worries, and gave us smooth handle-bars with rotund fittings. The same process, we fondly imagined, would be followed with motor cycles, as they developed. We were fools. After nearly twenty years, many motor cycle manufacturers still bolt on the spikiest fittings imaginable. I know I can wrap the offending protuberances in insulating tape, and so rob them of their marked resemblance to barbed wire entanglements; but I cherish a deep and sullen resentment against the fool designer who is responsible; and there is more than one of him.

The Haunting Misgiving.

I am nothing if not frank, so let me confess that dynamo lighting reminds me to some extent of the early days of motor cycling, when every ride was tempered with the cynical expectation that ere long one's timing gear would shear, or one's contact breaker drop off. I was once driving an electrically lighted car by night over strange roads, when the capricious dynamo seized on a blind corner in its spite, and plunged the world into darkness without a moment's warning. Never did two human feet descend on clutch and brake pedals with more weight or abruptness; and this is surely the main weakness of electricity as an illuminant. Acetylene gas usually heralds a fit of misconduct by evincing a fit of the jumps, unless, of course, you have been fool enough to mount your rubber pipe where a knee-twitch may pinch it, or a swing tangle it in the front wheel. But electricity always acts with the mobility of a jerboa. At 11h. 57m. 43s. the road is bathed in brilliant light for half a mile ahead; at 11h. 57m. 43.5s. you find the world has disappeared into Stygian darkness; and your safety may depend on whether the surroundings are wide and straight, or whether your mental retina retains sufficient impression of what lies ahead to give space for a safe stoppage; or on the happy chances that protect us poor fools of motor cyclists in hours of peril. Such appalling incidents are, of course, few and far between. I can only recall one instance of a smash due to this ever-present possibility; and in my own experience of the kind I emerged scathless.

Electric Outfits on Test.

So far I have experienced no trouble whatever with my electric lighting sets, apart from the batteries, which, being new, run down extremely fast—faster, indeed, than I am able to repair by dynamo charging. Each of them has been removed from the machine on two or three occasions to be charged up at a garage. When the cells settle down, I hope that the dynamos will be able to keep the voltage up to the proper level, though, judging by present experiences, I rather think it may be necessary to keep them on charge during the bulk of my day work whenever the lamps are in regular use. A neighbour of mine, who is using a Lucas outfit on a big sidecar combination, has not yet experienced this difficulty, owing to the fact that his battery, being stored in the sidecar, is altogether more substantial and capacious and the dynamo is able to keep it up to the mark. His sole trouble has been a broken head lamp lead, due to the fact that he did not bind the wire to his top tube at a point near the lamp socket, and the long sag he left in it caused a fracture through excessive sway. He has now taped this up and is happy.

A Trade Innovation.

I notice with some irritation that the trade—or a large section of it—has suddenly ceased to supply tyre repair outfits as part of the standard kit. I have taken delivery of four new machines during 1915, comprising three different makes, and in no single case has a tyre repair outfit figured in the equipment. Of course, these details are conventional. Nobody expects to discover spare valves, sparking plugs, and belts or chain bits—[Spare links are supplied on at least one chain-driven, two-speed machine.—ED.]—in the panniers of a new machine. But the practice of supplying sundry essential fitments—for example, a few tools, a tyre inflator, and a tyre repair kit—has stereotyped into little short of actual law; and I wonder much what secret cabal has suddenly deprived us of goods to the value of half a crown or so? I suppose the guilty firms will be able to justify their innovation; but they ought at least to make it public property, and so I supply their omission; for have I not twice in this year of grace been overtaken by the puncture fiend on my first trip with a new mount, and has there not been a loud crescendo in my curses, as to the knowledge of a flat tyre was slowly added the far more disquieting information that my kit contained neither patches nor solution? Perhaps the Government has bought up the whole supply for repairing aeroplane tyres! It might seem so, for the solution in the last two repair kits which I procured from local agents to complete my panniers contained a caricature of solution resembling ancient ink eraser, which had evidently mouldered in stock and dried up completely.

A TRIP INTO KASHMIR
on a motor cycle.

By G. R. H. Talbot.

I HAD long meditated making a trip into Kashmir, but, owing to its great distance from the eastern side of India, it was some time before I had an opportunity of doing so. However, at last I was able to get away for eleven days, and accordingly I set forth from Calcutta by the East Indian Railway Punjab mail train.

April is one of the hottest months of the year in Calcutta, and I was greatly looking forward to the prospect of being shortly in a climate comparable to that of England. The journey was a long and hot one, and beyond passing through some of the most important towns in India, *e.g.*, Allahabad, Cawnpore, Umballa, and Lahore, there was little of interest to be seen.

The Delights of a Cool Climate.

Umballa, a large military station, was reached at about six o'clock in the morning, and it was necessary here to transfer to the North-Western Railway train, which left about an hour later. Thenceforward to Lahore the journey was, if anything, of even less interest than the previous portion, the country traversed consisting mainly of dried-up rice fields. A somewhat protracted stop was made at Lahore for luncheon, or "tiffin" as it is called in India, but eventually the train got going again. Towards evening there was a marked drop in the temperature, and this continued as the train rolled on its way through deep cuttings and tunnels, gradually getting into much higher country until Rawalpindi, 2,000 feet above sea level, the base from which my journey was to be made, was reached at about eight o'clock on Monday night. It was, indeed, a relief to find that here there was at present no need for the punkah or electric fan. In Calcutta one has to start using fans about the middle of February, but in Rawalpindi the hand-pulled punkah is not brought into use until June. I was glad to get out of the train, as I had been travelling almost continuously for two days and nights, and had come almost 1,400 miles, and after seeing my luggage and machine, a free engine Triumph, safely on to the platform, I managed to get dinner of a sort at the station. After this I went to search for an hotel, and found one near the station.

A Long and Tricky Climb.

The distance from Rawalpindi to Srinagar, the capital of Kashmir, is, roughly, 200 miles, and I hoped to be able to accomplish this within the day, as I had previously sent on my luggage by mail tonga (a curious sort of two-wheeled conveyance drawn by two horses, the usual vehicle for passengers and mails between the two places), and although there are rest houses at intervals along the road where meals, etc., can be obtained, no bedding is available, and if one wishes to stop the night, it is necessary to take one's bedding with one. Bearing this in mind, I got up at about 5.30 the following (Tuesday) morning, but it was nearly eight o'clock before I started.

The road for the first fifteen miles is more or less level, but after the twenty-third mile there is a stiff climb of about 4,500 feet to Murree, which is 7,000 feet above sea level. The road on this occasion was very greasy and slippery owing to recent rain, and with sharp hairpin bends and a heavy traffic of bullock carts, troops, and camels, it was at times a difficult matter to keep the machine upright, though the actual surface of the road was not bad on the hill portion. When within two miles of Murree the road to Kashmir continues to the left, and that to Murree branches off to the right, and is a stiff gradient from about 1 in 10 to 1 in 5 right into the town. I decided to go there before proceeding on my way, firstly to get breakfast, and, secondly, because an awful thought had just struck me, namely, that the tin of petrol that I had had sent on previously had been sent to the wrong place. I had intended to have it sent to a place about 100 miles from Rawalpindi, roughly half way to Srinagar, but I then realised that I had made a stupid mistake and had had it sent to Uri, 100 miles from Murree instead of from Rawalpindi.

A Quest for Petrol.

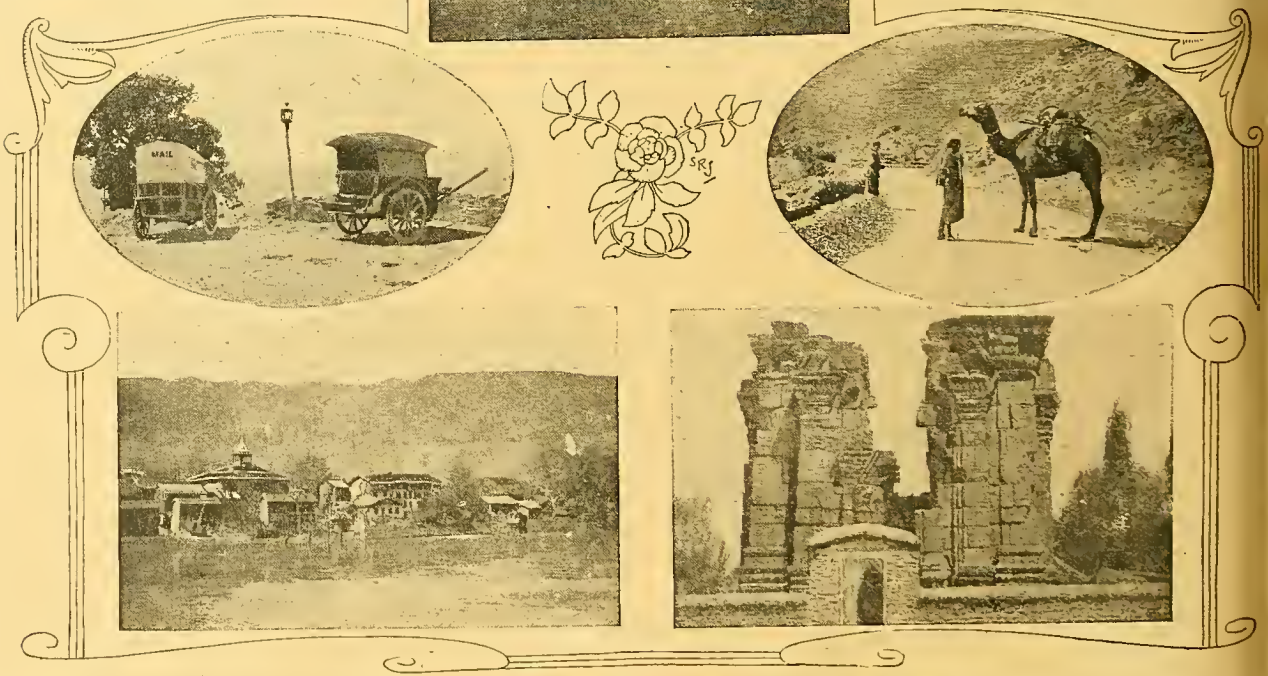
While having breakfast at a comfortable little hotel perched on the side of the hill, I made enquiries as to whether there was any possibility of my getting any petrol in the town. At first I was told that it probably could be obtained at the chemist's, and a messenger was accordingly sent off to get some, but before long he came back and said that there was none to be got either there or at any of the other shops. This was cheerful news, as my petrol was 100 miles ahead, and I only had about two-thirds of a tankful left! I thought it might be just as well to go up to the town (about half a mile above the hotel at which I was) and make quite certain that none was to be had, so with a vigorous push I got going up the gradient, which must have been about 1 in 5, rather too stiff for a free engine start, and made for the chemist's shop. After much hunting a quart bottle of the precious fluid was found—the whole available stock in Murree. I carefully poured

A Trip into Kashmir on a Motor Cycle.—

it into the tank, but was still very doubtful as to whether I should have enough to carry me the hundred miles; however, it was no good waiting any longer, and, as it was now nearly one o'clock, I made a start.

A Glorious Bit of Coasting.

In some ways the bit that now followed was perhaps the most enjoyable of the whole journey. It was one long continuous coast of 31½ miles with the exception of about a mile or two of almost level ground shortly after getting clear of Murree. In this distance one drops 4,950 feet, and it was possible to go almost the whole way with the clutch out—a most delightful experience. Shortly before reaching Kohala one can see the River Jhelum winding its way about between the mountains on either side, and it is at Kohala that one crosses the river and finds oneself in Kashmir territory. From here forward the road continues on the left-hand bank of the river, sometimes being only about fifty feet above the water, but at times 100 feet or so with an almost sheer drop down. It is an interesting bit of road, as it is cut out of the side of the precipitous bank, and, in one or two places, passes through tunnels cut in the solid rock. After I had gone some four or five miles from Kohala it began to thunder, and in a few minutes it was pouring with rain in a way that it only does in the tropics. It soon became too bad to go on, as, apart from the rain, the road was so slippery that it was almost impossible to keep the machine upright, so I took shelter in a roadmender's hut which I found a little further on until the worst was over. When it had cleared up a bit I started again, but the road was still terribly slippery, and it was only possible to proceed at about five miles an hour, and even at this pace I was continually skidding, and on one occasion found myself facing in the direction from which I had come. However I got along as best I could to Dulai, where there is a charming little dâk bungalow by the side of the river. This was named "Honeymoon Cottage" by Lady Dufferin. Here I had tea while my clothes were being dried in the sun. It had now got so late that reaching Srinagar that night was out of the question, and I decided that the best thing to do would be to stop at the dâk bungalow at Domel for the night. This I did, and it was rather an uncomfortable experience, as I had no spare clothes with me and no bedding.



(1) Reservoir near Srinagar. The mountains are always snow-capped.

(2) "Tongas," in which mails and passengers are carried in certain parts of India.

(3) On the way up to Simla.

(4) Grass-topped houses on the way to Srinagar.

(5) Ruins on the Kashmir road.

A Pleasant Evening.

The first thing I did was to have a bath. The khansamah (man in charge of the bungalow) produced some soap, but said he had no towel, so I had to dry myself with a series of dinner napkins! He lent me a most gorgeous pair of Indian shoes and also a blanket—about the latter the less said the better. There were some other European travellers staying in the bungalow on their way up to Srinagar and also the road engineer, and we had quite a cheery

A Trip into Kashmir on a Motor Cycle.—

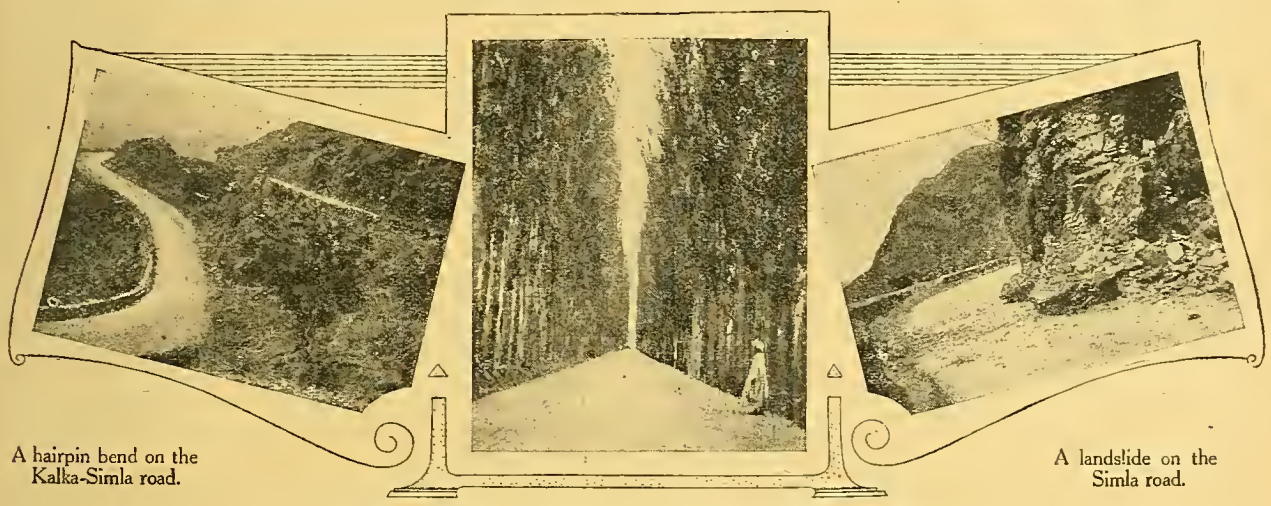
dinner on the verandah. I slept in my waistcoat and overcoat, with my waterproof overalls as a pillow. In spite of my improvised bedding, I slept soundly and awoke quite fresh and fit the next morning, and, after a bath and breakfast, I started off again, my machine having in the meantime been cleaned. But I was very doubtful whether the petrol still left in my tank would carry me on to Uri.

Getting Along by Slow Stages.

When I got to Chakoti, thirty-five miles from Domel, I looked to see how much petrol I had left and saw there was only a very little in the bottom of the tank, but, as it was only fourteen miles on to Uri, I decided to risk it, as the only alternative was to buy some kerosene oil in a bottle from the khansamah of the dâk bungalow, and I was anxious to avoid doing this if it could be avoided, owing to the difficulty of carrying it. All went well for about five miles, when the machine began to slacken and finally stopped owing to the petrol having given out! As it happened there was a horse changing stage a few yards further on, where I eventually succeeded in getting the syces (native grooms) to produce about half a bottle of very dirty kerosene oil. They were quite ready to sell me the oil, but could not be induced to part with the bottle in which they kept it, and which they apparently regarded as a most valuable possession, saying that in order to get another one they would have to go to the nearest village. I had hoped by tipping up the bicycle to use every drop of petrol and to postpone putting in the kerosene as long as possible, taking it with me in the bottle, but as this could not be managed, I had to pour the filthy stuff into the tank. The engine started quite easily and off I went, but my luck was not to last for long, as, after going two or three miles, I again came to a standstill, having used up the kerosene.

I was still some six miles from my petrol, and I started pushing and pedalling alternately, but soon got tired of this. I then espied a native rider coming towards me, and I endeavoured to induce him to let me harness his horse to my machine and tow me, but he would not agree to this, saying that his pony would jump over the precipice. However, he volunteered to go on to the next village and get coolies to push the bicycle. Meanwhile some men came along and I got them to push me into the village, some two miles away. Here at a native shop I got some more kerosene, but, as the engine was by now quite cold, I could not induce it to fire. As being pushed by coolies was a somewhat slow and monotonous procedure, I chartered an ekka (a weird sort of two-wheeled conveyance with a canopy over it drawn by a pony), fixed a long rope to it, and, taking one end in each hand, was towed the last four miles or so of the twisting mountain road into Uri, a pretty village surrounded on all sides by hills. Hurrying to the dâk bungalow, my first question to the khansamah was whether my petrol had arrived, and it is putting it mildly to say that I was glad when he answered that it had

The next stage was to Rampur, thirteen miles from Uri. The road here makes a long *détour* up the valley, and then continues along the side of some rocks. Near this point one sees the large electric works—rather a blot on this lovely country—which are worked by the concentrated energy of the Jhelum river, the water being conveyed some six miles in a large flume and falling some 400 feet. The generated current is conveyed from the power house to Srinagar, about fifty-five miles, by means of overhead wires.



A hairpin bend on the Kalka-Simla road.

A landslide on the Simla road.

View of the Avenue which, with the exception of a few breaks, extends to a distance of thirty miles into Srinagar.

An Interesting and Beautiful Road.

From Rampur to Baramulla the road is comparatively level, but by no means uninteresting on that account. About half way through this stage one gets a view of the Nanga Parbut peak, some 26,900 feet high. Apple blossom and any number of varieties of wild flowers are much in evidence, and the atmosphere is as different from the humid climate of Calcutta as chalk is from cheese.

Near Baramulla the river becomes navigable, and many people join their houseboats there and finish the thirty-five odd miles to Srinagar in them. After having had tea at a charming dâk bungalow by the side of the river, on which were to be seen many house-boats and dungas (a smaller and less elaborate type of

A Trip into Kashmir on a Motor Cycle.—

boat), I resumed my journey. It was now about 6 p.m., and I soon had to light my lamp. From here to Srinagar—34½ miles—the road runs through an almost continuous avenue of chenar and poplar trees. Being dark it was very difficult to discern anything ahead owing to the shadows cast by the trees, and I very nearly ran into a horse which had strayed into the road.

At last I reached my goal—Srinagar—at about 9.30 p.m., and although the actual distance from Rawalpindi—over 200 miles *via* Murree—is not a particularly arduous journey on an ordinary road, it is distinctly trying when one is riding continuously along the edges of precipices and turning hairpin corners.

Motor Boating at Srinagar.

Srinagar is a delightful place, and in some ways resembles Venice. The river is really part of the town and flows right through the centre of it, and in the distance are the snow-capped mountains. Many people spend several months in and around Srinagar in houseboats, shooting and fishing. Unfortunately I had no time for this, as I was only there about two and a half days. The first day was wet, and it was not possible to do more than have a look round the place. On Friday I went to the Dal Lake by motor boat, starting from my friend's house. The only difficulty we had was keeping the propeller clear of the large quantities of weed to be found in the lake. Just at the entrance to the lake from the river backwater is a bridge underneath which one passes, and on coming back one is literally shot through owing to the narrowness of the opening. In the evening I went on my motor cycle to see the Nishat and Shali Baghs—old Mahomedan gardens a few miles outside Srinagar. They are formed in terraces, and although not very bright in the way of flowers, they are well supplied with trees, and having mountains as a background, a lake in front, and clumps of lavender and lilac in between, the effect is very beautiful.

A Narrow Escape.

The next day I had to start on the return journey, and decided to take it rather more easily than I did on the way up, and so stopped the first night at Uri. As usual, there were no bed-clothes, so I had again to sleep in my overcoat, and very chilly it was in spite of a wood fire burning in the room. As a result of my scanty covering I succeeded in getting a stiff neck.

After putting into the tank the remainder of the petrol that I had left at the bungalow on the way up, I started off in the morning and very nearly annihilated a landau which I met somewhat unexpectedly round one of the numerous turns in the road. However, we just managed to escape each other without damage.

I stopped for lunch at Domel dâk bungalow, and then went on to Dulai, where I found the petrol that I had telegraphed for on the way up. Nothing of particular interest happened between here and Kohala, where I had tea at the dâk bungalow, which is situated in a most awkward position some fifty or sixty feet above the road, and reached by a steep path.

A Visit from the Police.

Leaving Kohala, I started on the long climb to Murree. The difference in temperature is very marked after one has ridden for about an hour, and by the time I got to Rowbury's hotel, over 7,000 feet above sea level, where I stayed the night, it was quite cold. Shortly after my arrival I had a visit from the inspector of police, who came to warn me for having ridden my motor bicycle within the town on my way to Kashmir and again that day. It appeared that this was against the regulations. I had an inkling that this was so on the way up, as a native constable had waved a notice at me, but, as I did not wish to walk up the hill, I thought it best not to examine the said notice too closely. After a night's rest I left Murree on the last portion of my road journey. For the first twenty-five miles it was mainly coasting and then more or less level road. The journey was completed without incident, except for a tyre bursting about three miles outside Rawalpindi. This I temporarily repaired by means of a loose bit of canvas, and this was the only tyre trouble I had throughout the trip. I carried a spare cover and two or three spare tubes with me in case of necessity.

The next morning I left Rawalpindi by the mail train at six o'clock, eventually arriving in Calcutta forty-eight hours later, after what was the most strenuous eleven and a half days' leave I have ever had. The latter part of the journey in the train was stiflingly hot—in fact, we were delayed in the middle of the day on account of a rail having buckled owing to the extreme heat.

NEWS FROM THE No. 3 BATTERY, M.M.G.S.

THE letter from A. G. C. Wheeler, of the No. 10 Battery M.M.G.S., published in our issue of July 15th, has produced another equally interesting epistle from a member of the No. 3 Battery, also on active service. The writer is Art.-Sergt. C. G. Turner, and we give extracts herewith:

"In *The Motor Cycle* of July 15th, page 59, I note reproduction of a letter from A. G. C. Wheeler, of No. 10 Battery M.M.G.S., and I think that perhaps you would care to have some news regarding the No. 3 Battery to which I belong. We have been in the firing line since March 6th, with very few rests in between, and we are still going into the trenches in sections and also as a battery. I would like to say that our machines have often gone up to within 100 yards of the fire trenches, as an inspection of the machines will show. Another way in which we have been used is in anti-aircraft work, and *very* successfully too.

"The neighbourhood we operate in is noted for its shell fire, but in several attacks in which we have been used, we have wiped out many a score, I am pleased to say. Our last trenches and the ones we are using now are not more than thirty yards from those of the enemy, and we see plenty of Huns. We are, in fact, so near that trench mortars are used, also hand bombs. Artillery certainly does dominate in this war.

"Our Daimler car drivers are real heroes. Going up to within a few hundred yards of the enemy with rations, etc., for our boys is very trying, especially at night. Bullets, shells, and gas galore, and the roads (?) a succession of shell holes."

ROAD TESTS OF NEW MODELS.

THE 4 h.p. DOUGLAS.

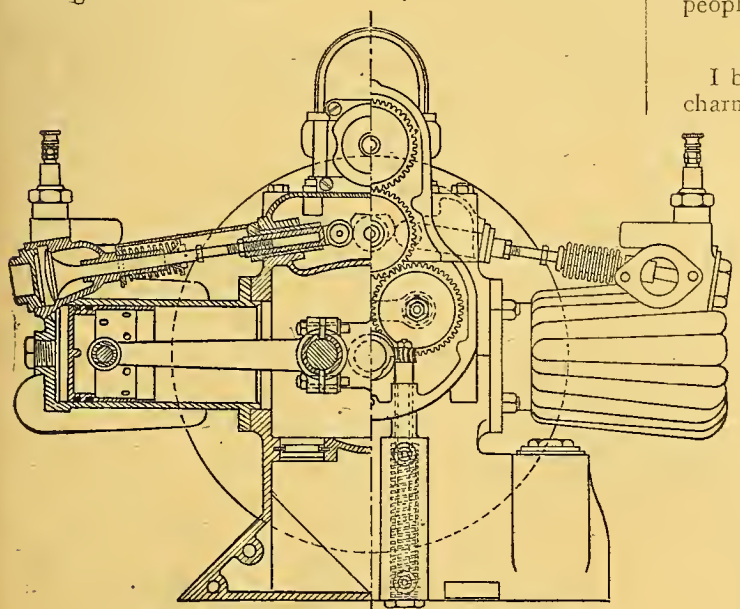
Engine 74·5 x 68 mm. bore and stroke (594 c.c.) Horizontally opposed cylinders. Three-speed gear, ratios 5¼, 8¼, and 12½ to 1. Cork insert clutch, chain and belt drive.

THE engine of the 4 h.p. Douglas must not be considered to be a copy of the better known 2¾ h.p. of the same make. There are many points of similarity, it is true—horizontally opposed cylinders, excellent balance, even firing, and outside flywheel; but there are also many points of difference—the valves are placed side by side above the cylinders and operated by a single camshaft, the stems and springs being enclosed, the silencer is low down in front of the engine instead of being underneath, and the oil is carried in a sump which is an extension of the crank case, no oil being carried in the tank, which is reserved for petrol only.

The Lubrication System.

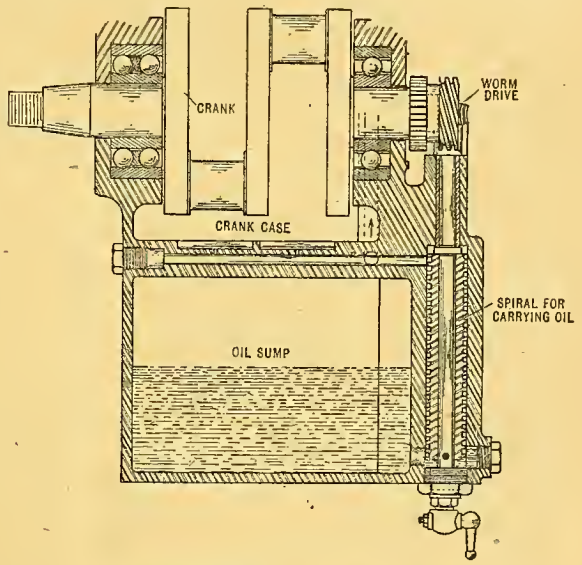
The method of lubrication to which we have just referred is very simple and effective, as well as being practically foolproof. When the oil is placed in the sump beneath the crank case the rider can dismiss the question of lubrication from his mind until he has travelled 500 miles or so, but it is better to add a little oil at more frequent intervals. Reference to the accompanying drawings will clearly show the method of working at a glance. The oil is raised from the sump by an elevator on the Archimedean screw principle to troughs into which the big ends dip. These throw the oil into the cylinders, whence channels convey it to the other bearings. The surplus drains back through a filter composed of two gauzes into the reservoir for future use. The elevator is driven by a worm on the crankshaft at one-third engine speed. That this works well in practice will be seen later.

Both crank and camshafts are carried on ball bearings, but the big end is fitted with a plain bearing.



Part sectional side elevation of the 4 h.p. Douglas engine.

The 4 h.p. Douglas sidecar outfit, selling at £77 complete, ranks as a cheap, low-powered combination in these days of three-figure 8 h.p. sets. As such, it has perhaps a better chance of ultimate survival than most, for the costlier types are bound to be hit rather hard in time by the competition of light cars in general, and particularly by the second-hand British



The Douglas lubrication. Oil sump and elevator.

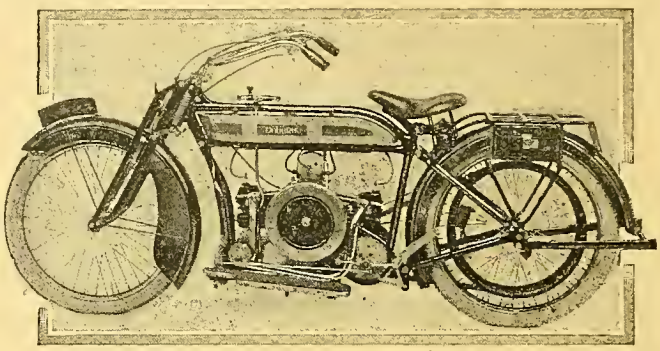
light cars and the new-imported Yankees, like the Trumbull, the Saxon, and the Scripps-Booth. Consequently the future of sidecars may depend more on the low-priced 4 h.p. combinations than many people are ready to admit.

Practical Tests by "Ixion."

I bought my machine for solo work, and have been charmed by the ease with which it responds to its kick-starter, in which respect—taking one month with another—it easily excels any single-cylinder I have owned. The clutch is exceedingly sweet, and the normal speed of the engine on the top ratio of 5¼ (sidecar gear) is 35 m.p.h.; express train speeds are possible on full throttle, and the engine will turn over smoothly in traffic on the merest whiff of gas. The indirect gears are unusually silent, and on the bottom gear of 12½ anything can be climbed. Acceleration is quite a unique feature: the engine is much better silenced than the 2¾ h.p. of the same make, whilst retaining all its balance—in fact, I think its balance is better, and, excluding very low rates of revolution, for which I have not yet tuned it up to my satisfaction, the running is more reminiscent of a steam turbine than any motor cycle engine I have yet handled. Increasing wind pressure on the cheeks is the

Road Tests of New Models.

most pronounced sensation as the throttle is opened. The lubrication arrangement is very satisfactory, in that distances up to 500 miles can be covered on a single filling of the crank case sump, and the circulation is such that there is no doubt about every bush getting its supply; in fact, the pressure is so good that a little oil escapes from some joint of my crank case, and I have yet to trace the point. The only defect in design seems to be that the carburetter protrudes rather inconveniently on the right side of the machine, and one has to execute a distinct flanking movement with the calf to get at the brake pedal; but this handicap is common to most horizontal twins of large capacity, and at present can only be countered by setting the brake pedal further out than most designers consider wise.



Flywheel side of the 1915 model 4 h.p. Douglas, the road experiences with which are described in the accompanying article.

I was so smitten with the paces of the machine that I went out of my way to test it with a sidecar, though, somehow or other, I have never been an enthusiastic sidecarist. After driving a sidecar-burdened "choggy" single-cylinder, the horizontal twin is a revelation. The engine seems to ignore the extra load, and is very perceptibly faster and smoother at its work than any single of similar capacity can hope to be. One is not perpetually trying to avoid a knock, or to get the engine to pick up; it is literally made for the job, and thinks nothing of plugging away for mile after mile when occasion requires.

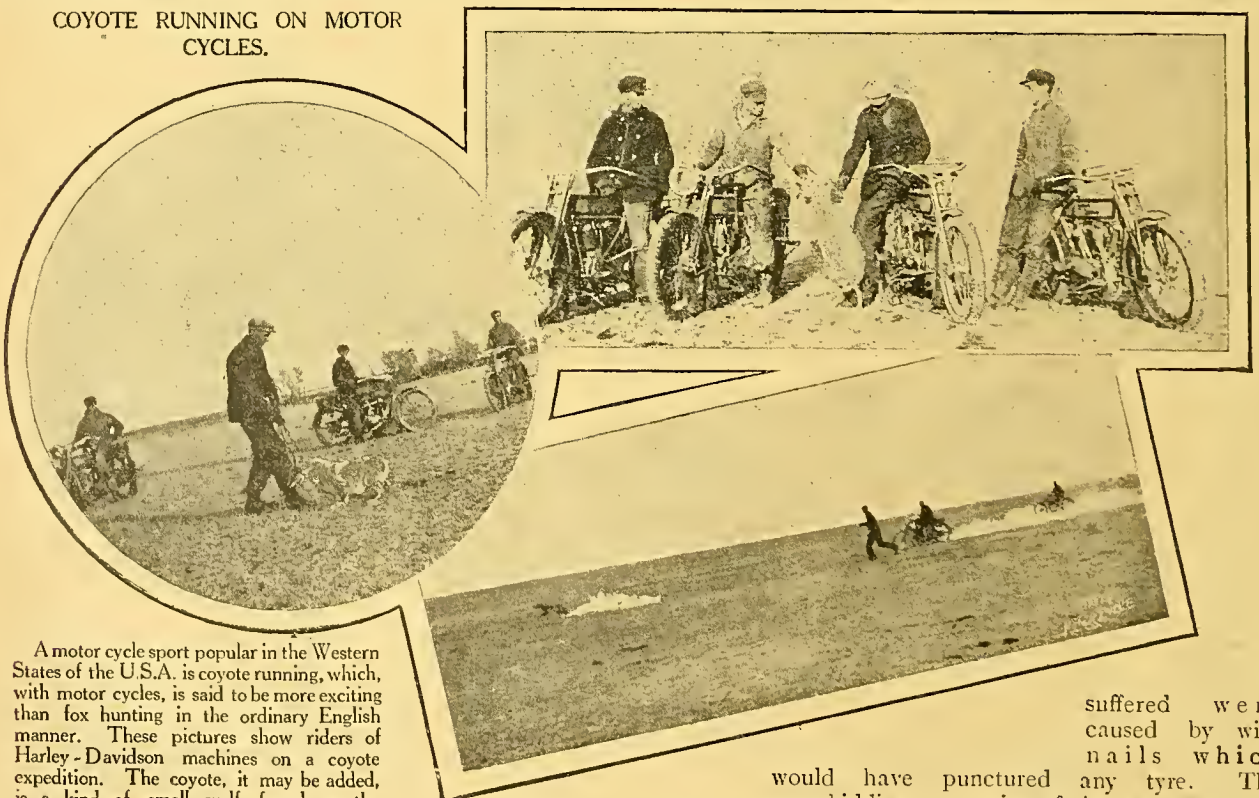
IXION.

A GOOD TYRE COVER.

FOR some little time I have been testing a John Bull Rib-Stud motor cycle tyre. This tyre began its work on the rear wheel of a chain-driven 3 h.p. machine. At the end of 2,730 miles it was removed to the front wheel, not because it was incapable of further work on the driving wheel, but because I wished to make a trial of another cover in the rear position. The total mileage is now 5,700, and careful measurement of the rib-studs shows the thickness to be approximately $\frac{1}{16}$in. in centre and $\frac{1}{8}$in. at the sides, the original depth of the studs being $\frac{5}{32}$in., and the thickness of the rubber below the studs about the same. The cover is 2$\frac{3}{8}$in. in section, and has given no trouble. The two punctures suffered were caused by wire nails which would have punctured any tyre. The non-skidding properties of the tyre are excellent.

AURIGA.

COYOTE RUNNING ON MOTOR CYCLES.

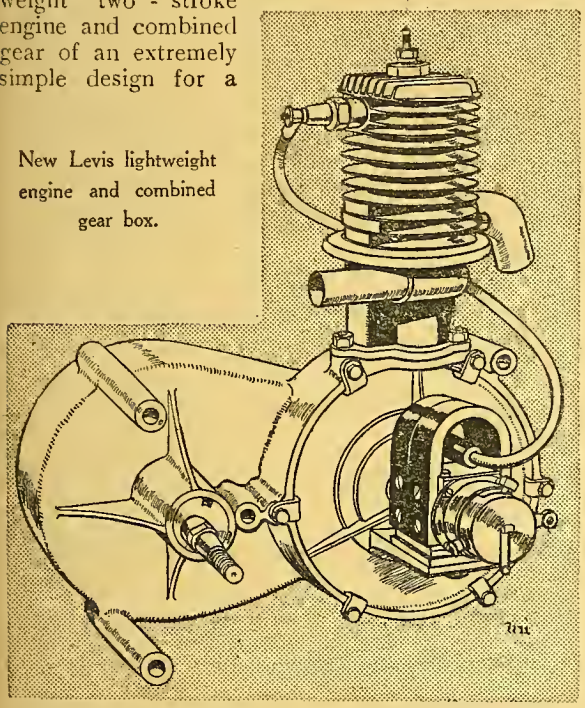


A motor cycle sport popular in the Western States of the U.S.A. is coyote running, which, with motor cycles, is said to be more exciting than fox hunting in the ordinary English manner. These pictures show riders of Harley-Davidson machines on a coyote expedition. The coyote, it may be added, is a kind of small wolf found on the Western prairies of North America.

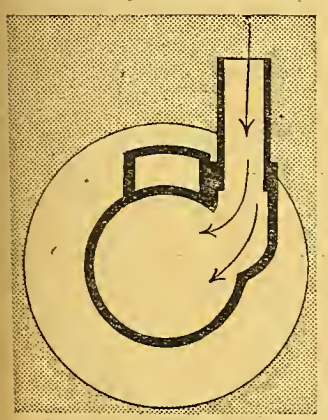
Simplicity in Motor Cycle Design.

A Two-stroke Two-speed Power Unit for a 1916 Model.

THE two-stroke engine, with its absence of valves and valve gear, offers great opportunities to designers of producing extraordinarily simple power units, and not a few have shown themselves capable of grasping such opportunities. In this connection it is interesting to note that Messrs. Butterfields, Ltd., are producing a newly-designed lightweight two-stroke engine and combined gear of an extremely simple design for a new Levis lightweight machine, which is to be placed upon the market at a future date. Several patents have been taken out in reference to this new power unit, and many of the features are of a highly novel character. The cylinder is of the three-port type, with a bore of 60 mm., and a stroke of 70 mm., the nominal horse-power being approximately 2-3, and the cubical capacity 198 c.c. The cylinder is bolted to a very narrow crank case, housing a plain single flywheel which takes the place of the ordinary type crankshaft by having a pin attached to its outer face carrying the connecting rod big end. Both the spindle carrying the flywheel and the connecting rod big end are fitted with Hoffmann roller bearings, and from inspection of a specimen engine at the Levis works we were agreeably impressed by the first-class workmanship put into these parts of the engine. The two-speed gear and clutch incorporated in this unit is the Enfield twin clutch and chain type, and it is carried in a casing cast in one with the crank case, means being provided to allow of the complete gear and chains being adjusted or withdrawn from the casing by simply removing a few screws and a cover plate. The clutch spindle is, as usual, held in an eccentric mounting in order to provide adjustment for the chains. The gear ratios employed are 5¾ and 9½ to 1, and both gears are, of course, direct.



New Levis lightweight engine and combined gear box.

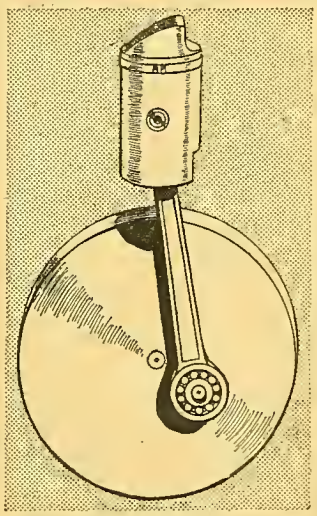


Sectional diagram of cylinder showing streamline entry port.

One of the patents relating to the new Levis engine concerns the simple and direct method of mounting the magneto on a small platform at the side of the engine, and driving it by means of a small dog lever connected to the crank pin inside the crank case. This eliminates the chain and sprocket drive necessary with the usual form of magneto drive on two-stroke engines, whilst the magneto itself is in an infinitely more accessible position and can be more easily removed when required.

The Lubrication System.

The cylinder itself has several interesting features, the chief of which is the new streamline entry port cast with the cylinder and leading from the carburetter. By this arrangement the mixture enters the crank case at a considerably higher speed than with the ordinary type port, thus increasing the general efficiency of the engine. The lubrication of the cylinder is effected by oil being led to an annular chamber which leads the oil to the piston *via* a series of small holes drilled in the cylinder wall, whilst any excess oil is prevented from being thrown into the cylinder from the crank case by base plates as in the ordinary four-stroke type of motor cycle engine. With this arrangement one should therefore have very little trouble from excess lubrication. The piston is a very light and neat piece of work, and only one ring is fitted.



Piston, connecting rod and flywheel of the Levis lightweight engine. Roller bearings are fitted to the big end of the connecting rod.

We should imagine that this engine should do very well in a lightweight machine, as the internal friction of the power unit has been reduced to a minimum, consistent with good wearing qualities, and although of only 198 c.c., the engine should have no difficulty in taking a rider of average size and weight over almost every road and hill in this country with the assistance of the efficient two-speed gear incorporated in the power unit.

"THE MOTOR CYCLE" RECRUITING SECTION.

A fine batch of men recruited last week by the Editor of *The Motor Cycle* for the M.M.G.S.—enough for a complete battery.

LAST week's list of enlistments of motor cyclists and car drivers in Coventry for the Motor Machine Gun Service are given hereunder:

Avison, Arthur D., Rainhill
Britcliffe, C. H., Mansfield
Bower, Harold, Huddersfield
Beckett, J. E., Rochdale
Baker, E. W. C., King's Lynn
Black, A., Sunderland
Bradshaw, W., Manchester (A.S.C.)
Clarke, P. O., Colchester
Dent, J., Ulverston
Darling, W. J., Catford, S.E.
Fuggle, W. H., Slough
Gore, W., Manchester
Hatcher, A. S., Ipswich
Harrison, F., Sheffield
Hall, S., Beckenham, S.E.
Hingeley, C. R., Stourbridge
Hartley, W., Sunderland
Johns, J. E., Devonport
Johnson, A. W., London, S.W.
Lewis, T. A., Aberaman
Langworthy, H. R., Plymouth
Lyon, W. I., London, S.E. (A.S.C.)
Mehew, O. G., Huntingdon
McKenzie, V., Haverfordwest
Merrett, T., Winchfield
Mongiardino, L., London (A.S.C.)
Moffatt, R., Harrogate
Morgan, L. H., Market Harborough (A.S.C.)
Mellor, Norman, Huddersfield
May, W. E. Southcomb, London
McKenzie, C., Coventry
Nelson, E. R., Grimsby
North, P. E., Loughborough
Peel, J. A., London, W.
Phillips, T., Cardiff
Price, T. J. E., Stourbridge
Peacock, W. B. (A.S.C.)
Rawden, T., Grimsby
Rawling, T. J., Cleator
Reynolds, F. J. B., Coventry
Richards, H. (A.S.C.)
Rainbow, J., Letchworth
Simpson, P., Hammersmith, W.
Smith, J. S., Eltham
Scruton, S., Middlesbrough
Stubbs, W., New Balderton
Spalding, A. (A.S.C.)
Taylor, H., Brighouse
Tarry, A. J. W., Northampton
Townley, D., Ashton-under-Lyne
Vitali, J. C., Manchester (A.S.C.)
Walton, A. S., London, S.W.
Woodland, A., Liverpool
Wood, H. M., Bridlington (A.S.C.)
Weight, F. A., Newport, Mon.

The men were examined on Wednesday afternoon, were sworn in, and received their day's pay, billeted out in Coventry that evening, and marched down to the station on Thursday morning.

The number of applications received continues to be most satisfactory. Only a small percentage of the pedal cyclists who apply for admission have been accepted. Men of good physique who have either had previous military training or engineering experience are the type usually selected.

Among the list of recruits will be noticed the name of Mr. Southcomb May, hon. sec. of the Motor Cycling Club (London), who queried us as to a M.C.C. member who might like to take up his secretarial duties.

L. Mongiardino is the third or fourth Britisher who has come over from South America specially to enlist.

A solicitor who attended the inspection, though qualified for a position as car driver at 6s. per day, preferred the motor cyclist's work at 1s. 2½d.—a sporting decision which greatly pleased the other recruits.

One or two despatch riders were examined and passed for the Royal Engineers' waiting list last week.

Still more men are wanted for the new batteries. The form below should be filled in and forwarded to Mr. Geoffrey Smith, Editor, *The Motor Cycle*, Coventry, when a free railway warrant to attend an inspection at the Recruiting Office, Coventry, on Wednesday afternoon next, will be issued to suitable candidates.

A few experienced motor cycle workshop mechanics are wanted. These are A.S.C. men attached to the M.M.G.S.

Name .....

Address .....

.....

Age ..... *Height* .....

Chest measurement .....

How long have you been a motor cyclist? .....

Can you do running repairs? .....

Have you had any previous military training, and, if so, when? .....

.....

Are you medically fit? .....

Occupation .....

When free? .....

Date .....

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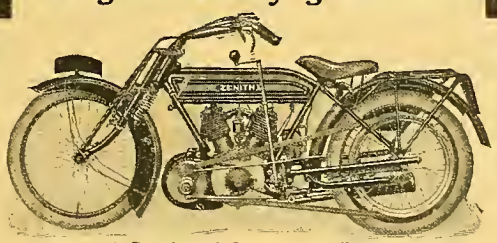

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Model W., 3½ h.p., 85½ x 85 mm. single-cylinder, has been introduced at the request of H.M. War Office, to which a large number has been supplied. We can execute orders for a limited number of private users.

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STANDARD.
TWIN-CYLINDER.

A. 3½ h.p. 70 x 64½ mm.
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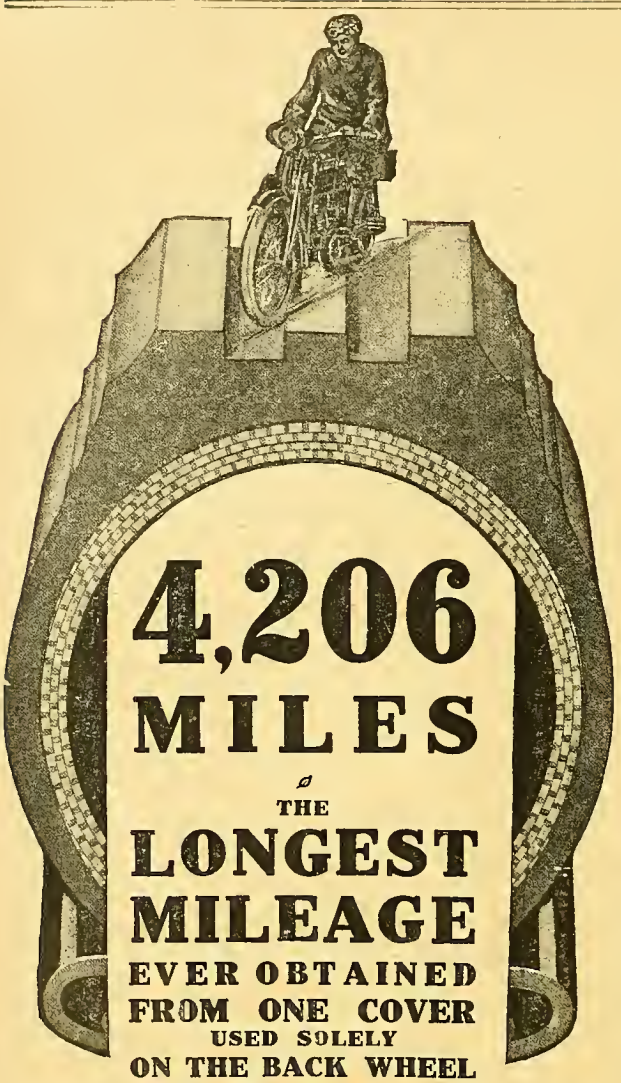
COUNTERSHAFT.
TWIN-CYLINDER.

B. 3½ h.p. 70 x 64½ mm.
D. 4-5 h.p. 70 x 85 mm.
F. 6 h.p. 76 x 85 mm.
H. 8 h.p. 85½ x 85 mm.

ZENITH MOTORS, LIMITED, HAMPTON COURT, ENGLAND.



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EVER OBTAINED FROM ONE COVER USED SOLELY ON THE BACK WHEEL

This result was obtained with a Pedley Tyre by "Magnet" on a big Clyno Sidecar Outfit, who gave his experiences with different makes of Tyres in *Motor Cycling* of May 18th.

Several makes were tested, and Pedley gave the best results and greatest mileage.

Another Pedley Tyre tested by "Magnet" gave 4,762 miles (3,792 back, 970 front) and still running.

These two instances prove once again that the Pedley is the tyre of Highest Quality, Greatest Reliability, Biggest Mileage.

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PEDLEY

"The Biggest Mileage Tyre."
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LODGE PLUGS

has actually been doubled,

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we regret it is not possible yet to satisfy the present unparalleled demand, owing to the enormous number of Lodge plugs required for the war.

ENGLAND'S PREMIER PLUG
Designed for maximum power.

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MAG SILENT ENGINES

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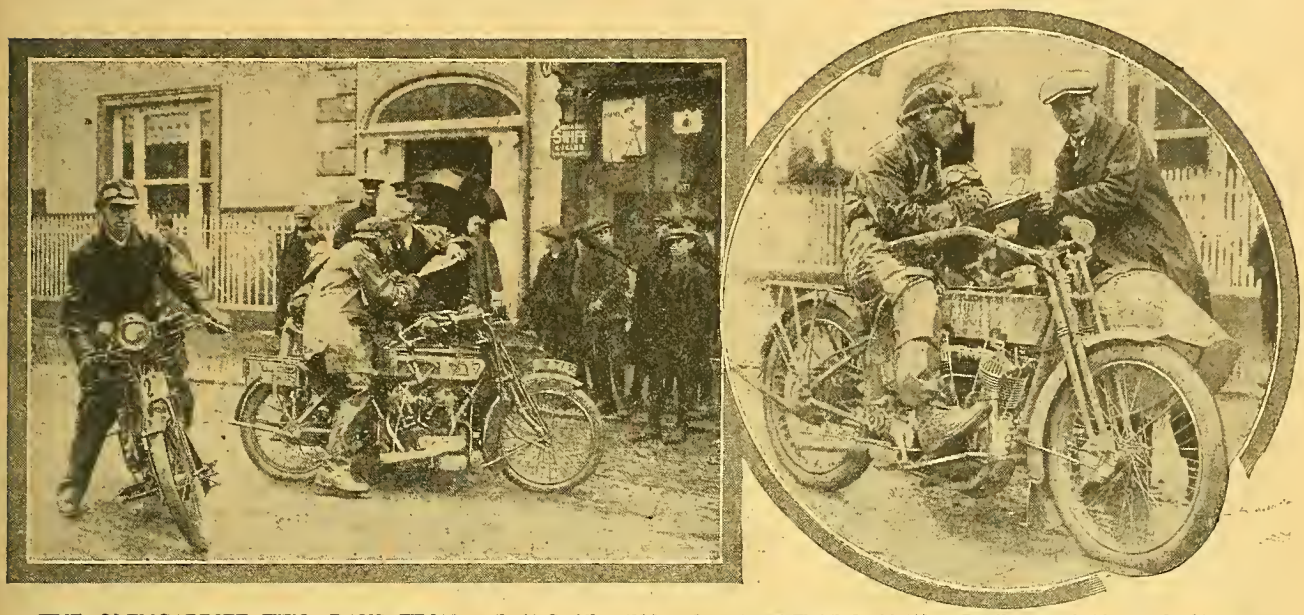
ALL PARTS ALWAYS IN STOCK.

MAG ENGINE CO., LTD.,
Harrow Road, Willesden Junction, LONDON, N.W.

Open Two Days Trial in Ireland.

Weather Interferes with the Pleasure of the Glengarriff and Back Run.



THE GLENGARRIFF TWO DAYS TRIAL. (Left) S. Allen (3½ h.p. James) and T. W. Ladd (6 h.p. Bradbury and sidecar) checking in. (Right) W. J. Henderson (Harley-Davidson) signing the sheet at Cashel.

THE open two days trial of the Dublin and District Motor Cycle Club was held on Saturday and Monday last. As usual, the event was to Glengarriff and back, and as the off day enabled the competitors to spend a very pleasant time amid the delightful surroundings of that favoured spot, the entry was very fair.

The conditions were of the customary character, but the fact that there were no secret checks, save in the first sixteen miles on the first day and the last sixteen miles on the second, made the event of a holiday nature. The allowance of grace at the secret controls was two minutes either side of schedule time, a similar allowance being made at all the open controls and an extra eight minutes at Limerick on the second day. Although the distances were long—225 miles on the first day and 222 on the second—the route was a relatively easy one. Such hills as were likely to cause trouble were covered by the non-stop sections, these including the crossing of the Knockmealdown mountains in Tipperary from Clogheen to Lismore, and the ascent of the Pass of Keimaneigh from the Inchigeela side on the first day and Gowlane Hill, outside Kenmare, on Monday. None of these hills are of the impossible class, Gowlane being the severest, but as it has been ascended by a high-powered single on top gear it will be seen it has little terrors for the modern variably-geared machine.

The competitors were sent away from Inchicore Bridge at one-minute intervals from six o'clock on Saturday morning.

Two secret checks were taken before Naas was reached, and with these disturbing influences out of the way there was nothing but the weather to interfere with the pleasure of the southern journey, and that it did to a considerable extent. The route lay along the main road to Cork by Newbridge, Kildare, Monasterevan, Maryborough, and Abbeyleix, to Cashel, where an interval of an hour gave an opportunity for a second breakfast while the machines were in control at Harringan's. Three of the thirty-five starters were missing at Cashel, Culhane (Crouch cycle car), Grimes (5 h.p. Indian), and J. J. White (2¼ h.p. Sun) having retired, the first-named as a result of a sideslip. All were on time, with the exception of Summerfield, who was twenty-five minutes late owing to tyre and plug troubles.

The journey was resumed by the first of the competitors at 11.40, and, continuing on the Cork road to Clogheen, the riders turned into the mountains to cross to Lismore by the Gap. The long ascent did not give any trouble, but the sharp hairpin corner half way up the hill was faced with a certain amount of trepidation. The rain continued to descend in a most persistent manner, and the wind was so fierce on the descent that the downward run to Lismore was as hard as the ascent from Clogheen. Freeman (7-9 h.p. Indian) was compelled to drop out near Fermoy owing to his speedometer getting mixed up with his front wheel, but he went on after repairing, and returned to Dublin on Monday with the competitors.

The check at Cork found another five missing. Sullivan (5 h.p. Indian) retired with a waterlogged magneto. Kelly (6 h.p. New Hudson sc.) and O'Flaherty had tyre troubles. Wallen (6 h.p. A.J.S. sc.) had to put right an air lock, but he, as well as Freeman, went on to Glengarriff for the week-end, although officially out.

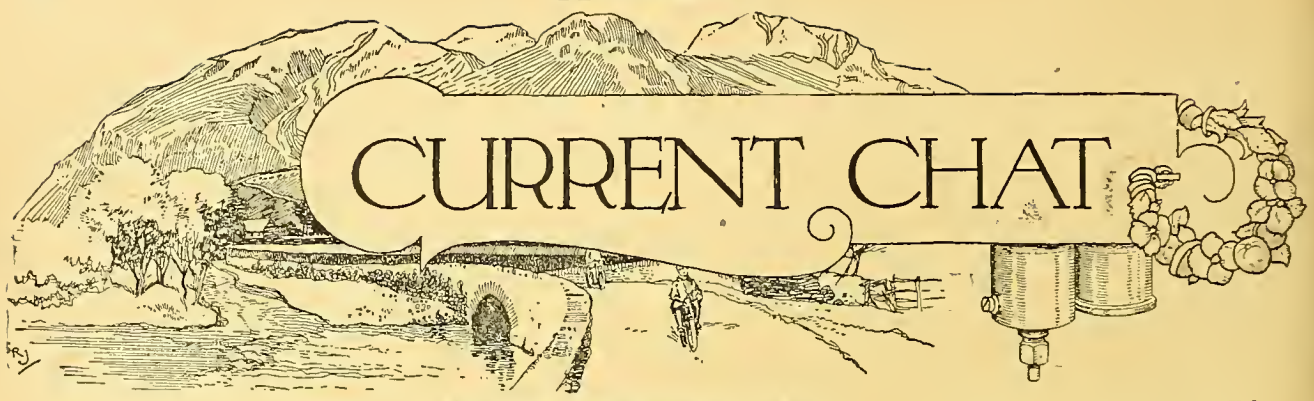
A fine road out to Macroom and Inchingeela left the engines in nice tune for the ascent of the Pass of Keimaneigh.

The Return Journey.

There were twenty-seven eligible to start on Monday morning out of the thirty-five who left Dublin, but Day (2¼ h.p. Sun), having met with a slight accident on Sunday, did not continue, and Cruise (6 h.p. A.J.S. sc.), who was very late in arriving at Glengarriff on Saturday, also retired. The return journey was by Limerick. Leaving Glengarriff by the Tunnel road in better weather than was experienced on Saturday, Gowlane was tackled before Kenmare was awake. Many of the machines had evidently suffered from the effects of the soaking rain they got on Saturday, as a number of those who up to this had clean records were compelled to acknowledge stops.

The weather continued good for the forenoon run to the luncheon control at Limerick, but frequent and heavy showers were experienced in the afternoon run of 120 miles to Dublin. A couple of secret checks were taken between Naas and Dublin, but even without these there should be little difficulty in finding a winner of the competition. Twenty-one of the twenty-five men started from Glengarriff and completed the second day's journey, Chambers, Summerfield, Walshe, and Doolin retiring on the way. There were ten failures to make clean ascents of Gowlane Hill. The finishers were :

Roche (Rover)
Curtis (Indian sc.)
Hartigan (Scott)
Farran (Indian)
Hurse (B.S.A.)
Kettle (B.S.A. sc.)
Dick (New Hudson)
Toole (B.S.A.)
Ladd (Bradbury sc.)
O'Dwyer (B.S.A.)
Doleman (Rover)
Cunningham (Bradbury)
N. Sullivan (Sunbeam)
Collins (Enfield sc.)
Mooney (Bradbury sc.)
Clarke (Rudge)
Browne (Rover)
D. Allen (Sun)
S. Allen (James)
Woods (B.S.A.)
Henderson (Harley-Davidson sc.)



TIMES TO LIGHT LAMPS.

Aug.	5th	... ...	8.41 p.m.
,,	7th	... ...	8.38 ,,
,,	9th	... ...	8.35 ,,
,,	11th	... ...	8.31 ,,

Soldier Motor Cyclists.

We recently met two officers who are well-known motor cyclists. Of these, one was Second-Lieutenant C. S. Burney, who is looking the picture of health, and is driving a Singer light car. His brother, Alec. Burney, is still serving in France. The other was Vernon Busby, whom we congratulated on getting his second star. He is shortly to be transferred from the R.E. to the R.F.C.

The Importance of Rear Springing.

As our readers know, we devoted quite a lot of space in our last issue to the question of rear springing on motor cycles, and it was an interesting coincidence that our contemporary *The Scottish Motor Cyclist* in its same issue had a paragraph on the subject, which also formed the title for its poster, as it did for *The Motor Cycle*.

Damages for a Motor Cyclist.

It is not often that an individual, especially a motorist, succeeds in a claim against a corporation. Therefore, we congratulate Mr. M. Kinrade upon his success in claiming damages from the Barrow Corporation. Mr. Kinrade, who has but one arm, was thrown from his machine by a badly filled up trench, and his shoulder dislocated. After some litigation the case was settled out of court, the damages being agreed upon at £75.

Motor Cycle Registrations in London.

The number of motor cycles registered in the area of the London County Council during the quarter ended June 30th last was 2,556, making a total of 39,916 since registration began. Registrations of changes of ownership of motor cycles numbered 1,223, bringing the total of such registrations to 19,353.

Second-hand Prices.

We give below the average prices for the various second-hand models offered for sale in *The Motor Cycle*, and also the average prices for the last eight weeks. The prices quoted way be regarded as their standard value.

Make.	Year.	H.P.		Last week's average	Average for past 8 weeks.
A.J.S.	1914	6	3-sp. sidecar ..	£79	£74
Bat	1913	6	2-sp. sidecar ..	£51	£51
Bradbury ..	1914	4	2-speed	£37	£43
B.S.A.	1913	3½	2-speed	£34	£35
Calthorpe ..	1914	2	2-speed	£19	£20
Chater-Lea .	1914	8	3-sp. sidecar ..	£61	£67
Clyno	1913	6	3-sp. sidecar ..	£57	£55
,, ...	1914	2½	2-speed	£32	£32
Douglas ...	1914	2¾	2-sp. kick start	£42	£43
,, ...	1914	2¾	2-sp. T.T.	£41	£38
,, ...	1913	2¾	2-sp. T.T.	£37	£35
Enfield	1914	6	2-sp. sidecar ..	£66	£63
,, ...	1914	3	2-speed	£36	£42
Indian	1914	7	2-sp. sidecar ..	£56	£60
,, ...	1914	7	T.T.	£46	£42
James	1914	4½	3-sp. sidecar ..	£60	£53
Matchless ..	1913	8	2-sp. sidecar ..	£55	£55
New Hudson	1914	4	3-sp. sidecar ..	£50	£44
P. & M. ...	1913	3½	2-sp. sidecar ..	£50	£46
Premier ...	1913	3½	3-sp. sidecar ..	£42	£41
Rex	1914	6	3-sp. sidecar ..	£65	£57
Rover	1913	3½	3-sp. sidecar ..	£37	£42
,, ...	1913	3½	3-speed	£37	£34
Rudge	1913	5	Multi	£46	£43
Scott	1914	3½	2-sp. sidecar ..	£55	£54
Sunbeam ..	1914	3½	3-speed	£59	£58
,, ..	1913	2¾	2-speed	£42	£40
Triumph ...	1914	4	3-sp. sidecar ..	£56	£58
,, ...	1913	3½	3-speed	£37	£36
Williamson .	1914	8	3-sp. sidecar ..	£82	£60
Zenith	1914	8	Gradua sidecar	£61	£59

SPECIAL FEATURES.

HOLIDAY EVENTS.

SIMPLICITY IN MOTOR CYCLE DESIGN

A TRIP INTO KASHMIR ON A MOTOR CYCLE.

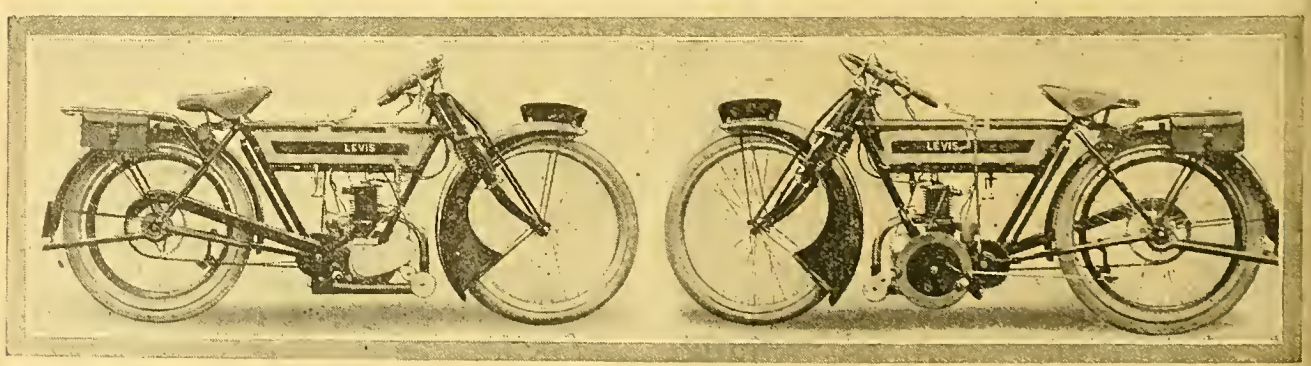
Big Second-hand Prices.

It is common knowledge that the second-hand market is in an abnormal condition owing to difficulty in getting quick deliveries of new machines. Second-hand machines are consequently fetching high prices, and as an instance of this we know of a 6 h.p. 1915 A.J.S. sidecar outfit which fetched £105 after having done 2,500 miles. Beyond wear on tyres it was as new, and it was most luxuriously equipped; nevertheless it is a good price.

What No. 7 Battery M.M.G.S. is doing.

From a letter received from Sergt.-Art. S. Towler, of the No. 7 Battery, it appears that this battery has now had a turn in the trenches. When he wrote two sections were in the trenches, the other resting behind the lines. The whole battery has been under fire at one time or another, and the machines have been taken right up to within half a mile of the front line trenches. So far the casualties have been light—only two men wounded.

The No. 7 is equipped with Clynos, which Sergt. Towler says are standing up well—likewise the Rom tyres. At the time of writing not one of the eighteen machines had suffered from a puncture—perhaps the detachable wheels have some mysterious effect upon the puncture fiend.



A 1915½ PATTERN LEVIS.

A new Levis two-stroke lightweight, which has been submitted to one of the Allied Governments. The 2½ h.p. engine measures 73 × 70 mm. and an Enfield two-speed gear, with all chain drive, is embodied. This model is really the forerunner of a new series of Levis lightweights.

At the Front.

Lieut. Philip Grout, who has been acting as secretary of the Motor Cyclists' Reserve Committee in the South Midland Divisional Area, left a few days ago for Overseas with a field company. Lieut. Grout has handled probably more despatch riders for the Royal Engineers than any other single man, and has now elected to take up "active" service for

Lieut. Philip Grout.

his country. As late secretary and founder of the Bristol Motor Cycle Club, Lieut. Grout organised one of the most successful trials held in England, viz., the Bristol one day event in April, 1913. As a result he was appointed chief marshal at the Tourist Trophy Races of 1913. Grout is one of the old brigade, and won a silver cup for the best lightweight performance in the Land's End to John-o'-Groat's trial of 1910. All his motor cyclist friends will wish him luck.

Sidecars Wanted for Wounded Soldiers.

Mr. H. Milligan, 45, Terminus Road, Eastbourne, is anxious to hear of a dozen motor cyclists who will communicate with him with a view to giving some wounded soldiers an afternoon's outing one Sunday in the near future.

A Regrettable Accident.

We learn that, while bound for a week-end tour in Wales on their new double-seated sidecar outfit, Mr. and Mrs. Harry Stevens, of A.J.S. fame, met with a serious accident last Saturday. It was caused by a collision with a large closed car at the junction of the London, Liverpool, and Holyhead roads, near Ivertsey Bank. Unfortunately, both Mr. and Mrs. Stevens were badly cut about the head and face, while it is feared that Mr. Stevens is also suffering from a broken arm. The car was turned over, and the occupants all required the attention of the doctor while the car and sidecar suffered extensive damage.

Luckily Mr. W. H. Carson, of Coventry, who was journeying to Carnarvon on his Excelsior sidecar, almost immediately arrived upon the scene, and at once hurried on to Shifnal for a doctor. Eventually Mr. and Mrs. Stevens were taken back to Wolverhampton on their brother's car. We wish all who were injured a speedy recovery.

Retracing Lost Friends.

In our recruiting section last week we mentioned the case of F. S. Roberts, who came all the way from Sydney, N.S.W., to enlist in the M.M.G.S. An old friend, living in Edinburgh, who had not seen or heard of Roberts for some considerable time, saw the paragraph, and wrote asking to be put into touch with him, and we immediately complied.

A Competitor in the All-khaki Race Meeting.

C. Allison, late of the Scott Co. and Colmore Depot, Birmingham, has entered for the All-khaki race meeting at Brooklands next Saturday. Allison has been at the Front with the No. 1 Motor Machine Gun Battery, and was invalided home on May 5th.

The All-khaki Races at Brooklands.

Provided the weather is kind, Brooklands will next Saturday be as bright as in the days before the war. There may not be so many spectators, but with a total of 172 entries for the eleven events, there will be good sport and plenty to see. The complete entry list appears on page 136.

Motor Cyclists' Holiday Haunts.

The Peak District as usual attracted many motor cyclists during the holiday time. On Bank Holiday, the garages in Buxton and Matlock were very full, indeed overflowing when the rain came down, which it did at intervals in real earnest. The oolite road surface of the Peak is particularly slippery in the wet, and we noticed with some concern passengers on the carriers of motor cycles, but we witnessed no sideslip. The number of khaki-clad motor cyclists on the road was extraordinary.

Presents for Motor Cyclist Soldiers.

In connection with the smoking concert organised some little time ago among the different Birmingham and district motor cycle clubs, we hear from Mr. S. K. Jones that presents have found their way to a hundred members who are serving their King and Country, and of the dozen or so presents still outstanding, one is now to be despatched to Corporal Brown,

A remarkable two-wheeled motor vehicle, known as the Gibson Mon-Auto, and built in the U.S.A. It is driven by a single-cylinder engine, 66.7 mm. × 76 mm., and it is geared to the rear wheel at a reduction of 5 to 1. Diameter of the wheels is 14in., the complete machine weighs 45 lb., and it is to sell at about £20.

the letter in our last issue having led Mr. Jones to apply to us for Corporal Brown's address. Mrs. Clarke, mother of Corporal Kenneth Clarke, a despatch rider who lost his life some months ago, has received £15 of the amount contributed.

Death of Mr. C. W. Hathaway.

It is with sincere regret that we have to record the death of Mr. C. W.

The late Mr. C. W. Hathaway, for twenty-five years works manager of the Triumph Cycle Co., Ltd, Coventry.

Hathaway, works manager of the Triumph Cycle Co., Ltd. Mr. Hathaway, though comparatively unknown to the outside world, had a great deal to do with the joys of thousands of motor cyclists, for he it was who was responsible for the Triumph motor cycle since the earliest days, and everyone knows how the evolution of the motor cycle has very largely followed Triumph standards. Mr. C. W. Hathaway, as a member of the Coventry Munitions Committee, was received by H.M. the King on Thursday, the 22nd ult., when he seemed fit and well, but that same evening Mr. Hathaway was taken ill at a friend's house, and though an operation was performed the next day he passed away on Wednesday morning last week. Mr. Hathaway's abilities as an engineer and organiser were greatly valued by his directors, Messrs. S. Bettmann and M. J. Schulte, with whom he came from London in the earliest days of the Triumph Co. For twenty-five years Mr. Hathaway has acted as works manager to the company in question, and it does not seem long ago that we attended a dinner at which he was the recipient of a handsome presentation from his men (with whom he was immensely popular) on the occasion of his completing twenty-one years' service with the company. He was 51 years of age, and leaves a widow and five children, one son being in the No. 5 Motor Machine Gun Battery. The funeral took place at the Coventry Cemetery on Saturday morning last, and among the many handsome wreaths was one from the Coventry and Warwickshire Motor Club, of which body he was a member for many years.

READY TO GO ANYWHERE

AND TO DO ANYTHING!

THE views on this page show over a hundred motor cyclist despatch riders attached to the R.E. Signal Section, being inspected by Sir Edward Every and Lieut. Howe, and served out with equipment previous to leaving for the Front. It is, we believe, the largest batch of despatch riders which has ever left England in one instalment. The machines, it will be noticed, are Triumphs and Douglases, these being the two makes at present used by the authorities for despatch riding overseas Equipment of both men and mounts is most complete. The photographs, which were taken at a well-known training centre for those who enlist for the Signal Services, of which despatch riders form a very large part, will bring home to everyone the extent to which motor cycles are used, and emphasise the important part they play in the great War. A number of these men enlisted through the recruiting section of "The Motor Cycle," and our readers will join us in wishing them all the best of fortune.

172 Entries for the All-khaki Race Meeting.

Promise of Good Sport at Brooklands next Saturday. General Public to be Admitted.

NEXT Saturday Brooklands will be the scene of one of the most interesting race meetings which has ever been held. It will indeed be a novelty, and one of which a short time ago we would never have ever even dreamed to see a series of sporting motor cycle races in which each competitor wears the King's uniform. No mischievous critics can find fault with racing under these conditions, as no slackers will take part. The stewards will be staff officers, and the majority of the officials will be in khaki. The entries have been quite good considering the uncertainty under which the British soldier is living at the present time, and it is to be expected that the number of spectators will be considerable.

Silver cup to be presented by *The Motor Cycle* to the competitor making the best aggregate performance at the All-khaki race meeting at Brooklands on Saturday next.

The first race will start at 2 p.m. Members of the Brooklands Automobile and the British Motor Cycle Racing Clubs will be admitted free if they are wearing their badges, whilst the general public will be admitted on payment of 1s. Tea and light refreshments can be obtained on the track.

The following is a list of the entries received by last Monday; further entries were received on Tuesday, and the number of these is given also:

EVENT 1.—LIGHTWEIGHT HALF-MILE SPRINT.
2nd Lieut. E. H. Dimmock (9th Loyal N. Lancs), Connaught, 270 c.c.

EVENT 2.—"DOUGLAS" HALF-MILE SPRINT.
Capt. G. L. Andrew (Army Cyclist Corps), Douglas, 350 c.c.
Also four others.

EVENT 3.—MEDIUM-WEIGHT HALF-MILE SPRINT FOR TOURING MOTOR CYCLES.
2nd Lieut. V. Spencer Daniell (8th The Buffs), James, 500 c.c.
Lieut. J. H. C. Lindesay (25th Div. Cyclist Company), Rudge-Multi, 499 c.c.
Private Ed. R. Mecredy (52nd Company, A.S.C., M.T.), Arno, 493 c.c.
Capt. J. H. Storey (9th S. Lancs), Rudge-Multi, 500 c.c.
Lieut. H. W. Tait (D.L.I.)
Lance-Corpl. H. R. Whitmore (Royal Engineers), Lea-Francis, 496 c.c.
2nd Lieut. B. H. Ryder (R.F.A.), Triumph, 499 c.c.
2nd Lieut. W. C. Hull (Royal West Kent), Ivy-Precision.
Also thirteen others.

EVENT 4.—MEDIUM-WEIGHT HALF-MILE SPRINT FOR RACING MOTOR CYCLES.
Capt. G. L. Andrew (Army Cyclist Corps), Douglas, 350 c.c.
Lance-Corpl. Frank Collard (13th Cheshires), Trusty-Precision, 500 c.c.
2nd Lieut. F. M. C. Houghton (25th Div. Cyclist Comp.), Rudge-Multi, 499 c.c.
Lieut. A. Lindsay (R.A.M.C.), Norton, 490 c.c.
2nd Lieut. C. E. Medhurst (Royal Flying Corps), Norton, 490 c.c.
Private G. W. Miller (52nd Company, A.S.C., M.T.), Blackburne, 499 c.c.
2nd Lieut. B. H. Ryder (R.F.A.), Triumph, 499 c.c.
Lieut. H. W. Tait (D.L.I.)
Lieut. G. H. Walker (25th Div. Cyclist Company), Royal Enfield, 425 c.c.
Lance-Corpl. H. R. Whitmore (Royal Engineers), Lea-Francis, 496 c.c.
Private E. G. House (273 Company, A.S.C., M.T.), Rudge-Multi, 499 c.c.
Also thirteen others.

EVENT 5.—QUICK-CHANGE PLUG RACE.
2nd Lieut. F. M. C. Houghton (25th Div. Cyclist Comp.), Rudge-Multi, 499 c.c.
Private A. C. S. Irwin (M.C.O.T.C.), New Imperial, 293 c.c.
Lieut. A. Lindsay (R.A.M.C.), Norton, 490 c.c.
Asst. Paymaster C. P. Marcel (R.N.R.), Indian, 994 c.c.
2nd Lieut. B. H. Ryder (R.F.A.), Triumph, 499 c.c.
Lieut. G. H. Walker (25th Div. Cyclist Company), Royal Enfield, 425 c.c.
Lance-Corpl. H. R. Whitmore (Royal Engineers), Lea-Francis, 496 c.c.
Corpl. F. E. Barker (M.T., A.S.C., Motor Cyclist Section), Zenith.
Also twelve others.

EVENT 6.—UNLIMITED HALF-MILE SPRINT.
Capt. E. W. S. Bardsley (King's Own), Indian, 994 c.c.
Lieut. R. Escombe (R.F.A.), Indian, 994 c.c.
2nd Lieut. F. M. C. Houghton (25th Div. Cyclist Comp.), Rudge-Multi, 499 c.c.
2nd Lieut. E. W. Hardman (Loyal N. Lancs), Indian.
2nd Lieut. N. T. Herbert (Royal Warwickshires), Zenith.
Lieut. A. Lindsay (R.A.M.C.), Norton, 490 c.c.
Asst. Paymaster C. P. Marcel (R.N.R.), Indian, 994 c.c.
Lieut. G. H. Walker (25th Div. Cyclist Company), Royal Enfield, 425 c.c.
Lieut. R. C. Wright (Royal Warwickshires), Bat.
Private R. H. Waddy (Oundle O.T.C.), Indian, 994 c.c.
Corpl. F. E. Barker (M.T., A.S.C., Motor Cyclist Section), Zenith.
Also ten others.

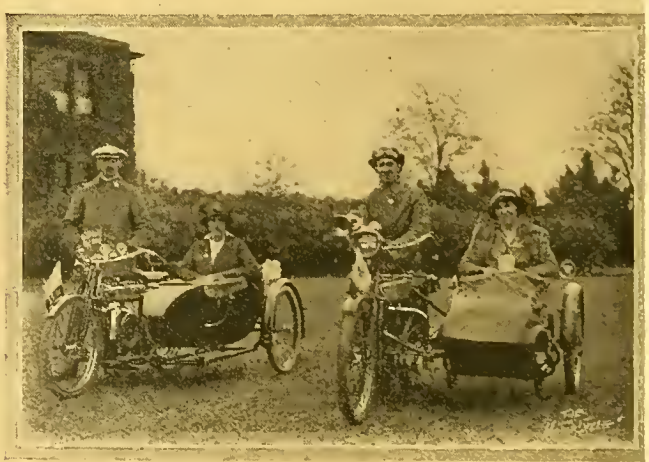
EVENT 7.—PASSENGER HALF-MILE SPRINT.
Capt. E. W. S. Bardsley (8th Batt. The King's Own), Indian, 994 c.c.
2nd Lieut. F. M. C. Houghton (25th Div. Cyclist Comp.), Rudge-Multi, 499 c.c.
Asst. Paymaster C. P. Marcel (R.N.R.), Indian, 994 c.c.
C.P.O. W. G. McMinnies (R.N.A.S.), Morgan cycle car, 1100 c.c.
Lieut. H. W. Tait (D.L.I.)
2nd Lieut. W. C. Hull (Royal West Kent), Ivy-Precision.
Corpl. F. E. Barker (M.T., A.S.C., Motor Cyclist Section), Zenith.
Also eight others.

EVENT 8.—JUNIOR HILL-CLIMB.
Capt. G. L. Andrew (Army Cyclist Corps), Douglas, 350 c.c.
2nd Lieut. E. H. Dimmock (9th Loyal N. Lancs), Connaught, 270 c.c.
Corpl. F. E. Barker (M.T., A.S.C., Motor Cyclist Section), Zenith.
Also five others.

EVENT 9.—SERPENTINE SLOW RACE.
2nd Lieut. V. Spencer Daniell (8th The Buffs), James, 500 c.c.
2nd Lieut. F. M. C. Houghton (25th Div. Cyclist Comp.), Rudge-Multi, 499 c.c.
Private A. C. S. Irwin (M.C.O.T.C.), New Imperial, 293 c.c.
Lieut. J. H. C. Lindesay (25th Div. Cyclist Company), Rudge-Multi, 499 c.c.
Asst. Paymaster C. P. Marcel (R.N.R.), Indian, 994 c.c.
Private Ed. R. Mecredy (52nd Company, A.S.C., M.T.), Arno, 493 c.c.
Capt. J. H. Storey (9th S. Lancs), Rudge-Multi, 500 c.c.
Lieut. G. H. Walker (25th Div. Cyclist Company), Royal Enfield, 425 c.c.
Lance-Corpl. H. R. Whitmore (Royal Engineers), Lea-Francis, 496 c.c.
Lieut. A. Lindsay (R.A.M.C.), Norton, 490 c.c.
Also thirteen others.

EVENT 10.—MEDIUM-WEIGHT HILL-CLIMB.
Lieut. W. E. Collins (Army Cyclist Corps), Triumph, 550 c.c.
2nd Lieut. V. Spencer Daniell (8th The Buffs), James, 500 c.c.
2nd Lieut. F. M. C. Houghton (25th Div. Cyclist Comp.), Rudge-Multi, 499 c.c.
Lieut. A. Lindsay (R.A.M.C.), Norton), 490 c.c.
Private Ed. R. Mecredy (52nd Company, A.S.C., M.T.), Arno, 493 c.c.
2nd Lieut. C. E. Medhurst (Royal Flying Corps), Norton, 490 c.c.
Private G. W. Miller (A.S.C., M.T.), Blackburne, 499 c.c.
Capt. J. H. Storey (9th S. Lancs), Rudge-Multi, 500 c.c.
Lieut. G. H. Walker (25th Div. Cyclist Company), Royal Enfield, 425 c.c.
Lance-Corpl. H. R. Whitmore (Royal Engineers), Lea-Francis, 496 c.c.
Private E. G. House (273 Company, A.S.C., M.T.), Rudge-Multi, 499 c.c.
2nd Lieut. W. C. Hull (Royal West Kent), Ivy-Precision.
Also sixteen others.

EVENT 11.—UNLIMITED HILL-CLIMB.
Capt. E. W. S. Bardsley (8th Batt. The King's Own), Indian, 994 c.c.
2nd Lieut. E. W. Hardman (9th Loyal N. Lancs), Indian, 994 c.c.
2nd Lieut. N. T. Herbert (3rd Royal Warwickshires), Zenith, 770 c.c.
2nd Lieut. F. M. C. Houghton (25th Div. Cyclist Comp.), Rudge-Multi, 499 c.c.
Lieut. A. Lindsay (R.A.M.C.), Norton, 490 c.c.
Asst. Paymaster C. P. Marcel (R.N.R.), Indian, 994 c.c.
Private R. A. Waddy (Oundle O.T.C.), Indian, 994 c.c.
Corpl. F. E. Barker (M.T., A.S.C., Motor Cyclist Section), Zenith.
Also eleven others.



A couple of sidecar outfits belonging to Paisley motorists, who used them on recent flag days for war charities for collecting funds. Besides selling flags, people were taken for "joy" rides, and by these means £30 was collected. The machines are a 2¾ h.p. Douglas and a 3½ h.p. Bradbury.

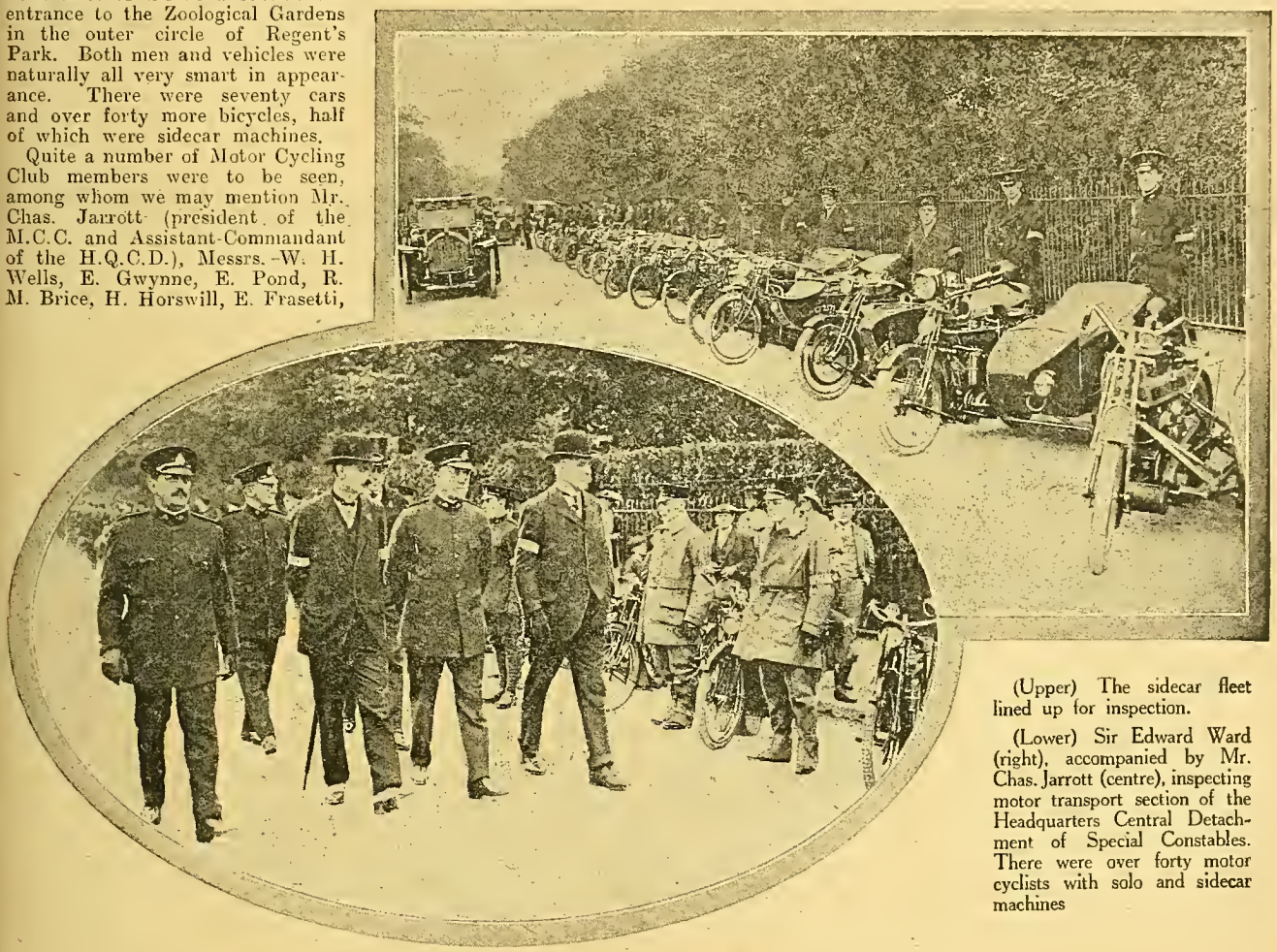
An Inspection of Motor Cyclist Special Constables.

ON Tuesday evening of last week Colonel Sir Edward Ward, K.C.V.O., K.C.B., inspected members of the A.A. in the Motor Transport Section of the Headquarters Central Detachment of Special Constables. All the special constables were in uniform, and were ranged up adjacent to their vehicles, which lined both sides of the road outside the entrance to the Zoological Gardens in the outer circle of Regent's Park. Both men and vehicles were naturally all very smart in appearance. There were seventy cars and over forty more bicycles, half of which were sidecar machines.

Quite a number of Motor Cycling Club members were to be seen, among whom we may mention Mr. Chas. Jarrott (president of the M.C.C. and Assistant-Commandant of the H.Q.C.D.), Messrs. W. H. Wells, E. Gwynne, E. Pond, R. M. Brice, H. Horswill, E. Frasetti, O. C. Godfrey, F. Applebee, and S. Dixon.

The inspection was made by Sir Edward Ward and his staff among whom were Assistant-Commandants C. Jarrott and C. Temperley. An attempt had been made to hold this inspection on the previous Tuesday, but the heavy rain had prevented it.

Sixteen motor cyclists are on duty at the A.A. headquarters every night till 1 a.m. In the event of an emergency, the duty of these men is to call up the car owners, who, in turn, pick up the ordinary special constables and convey them to Scotland Yard. Keen motor cyclists are still wanted by the A.A. for this work.



(Upper) The sidecar fleet lined up for inspection.

(Lower) Sir Edward Ward (right), accompanied by Mr. Chas. Jarrott (centre), inspecting motor transport section of the Headquarters Central Detachment of Special Constables. There were over forty motor cyclists with solo and sidecar machines

Cork Bank Holiday Trial.

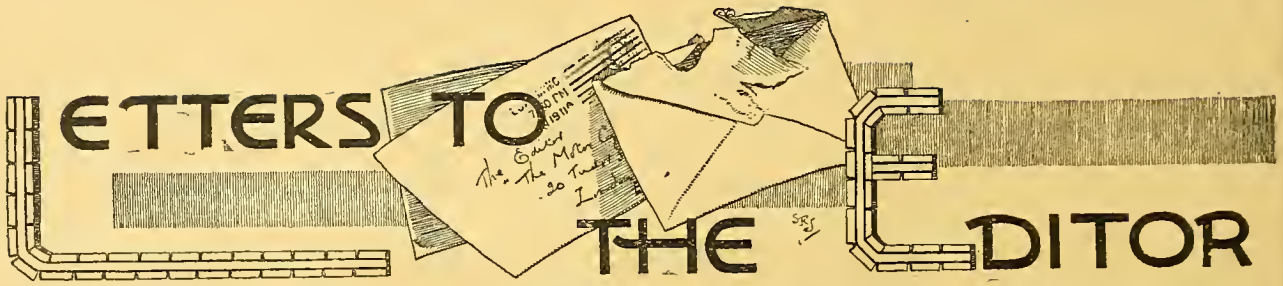
THE Cork and District Motor Cycle Club ran a one-day trial on the Bank Holiday from Glengarriff. The week-end weather was very unpromising, but it was quite fine when the first of the Cork men set out at 8 o'clock for a circular run in the mountains of Kerry.

As usual, the Hon. Sec. (R. S. Russell) was allotted the post of honour as route finder, and promptly to time he left for Kenmare. Twenty-three entries were received for the event, and of these seventeen were despatched as under at the customary one minute intervals :

R. S. Russell (2¾ Douglas)
J. Gibbings (3½ Indian)
E. G. Jack (3½ Rover)
J. J. O'Shea (3½ P. and M.)
W. J. Markham (2¼ Triumph)
R. Swanton (3½ Indian)
F. L. Dooly (4¼ B.S.A.)
E. V. Whittaker (4¼ B.S.A.)
J. Hennessy (5 Indian)
J. Wilson (3½ Triumph)
G. Pring (4 A.J.S. sc.)
W. P. Musgrave (4 Triumph sc.)
C. M. Ryan (3½ Indian)
D. Lucy (2¾ Douglas)
Sergt. Hughes (2¾ Douglas)
Lance-Corpl. Thompson (4¼ B.S.A.)
J. Cross (6 Enfield sc.)

On the ascent to the Tunnel, on the Kenmare Road, the first portion of the flexibility test was taken, the men being asked to cover a sixteenth of a mile of an easy gradient slowly. The slowest time was that of A. S. Whitaker, on a 4¼ h.p. B.S.A., who took 62s. over the distance. The fast portion of the test was taken on the return journey to Cork. The ascent of Gowlane Hill brought four riders to grief. Markham (2¼ h.p. Triumph) approached the ascent with a hot engine and failed, and although he made a clean ascent after cooling his engine, by going down to the foot, he retired. J. Wilson (3½ h.p. Triumph) broke a valve, and went on after replacing it, but, losing his way afterwards, he also retired. The other failures were Sergt. Hughes (4¼ h.p. B.S.A.) and W. P. Musgrave (4 h.p. Triumph sc.).

After Gowlane, two of the best known passes—Ballaghabeam and Ballaghosheen—were taken *en route* to Waterville, where an hour was allowed for lunch. The severity of the route led the committee to add thirty minutes to the customary 20 m.p.h. schedule. After the luncheon interval the men returned by an easy road to Kenmare, and on the way across to Macroom a new hill was taken in over Sheedy mountain. The day's run ended at Cork with a total mileage of 173½ miles.

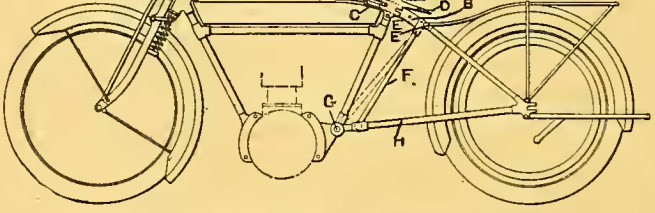


The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Rear Springing.

Sir,—As the patentee of one of the devices referred to in Mr. Eric Walford's able article in the last issue of your splendid journal, viz., fig. 11, I am naturally greatly interested, both in the article referred to and also in your editorial. I would like, if I may, however, to point out, for the information of your numerous readers, that the diagram (fig. 11) accompanying Mr. Walford's article fails in a very important point to give the best and most simple application of the device. May I, therefore, correct the impression created by the previous sketch by submitting the more modern one (also protected) which accompanies this letter? It will at once be apparent that, while in the first design the tank space was encroached upon to make room for the forward movement of the guide plates, in the present arrangement no such objection or disadvantage is present, while generally a much simpler and neater construction is obtained. It will be noticed that the guide block A forms the rear curve of the top tube—is, in fact, a specially designed seat-pillar lug forming the junction of the top with the seat-pillar tube. In the design now depicted, the weight-carrying and shock-absorbing springs (omitted for the sake of giving an unimpeded view of the guide block A) are anchored at points C and D, while the front tube of the rear triangle F may, if desired, be duplicated, and the lower extremities brazed to projections on the main lug G. The "snubbers," or recoil springs, are fixed to points E E. A good position for the countershaft



Sketch accompanying Mr. C. E. Palmer's letter.

gear is indicated at H, when all three centres would be in line, and the movement at H (or possibly nearer the point G) would be so trifling as to be negligible, even in an all-chain drive. The movable rear frame being positively held against any tendency to side-sway, both at its top extremity (by the guide block closely embraced by the slide plates) and at its bottom extremity (by the substantial and adjustable pivot), gives a frame which laterally is as immune from side movement or tail wag under stress as is the old type rigid frame; no movement is possible other than the desired vertical movement controlled by the springs. The guide plates B are securely pinned together by accurate shouldered bolts before and behind the seat-pillar line, and also, of course, to the flat-faced terminal lug at the apex of the rear triangle. The system gives a mount that may be ridden as a "rear-sprung" or as a "rigid" mount at the will of the rider, simple means being provided for locking up the rear to the main frame, in a moment, and by the use of a spanner only. It can be ridden, all out, over bad surfaces in comfort and without danger to the main frame through vibration, which is never the case where the springing is provided for the rider only.

Another application of the same principle is included in my specification, applicable to frames having the straight but rearwardly declining top tube (such as the Allon or the Enfield), and in this scheme the springs may be enclosed entirely within the top tube. All working parts and springs are out of the direct path of mud, dust, and rain, and the extra weight is very trifling. C. E. PALMER.

Petrol Consumption.

Sir,—Your issue of July 15th contained an interesting article by "Ixion" referring to the excessive consumption of petrol with motor cycles in general as compared with light cars. Whilst agreeing that the figures mentioned are approximately the average, I must say that they by no means represent the mileage that may be easily obtained if an efficient carburetter is employed and properly fitted. One of the principal causes of high consumption is due to the vibration to which the machine is subjected and the use of the old type of single jet carburetter, in which the jet remains the same size at all throttle openings. With this type the jet must be of sufficient area to meet the utmost demands of the engine at maximum speeds, and also permit of the suction being so reduced that only sufficient fuel is delivered for slow running, the result being (as pointed out by "Ixion") that fuel in excess of the engine requirements is ejected from the jet at medium throttle openings; in fact, when a bad pot-hole is encountered the engine will cease firing until the excessively rich mixture has passed out of the exhaust.

Objection to changing gear unless absolutely obliged is another cause of excessive consumption, there being many users who invariably "blind" up a hill rather than risk changing gear, and finish the hill with the air lever closed and dense black smoke issuing from the exhaust, whilst had the machine been driven to a point where the engine just commenced to labour, and then changed to a lower gear, the hill would have been climbed faster, with a less consumption of fuel, and without fouling the interior of the engine. Another point is the design of the inlet pipe, more especially with twin-cylinder engines, it being absolutely essential, if maximum economy, prompt acceleration, and good slow running are to be obtained, that the inlet pipe should be kept at a temperature sufficient to obviate condensation, otherwise misfiring is bound to occur, especially when opening up, and also freezing of the carburetter in winter weather.

Blow-back is mentioned as being another source of wastage. This, however, may be practically eliminated by correct cam design, and considerably minimised by the fitting of a suitably proportioned extension at the rear of the carburetter.

Regarding the objection raised to small jets and their liability to choke, this depends largely upon the design of the jet. I may say that there are a large number of our carburetters in use on waggons weighing upwards of 9 tons laden and using crude commercial spirit, and I have yet to see a stopped jet.

Although there are instances of extremely high mileage being recorded with motor cycles, the speed at which they were accomplished, together with the total weight of machine and rider, has not, to our knowledge, been published, and, without this essential information it is impossible to judge the merit of the performance. We have avoided comparisons with the results obtained by some of our clients and, the figures mentioned by "Ixion," but, of course, shall be pleased to furnish particulars on application to those interested.

EVEREST CARBURETTERS, COVENTRY.
ERNEST P. EVEREST.

Tyre Repairs.

Sir,—In your issue of July 8th, Mr. McBratney, in an interesting letter on "Retreading," speaks of having discarded a tyre possessing a good tread through breaking away at the bead. I myself discarded a good tyre (excepting a loose bead) last winter, and fitted a new one. I later conceived the idea of having the bead sewn down on a boot-sewing machine, getting the bootmender to use the longest stitch the machine would allow, so as not to weaken the canvas by a close perforation. This job cost 4d. I then tried the tyre on my front wheel, and was pleased to find that the stitched portion was nicely hidden by the rim all round. I have so far used the tyre all the season, and have piled up a fair mileage, but it has not budged. I only take one precaution, and that is not to inflate too hard—particularly on hot days. My new tyre I am keeping for next winter's slop and dirt. J.D.

The Cycle and Motor Trades Benevolent Fund.

Sir,—The value of the Cycle and Motor Trades Benevolent Fund has been brought home to me by practical proof of what this organisation can accomplish.

Two years ago one of our salesmen, while riding a motor cycle, met with an accident which ended fatally, and he left a wife and three children under five years of age. The case was brought to the notice of the Benevolent Fund, the administrators of which at once provided for the widow's immediate necessities, and took steps to get the eldest child into an orphanage. Through the thoroughness of the organisation and its influence, this child has been now elected, and has headed the poll in the election, thus assuring the child's future in life and relieving the mother of the burden of her support.

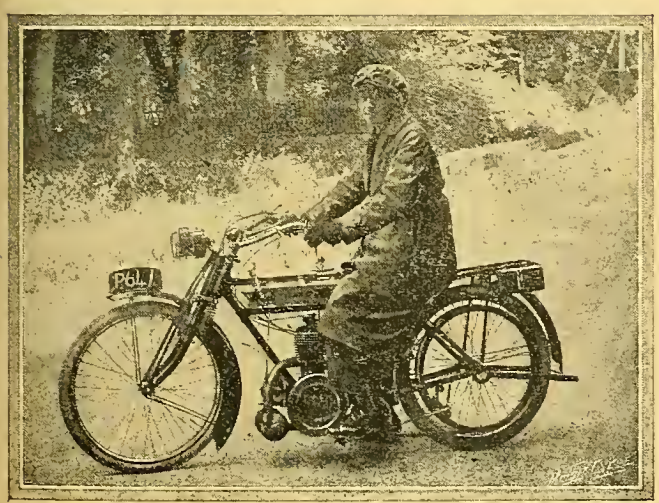
I am sending this letter in the hope that it will be read by men eligible to subscribe to the fund, but who have not yet done so, and that they will immediately take steps to identify themselves with an organisation which is doing so much good to those members of the trade who have fallen under bad times. The hon. sec., Mr. A. J. Wilson, 154, Clerkenwell Road, London, S.E., will be only too glad to send full particulars on receipt of a postcard.

E. C. PASKELL,
Proprietor Colmore Depot.

Lady Motor Cyclists.

Sir,—In reply to Mrs. Marshall's letter, I have ridden a motor cycle during this season and last, but have never been once hung up on the road through breakdowns, and would also mention that even if I have stopped only a few minutes to pump a tyre or any other minor detail, I have had heaps of willing offers from passing motor cyclists, and I can now go out on my machine with full confidence that, should I be unfortunate enough to have trouble, there will be always plenty of male sympathisers who will assist me to get home.

There should be no fear of road troubles on an up-to-date machine. AMY HARRIS.



Miss Amy Harris and her two-stroke Tyler. (See letter on this page.)

Broken Exhaust Valves.

Sir,—The following tip may be of interest to readers who are unfortunate enough to have an exhaust valve break some distance from a town. I recently broke my exhaust valve five miles from any garage, and not feeling inclined to "push," I hit upon the idea of replacing the broken exhaust valve by the inlet valve, and making the broken exhaust valve work automatically, which, I believe, is a fairly old dodge. The difficulty I experienced, however, was that the broken valve would not remain square on its seating, so I filed a groove round the stem just under the head and fastened a small spiral spring to the valve head, the other end of the spring being taken down the valve stem guide and secured, with sufficient tension to keep the valve head from falling sideways on to the seating. I then plugged the hole at the bottom of the valve stem guide with wood to prevent a leakage of air from this source, and my pains were rewarded by being able to ride comfortably to the next garage, five miles away.

Of course, the moral is "always carry a spare," but these things usually happen when one has left the spare at home.

W. D. EDWARDS

Despatch Riders at the Dardanelles.

Sir,—I have just received a copy of *The Motor Cycle* dated June 24th, which is the first I have seen since the first landing here at the Dardanelles. Before the war I had been with the motor cycle trade since my schooldays, so that *The Motor Cycle* is an old pal.

I have read with interest Cpl. C. M. O'Connor's letter on "Despatch Riders' Work." If, as he says, the risk in many cases is enormous, what must be the risk of the slower moving traffic, which forms a much better target and is much more likely to draw shell fire. Here on this Peninsula, all at times are subject to heavy shell fire, so that I cannot at present make comparisons, but hope to be able to say more later.

There were no roads here when we landed, and even now they are only a combination of sand and bumps. I do not think that the conditions could be much worse for our motor cycles and men, but both are doing remarkably well. At present only Triumphs and Douglases are being used. Our Section has three B.S.A.'s, but so far has used them but little. The Douglases are dropping their mudguards and odd fitments, but still keep plogging along. One has to ride here with fairly soft tyres, to lessen the shocks.

ALAN V. BAKER,
Mediterranean Expeditionary Force.

Oxford Roadways.

Sir,—I notice that you are soliciting information with regard to the present state of the roads. It is a great pleasure to me, and an even greater relief, to say a few words on the condition of what are still described as streets and roads in and around Oxford.

With its characteristic indifference to modern requirements, Oxford has allowed its thoroughfares to become a corrugated abomination. Their surfaces give examples of every imaginable sort of ridge, pit, crater, and crevasse. I often take a stroll up St. Giles's after dinner, picking up washers, nuts, and even tail lights; and, though I ride with every care for my own comfort and the efficiency of my motor, a spanner has to be thoughtfully applied after every run. Certain makers might well feel proud of their products could they see them jumping on the Woodstock Road, under the guidance of daring subalterns. It is true that belated and costly repairs are now being begun in some parts, but the general condition is the same. Motor 'buses are largely responsible for this state of things. The Oxford Borough Council does not seem quite to realise the action of continuous heavy traffic on road surfaces.

The Woodstock Road improves after Wolverton, and is excellent before Woodstock is reached. The Banbury Road is bad. The eastward roads are all bad. The Abingdon Road is tolerable. The Henley Road is excellent after Littlemore. The Cheltenham-Oxford road, generally speaking, is good.

A short ride on a public Daimler (and a wonderfully fine engine it has) would convince you, sir, that those who are intrepid enough to travel on top over Oxford roads are well qualified to judge of the hardships of transport work in Flanders. C. E. VULLIAMY.

Some Notes for Fast Tourists.

Sir,—I was much interested in the article by "Miles" on this subject in your issue for July 15th. I came down from Scotland to Nottingham, 360 miles, in thirteen hours on end, which I do not think was bad. My machine is a two-speed Douglas, and I can get forty-five miles per hour. But why does the writer say that semi-T.T. bars are best? Surely they tire one's back more on a long journey. My raised bars are quite comfortable. A. H. BRYAN.

Magneto Rear Lights.

Sir,—I must apologise to your correspondent "HE 118" for having failed to answer his letter of enquiry sooner. Although in some cases a bell bobbin will act fairly well as a choking coil it has two disadvantages, the core is solid iron, and it is wound with too many turns of wire. By this I mean that, although the wire may be suitable as to actual length and size, many of the turns are too far removed from the core to be of much use. If your correspondent will make the core of soft iron wires, as explained to those who wrote for particulars, and wind not more than four layers of wire, I feel sure he will get good results. I have found that the common electric torch 3½ volt lamp will work quite well, and by arranging another lamp in series with the rear lamp and placed on top tube or somewhere in sight, there is never any doubt as to whether the rear lamp is alight, in addition to which the front lamp can be of use for illuminating speedometer or watch, etc. The 4 volt Osram lamp is quite satisfactory, and will be found to outlast the cheaper torch lamps. I should advise making the choker of iron wires made into a bundle, having a diameter of approximately ⅜in. and 2½in. long.

In reply to the last query, I have not tried a ring transformer, and doubt if it would work. The choker is simple and cheap to make, takes up little space, and gives every satisfaction.

If "HE 118" would like any further particulars I shall be pleased to give them. As a result of my letter I received a great many enquiries, and replied direct to all those correspondents who enclosed a stamped addressed envelope for reply. SHAZBAZZIK.

Running Costs.

Sir,—I am sending you the cost of running a 1913 Douglas for two years. You will see it works out at just about 1d. per mile. I think everything has been taken into the cost. Depreciation is by far the greatest item. I exchanged the machine for a 1915 Douglas, and the £18 is exactly what I dropped.

You will notice that fuel works out at five miles for a penny. I am quite satisfied with the Douglas; it takes me up all the hills I have come in contact with, and my weight is 16 stone. The only fault I can find is that the chain from engine to gear box should be a much stronger one.

FROM MARCH 12TH, 1913, TO MARCH 18TH, 1915.

					Per mile
Distance travelled, 10,800 miles.					
Depreciation				£18 0 0	= .40d.
Fuel—					
102 gallons of petrol ...	£8	2	6		
7½ gallons of oil	1	10	5		
(Petrol = 106 m.p.g.)				9 12 11	= .21d.
Maintenance—					
Tyres	£3	10	5		
Engine and ignition	1	0	0		
Transmission and fittings, etc.	2	9	8		
Carbide		14	3		
				7 14 4	= .17d.
Taxes, Insurance, etc.—					
Taxes and licences	£2	15	0		
Insurance	4	18	0		
A.C.U. and clubs	1	2	6		
Clothing	1	7	3		
Loss of interest at 2½% ...	.2	5	0		
				12 7 9	= .28d.
Total				£47 15 0	= 1.06d.

LH 21.

Wear in Inclined Engines.

Sir,—Have you or any of your readers ever noticed the slight knocking that starts in engines of the inclined type after 2,000 to 3,000 miles? This knocking has always caused me a lot of trouble, to say nothing of the expense in getting it cured. In every case reboring stopped the knocking, showing clearly that it was wear in the cylinder. I have been a keen rider of a well-known inclined engined machine for the last three and a half years. Every one of the three machines developed this elusive mysterious knock. The first two models were a 1909 and a 1911, bought second-hand. The 1909 was badly worn, and was sold without reboring; the 1911 had to be rebored after 2,000 odd miles, and the knock commenced after reboring at 2,500 miles. I then replaced the small end in the connecting rod and a new gudgeon pin, but with no better results. Finally, I had again to get it rebored, which cured the trouble.

SPANNER.

A Canadian's Opinion.

Sir,—I think English manufacturers should consult the tastes of Canadians more, and there would be more English machines sold in Canada. As it is, Indians, Excelsiors, and Harley-Davidsons predominate here. If I could get an English Douglas or a Triumph with American handle-bars with the "twist the wrist" system, I think I would take it; but the handle-bars supplied on English machines, with their multi-controls, are a nightmare to us Canadians. Then again your small 26in. wheels and 2½in. tyres are no good for our roads. We use 28in. × 3in., and the twin engine is the most popular here.

Please pardon these few suggestions. I thought you might possibly like to have an expression of opinion from this side of the pond. I have been a reader of *The Motor Cycle* for a long time. A. A. STEWART.

Toronto, Canada.

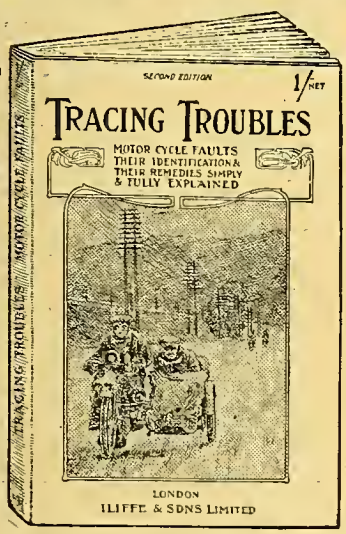
A 1915 4 h.p. Triumph beside King Richard's statue outside Westminster Abbey. Richard Cœur de Lion was named Lion Heart through bravery on the battlefield. In a like manner the modern motor cycle is winning fame for itself on the battlefield.

ONE OIL FOR 'TWO STROKES'

WAKEFIELD

CASTROL "C"

C.C. WAKEFIELD & CO. WAKEFIELD HOUSE CHEAPSIDE, E.C.



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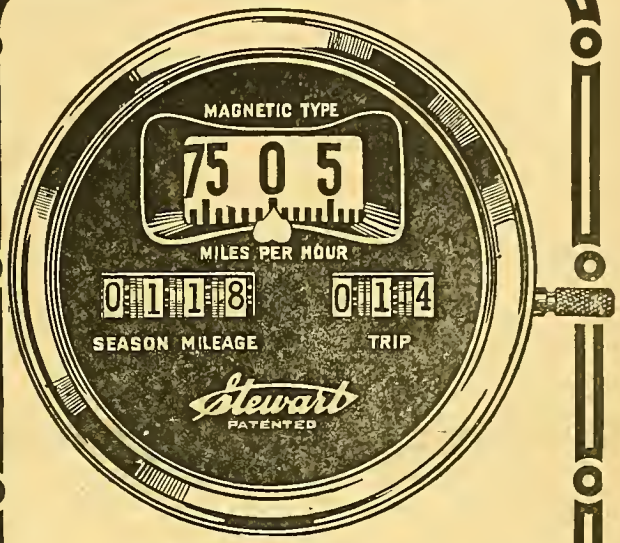


Stewart

Motor Cycle

SPEEDOMETER

AN accessory indispensable to the motor cyclist who desires to keep accurate check on running cost. But its chief purpose is to keep you informed of the speed. Fast or slow, no matter how rough the road, you always know exactly the rate at which you are travelling. Stewart figures are dead accurate, and you can read them at a glance.

50/-

Registers from Zero to 75 m.p.h. Season Mileage 10,000 and repeating. Trip recorder 100 and repeating. Will fit either side of front wheel or back wheel fitting supplied at no extra cost.

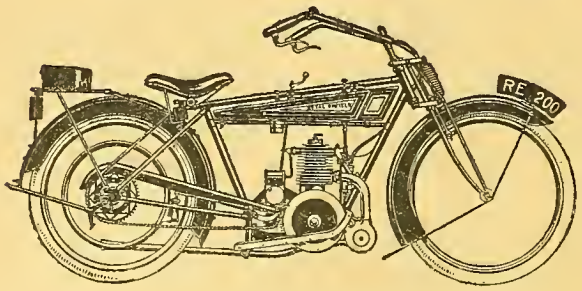
Write for Booklet.

The Cooper Stewart Engineering Co., Ltd., 11, Broad Street, Bloomsbury, London, W.C.

All Royal Enfield Motor Cycles are fitted with the Enfield patent Two-speed Gear and Chain Transmission

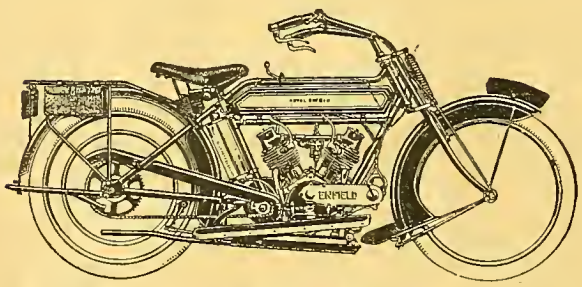
ROYAL ENFIELD

MADE LIKE A GUN



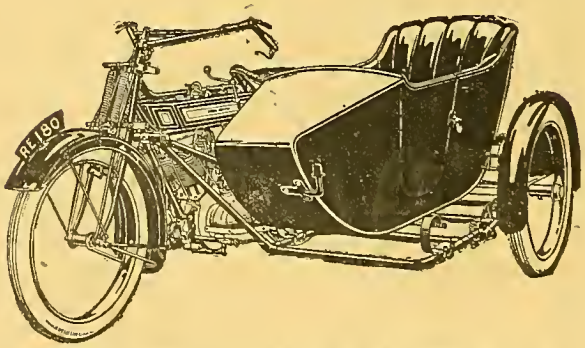
Model No. 200. The 2¾ h.p. Royal Enfield Two-stroke Lightweight, fitted with the Enfield two-speed gear, cush drive hub, and chain transmission. The handiest machine yet produced. Starts with the rider astride the machine, and makes traffic riding a pleasure.

Price, 38 Guineas, net cash.



Model No. 140. The famous 3 h.p. Royal Enfield Twin-cylinder Model, fitted with the Enfield two-speed gear, etc., and mechanical forced feed lubrication. In the Swedish Winter Motor Cycle Trials — probably the most severe in the world — 3 h.p. Royal Enfields took all the awards.

Price, 50 Guineas, net cash.



Model No. 180. The Royal Enfield Sidecar Combination, fitted with the Enfield two-speed gear, etc. Exceptional power and reliability are embodied in this model. As supplied to the British Army, the Russian Army, and the New Zealand Postal Authorities.

Price, 80 Guineas, net cash.

(With dynamo lighting set, etc., £100 net.)

For whatever purpose you need a motor cycle there is a Royal Enfield model to suit. Consider the merits of the machines illustrated here — and then let us send you the fullest particulars of the model which interests you most.

All Royal Enfield motor cycles, from lightweight to sidecar combination, are fitted with the famous Enfield Two-speed Gear, Cush Drive Hub, and Chain Transmission. This is a *standardisation* of reliability all Royal Enfield riders enjoy.

Write for the Royal Enfield Motor Cycle catalogue. Please mention "The Motor Cycle."

THE ENFIELD CYCLE CO., LTD., REDDITCH.

London Office and Showrooms:

48, HOLBORN VIADUCT, E.C.

Contractors to His Majesty's Government, the Belgian Government, and the Russian Imperial Military Authorities

Where the Military Motor Cycle can be Improved.

Sergt. Cocker, of the M.M.G.S., emphasises the Call for Special War Models.

THE day following our talk with Sergeant Pountney (referred to in our last issue on page 100) we had a call from Sergeant J. Cocker, who is with the same battery (No. 5). Cocker was enjoying seven days' leave after three strenuous months in the firing line, and was looking in splendid condition.

Originally he told us he had doubts as to the success of the M.M.G.S., as no real opening seemed to be found for them, but he had since discovered that the batteries are useful for many operations. For instance, they are used as infantry in the trenches, for attacking enemy aeroplanes in conjunction with anti-aircraft guns (the latter cannot fire directly overhead, which a machine gun can), and for harassing the enemy from various different points at night or day. The success of these efforts is proved by reason of the German artillery wasting so many shells in trying to find the machine guns. No doubt the ammunition shortage has been exaggerated. At any rate, whatever may have been the case elsewhere, it is a relief to know that there is no shortage of machine guns or ammunition, so far as the M.M.G.S. is concerned.

Cars are used occasionally to take men and guns up to the firing line, as the motor cycles are stored well in the rear. It will settle many controversies to hear from Cocker that the old plan of using the sidecar outfits for conveying men and guns as near the firing line as expedient, and then carrying tripods and guns to vantage points, has been retained. For offensive operations the cars are kept well in the rear. It is the exceptional trench warfare conditions which have given rise to slight changes of tactics.

Special War Models Necessary.

Cocker's opinions on the question of design are worth having in view of his experience as a competition rider and record holder. He told us emphatically that practically every part of every make of machine could be strengthened with advantage. Mudguards, fork springs, and carrier attachments are a source of real trouble, whilst frames break in the very severe work to which the machines are subjected. Even saddles break the supports, tearing away the leather. In other words, "war models" are needed.

Sergt. J. Cocker.

Cocker has conversed with well-known riders at every possible opportunity, and he asserts without hesitation that there is not a single perfect machine at the Front.

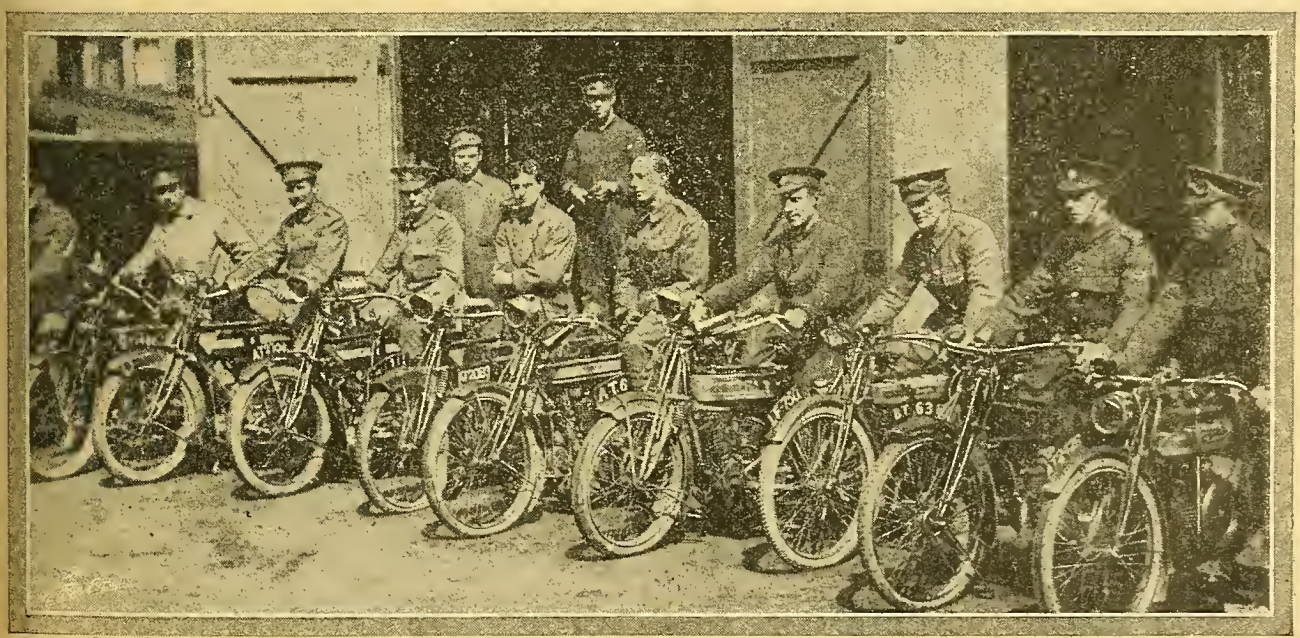
One or two makes stand up above the rest, but a number have notorious weaknesses. He agreed with our suggestion that the War Office could not do better than appoint some expert to collaborate with the leading users of machines at the Front, and prepare a report on the weaknesses of their mounts, and point to parts needing improvement.

The wastage of war is a well-known fact, but opinions vary greatly as to the average life of a machine on active service. There are doubtless many cases in which motor cycles are "scrapped" for no good reasons, and Sergt. Cocker told us of an instance in which an officer found an abandoned Rudge—almost new—by the roadside near Ypres, which on investigation was found to be suffering only from a sooted plug! But six weeks (which has been cited as the average life of a motor cycle at the Front) is not the life of every motor vehicle, for the original Enfields of the No. 5 Battery are still in use. There have been no fork breakages and no hub troubles. One or two engines have been rebushed; but, generally speaking, their behaviour has been exemplary. The light car tyres fitted have saved many roadside stops. The machines at present regularly perform the work of transporting rations to the trenches—when it is dark, of course!

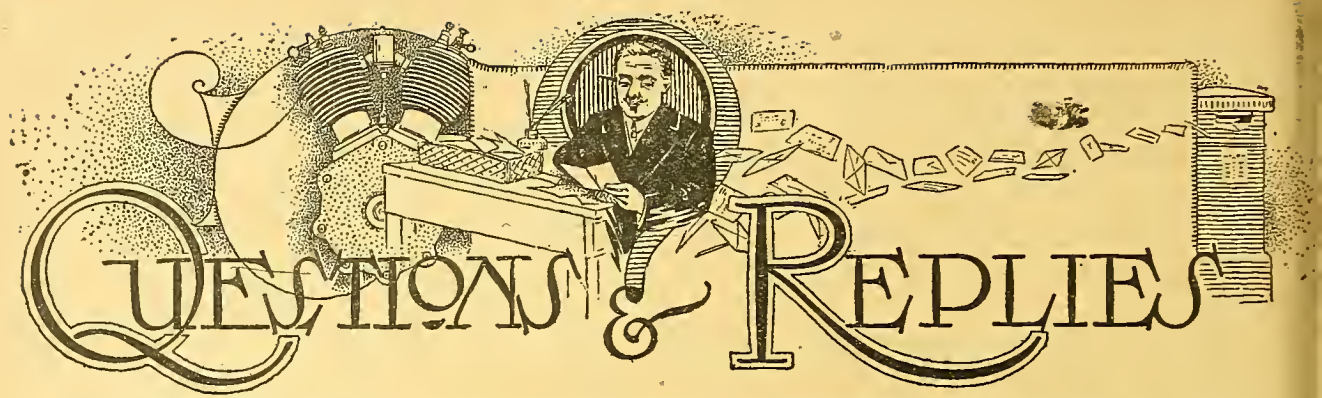
Blown off a Machine.

Cocker has had some exciting experiences, the most unique of which is that of being blown off his machine from the effect of a shell which burst some distance away. He likens it to being on a moor with a hurricane blowing, and a gust suddenly lifting him and his machine (a Douglas) bodily across the road into the opposite ditch. Whilst Cocker was in the ditch and looking round he immediately bethought himself of the 1912 Six Days Trial, when Dartmoor was crossed in the teeth of a gale.

Casualties have been few. The men are looking forward to the time when the advance commences, so that the sidecars with their machine guns may have a chance of showing their work in open country.



Despatch riders attached to the 5th East Yorks (Cyclists) Regiment. Reading from left to right: Lance-corporals Baggs (Triumph) and Willford (Precision), Sergt. Theakston (B.S.A.), Lance-Corporals Calam (B.S.A.), Chester (A.J.S.), Barringer (Norton), Artificer Powles (Rex), Lance-corporal Taylor (Douglas), Corporal Owst (Alion), and Lance-corporal Bowman (Douglas).



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Transfer of Registration.

I am on the point of buying a good second-hand machine. May I ask you to tell me what transfers are necessary and how they are negotiated.—A.G.

Provided the registration has not been cancelled by the previous owner, the number can be transferred to your name for the sum of 1s. The matter is arranged with the clerk of the county or borough council with which the machine was originally registered; for instance, for EL you apply to Bournemouth. The registration only is transferable.

The Petroil System.

Do you think the petroil system of oiling would be suitable for my 1911 3½ h.p. two-speed machine, which pulls well, but has a very nasty habit of overheating, even on the level? I have the machine geared low, as it is a very hilly district here (Whitby).—G.T.L.

We do not recommend the petroil system for use with four-strokes, as the oil would be fed to the cylinder instead of to the crank case, and the result would be very unsatisfactory. Probably a smaller jet would stop the overheating from which you are suffering, or you might try the effect of Harcourt radiators.

Removing a Timing Pinion.

I am taking down my 1907 Triumph engine for repairs, and my trouble is that I cannot get the timing pinion off the engine-shaft. It appears to be keyed on, and also held by a countersunk screw, which I have been unable to move. If you can advise me as to what would be the best way to remove the pinion I should be obliged.—H.V.H.

The countersunk screw must be removed, and to do this it is necessary to soak it with paraffin. Obtain an 18in. screwdriver, apply force with it centrally on the screw head, and turn the driver with a large screw wrench. Such a method should remove the most obstinate screw after one or two tries. However, if it cannot be removed in any other way it must be drilled out, after which the best way of getting the wheel timing pinion off is to use a timing wheel pinion drawer, such as that supplied by Messrs. Lake and Elliot, Albion Works, Braintree, Essex.

Lubricating the Change-speed Gear.

I should be much obliged if you would give me advice on my two-stroke two-speed lightweight motor bicycle. How often must I oil the countershaft gear? What oil would be best to use, and how much each time?—FX 2816.

Use engine oil. It is difficult to tell you how often to lubricate the gear. It depends upon how long the oil stays in, and also upon the means taken by the manufacturer to keep it in. The level of oil should be up to the gearshafts.

Advice to a Beginner.

Would you give me your advice as I do not understand motor cycles, and have been trying to gain some information from your paper, which I find very useful? (1.) Can I get a light motor cycle to do about a hundred calls a day for town work and at the same time use it for sidecar work when required? I do not want to go in for a high speed mount, but at the same time I want a mount which will take any hill. (2.) Would you recommend a new or second-hand machine, as I am not desirous of paying more than £30-£40, complete, including sidecar? I must have easy starting, and I should prefer a low-powered machine, if you think this will answer my purpose.—W.H.J.

(1.) A lightweight motor cycle is very useful as a solo mount, but for sidecar work you have not sufficient reserve of power, nor yet strength, and it is not advisable to fit a machine under 3½ h.p. with a sidecar. (2.) We should advise you to buy a second-hand machine of first-class manufacture, about 3½ h.p. You would get one of these for about £40, with a sidecar. You will naturally not buy without a trial run, and this will tell you whether or not the machine starts easily.

"MOTOR CYCLES AND HOW TO MANAGE THEM" is recognised everywhere as the standard handbook on the motor cycle. The seventeenth edition (revised) is now ready, and can be obtained from "THE MOTOR CYCLE" Offices, 20, Tudor Street, London, E.C. Post paid, 1/3 per copy.

Carburetter Adjustments.

Would you advise me on the following: I have a new machine with a 2½ h.p. two-stroke engine, and I can only get about 30 m.p.g. It is fitted with a special two-stroke carburetter, and when I purchased the machine it was fitted with 26 jet. I have since put a 24 jet in, but it has not made much difference in the consumption. I can drive with the air lever practically anywhere, and it is only when the air is nearly closed that the engine stops. Sometimes it is necessary to have the throttle wide open for about half a minute, and then close down again before the engine will cease four-stroking. I do not get four-stroking when using benzole.—W.W.

We should advise you to use a smaller jet, and to check every possible point for petrol leakage. If you use the petroil system of lubrication this should not be difficult, as the oil will collect where any leak occurs.

An Unaccountable Knock.

I recently purchased a 1914 4½ h.p. sidecar combination through a dealer of repute who was supposed to overhaul it thoroughly before delivery. I find that, although the machine runs well on the level, when I come to quite a slight hill there is such a pronounced metallic knock that I am obliged to put in second gear. By retarding the spark I can stop this for a little while, but if the incline is at all lengthy the knock quickly comes on again. If I try to accelerate quickly the knock occurs even on second gear. When I got the machine the Senspray carburetter was fitted with a 44 jet. I have now fitted a 32 jet, but the knock is still there. I shall be glad if you will give me a reason for the knock and tell me how to remedy it.—G.L.

You might try fitting a good plug with a single stout electrode. Do not retard the spark more than is necessary, and try closing the extra air a little immediately the engine is labouring. If closing the air and retarding the spark do not stop the engine knocking, then it is clear that the cause is a worn bearing, and there is no alternative but to take the engine down and remedy the defect.

Leaky Carburetter.

[?] The running of my machine is in every way satisfactory, but the carburetter leaks very badly all the time it is running. I can understand a certain amount of vapour blowing out, but there is a constant drip as well; in fact, I think I must waste nearly as much petrol as I use. Can you also tell me how often to lubricate, given fairly flat roads and an easy speed? Opinions seem to vary on this subject.—W.T.

The trouble is probably due to the fact that the needle valve requires to be ground in, or possibly there may be grit resting on the seat, which prevents the valve from cutting off the supply. There are no hard and fast rules to follow when lubricating an engine; for the most part this operation is left to the rider's judgment. A half pumpful every four miles should give good results for 3½ h.p.

Hints on Gear Manipulation.

[?] Will you please be good enough to give me some practical advice on the handling of a Bowden two-speed free engine gear, fitted to a 4 h.p. single? Should I be correct if I carried out the following: (1.) To change up. Start and run the engine with the clutch out till a good speed is obtained, then gently engage the clutch with the low gear in, lift the exhaust and change gear with compression released? (2.) To change down, close the throttle till the machine is running slowly, and change gear?—T.N.

Your method is quite correct, but (1) the engine should be accelerated sufficiently to allow the load to be taken up on the low gear. As soon as you feel the gear engaged, gradually open the throttle, then accelerate until the machine has attained a fair speed, and change up, releasing the compression, engaging the gear and opening the throttle imediately afterwards. (2.) When changing down it is not necessary to raise the exhaust valve. The engine should be allowed to quicken up a little before the low gear is engaged.

READER'S REPLY.

Bad Running against the Wind.

In *The Motor Cycle* for July 15th, "C.B." is complaining of the running of his machine. Perhaps my experience will assist him. I bought a twin fitted with Senspray carburetter, and found that against a head wind I could not give more than quarter throttle with full air. On looking for a likely cause, I found the float chamber was partly in front of the air intake, and I came to the conclusion that probably a partial vacuum was formed behind the float chamber and in front of the air intake, thus starving the engine of air. I moved the float chamber round until it was directly in front and about half an inch from the air inlet, and my trouble was cured.—X 5224.

EXPERIENCES WANTED.

"R.W.B." (Norfolk). — Metro 1915 T.T. two-stroke, single speed. Speed, reliability, consumption, and hill-climbing.

"J.H." (Manchester).—Morgan runabout, standard model. Hill-climbing powers, wear on tyres, reliability, petrol consumption, steadiness in grease, braking power, flexibility, and speed.

"L.G.R." (Narberth). — Philipson's automatic variable gear and Grado multipulley on a Triumph for a hilly country.

"W.J." (Burnley).—3½ h.p. A.B.C., whether suitable for solo and sidecar work. Petrol consumption, speed, etc.

"L.W." (Dolgelly).—(1.) Grado multipulley. Will it act as starter on lightweight? (2.) Calthorpe-Jap, 2¾ h.p., single speed, four-stroke. Reliability, hill-climbing, cool running, and petrol consumption; also speed on level.

"A.C.P." (Deal).—Omega. Comfort, reliability, speed, hill-climbing, and consumption.

ROUTES

KINGSTON-ON-THAMES TO NEWCASTLE-ON-TYNE.—G.F.

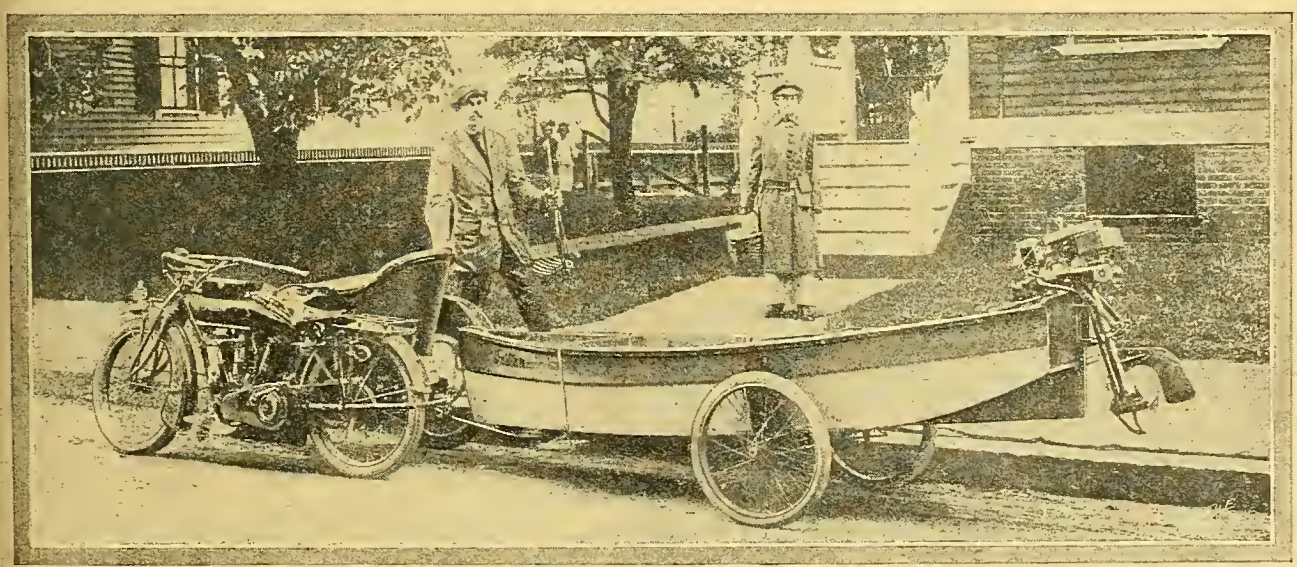
Kingston, Twickenham, Brentford, Ealing, Hendon, Whetstone, Barnet, Hatfield, Welwyn, Stevenage, Baldock, Biggleswade, Eaton Socon, Buckden, Stilton, Wansford, Stamford, Grantham, Newark, Tuxford, East Retford, Barnby Moor, Bawtry, Doncaster, Wentbridge, Ferrybridge, Aberford, Wetherby, Boroughbridge, Leeming, Scotch Corner, Darlington, Aycliffe, Ferryhill, Croxdale, Neville's Cross, Chester-le-Street, Gateshead, Newcastle-on-Tyne.

DORCHESTER TO COLWYN BAY.—L.K.W.

Dorchester, Cerne Abbas, Sherborne, Marston Magna, Castle Cary, Shepton Mallet, Bristol, Pilning, Severn Tunnel, Chepstow, Tintern, Monmouth, Hereford, Leominster, Ludlow, Church Stretton, Shrewsbury, Ellesmere, Wrexham, Mold, St. Asaph, Abergele, Colwyn Bay. Approximate distance, 225 miles. It is necessary to place machine on rail at Pilning to go through the Severn Tunnel, but there is no difficulty about this, as the railway authorities are quite used to handling motor cycles.

BARROW-IN-FURNESS TO HAMPTON COURT, LONDON, avoiding Metropolis.—W.F.H.

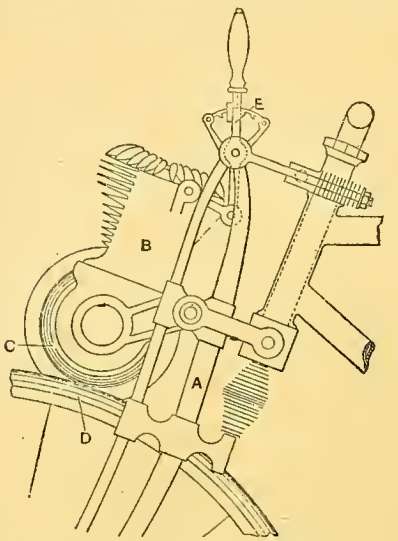
Barrow, Ulverston, Kendal, Kirkby Lonsdale, Ingleton, Settle, Skipton, Ilkley, Otley, Harewood; about two miles south of Wetherby turn right, and go through Aberford, Ferrybridge, Doncaster, Retford, Newark, Stamford, Stilton, Eaton Socon, Biggleswade, Baldock, Stevenage, Welwyn, Hatfield, to Barnet. From here follow R.A.C. London avoiding route (R.A.C. Official Map of Recommended Routes round London, obtainable from *The Motor Cycle* Offices, price 1s. 8d. post free), which intercepts the road to Hampton Court close to Strawberry Hill.



An American motor cyclist and his wife, who are both as devoted to fishing as they are to motoring. They combine the two by motoring to the scene of the fishing operations, and the boat, which is propelled by a detachable motor power unit, is slung on a special chassis and towed behind the Indian sidecar outfit. The boat is twelve feet long, and is sufficiently roomy to provide accommodation for the whole family; when on the road a couple of youngsters occupy it.

An Auxiliary Driving Set.

This auxiliary power plant is carried by a spring fork A adapted for attachment to an ordinary bicycle. There may be a single cylinder B, or two cylinders side by side, and the trans-



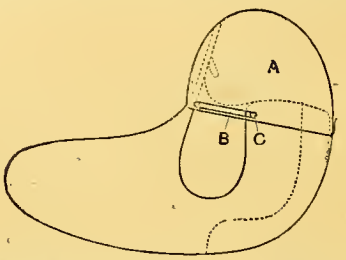
mission is by a roller C acting upon the front tyre D. A free engine effect is obtained by arranging the engine so that it may be raised out of contact with the tyre by means of the rod and

PATENTS by Eric W. Walford

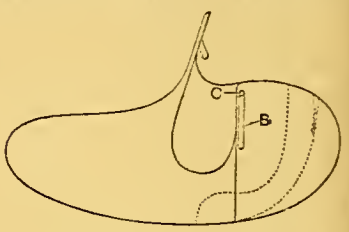
rack device shown at E. Many readers will recall the Ixion two-stroke engine of about 1904, which was arranged in much the same way.—G. Stagni, No. 11,407, 1914.

A Sidecar Hood.

The hood A is of rigid construction, and, when raised, totally encloses the passenger. It conforms with the shape of the rear part of the body, and when



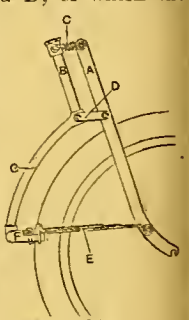
lowered fits around it. The hood is formed with a slot B at each side, which may slide upon a roller C. To bring the hood from the raised position shown it is moved backwards to bring the other end of the slot B into contact with the roller C, and then swung about this as a pivot



into the lowered position.—G. A. E Purvis, No. 2,457, 1914.

A New Spring Fork.

The fork A is connected to the steering head B by links C and D, of which the former is constituted by helical springs. The main spring effect is provided by a laminated spring E at each side, bolted at its rear end to a block F carried by a curved member G connected to the lower end of the steering head. At its forward end each spring E is pivoted on a stud on the fork blade.—B. Lund, No. 5,994, 1914.



Excelsior Motor Cycles.

There is, of course, no connection between the Excelsior machines made in Coventry by Messrs. Bayliss, Thomas and Co. and the American machine of the same name manufactured in Chicago.

A Spanish Agent.

Messrs. F.R.S. Lamps, 7-9, Pershore Street, Birmingham, inform us that their agency for Spain is in the hands of Mr. Harry Walker, Calle Balmes, 84, Barcelona. The firm is preparing a catalogue written and priced in Spanish.

Reviews.

The R.A.C. Official Motor Map of England and Wales. (George Philip and Son, Ltd., 1s. 6d. per sheet.) We are in receipt of sheets 1 and 4 of the above named map. This map is particularly clear, and very handy for touring. All the principal details are marked without any attempt at confusion. Each map is sold in a case with an index of hotels and repairers recommended by the club, and a list of golf courses.

Another innovation is the R.A.C. Record Route Map, by the same publishers. This consists of an outline map, in which the main trunk roads are lightly sketched. The idea is that the tour can be inked in afterwards, and there are spaces left for the date, number of days occupied, make of vehicle used, the mileage, amount of petrol consumed, cost of tour, and members of the party; a file case is provided for the map. This is an excellent idea, as a record of each tour can thus be filed. The maps are sold at 3d. each or 2s. 6d. per dozen, and the file at 6d.

SPARKLETS

An Allon de Luxe.

Messrs. Alldays and Onions, Matchless Works, Birmingham, are putting on the market a *de luxe* model of their Allon two-stroke machine. This will follow the standard specification except that it has a kick starter, clutch, and larger and heavier tyres, and that the fittings and finish are of superior quality. The machine can be enamelled in any desired colour, and the price is £50.

Kaylon: A New Aluminium Solder.

Kaylon is an aluminium solder, used, like other aluminium solders, without flux. When it is required to solder two pieces of aluminium the surfaces to be joined are carefully scraped, with the object of removing the outer oxidised hard skin on the surface of the metal. The metal is then warmed, preferably in a blow lamp, and at the same time the stick of Kaylon, which is held in greaseproof paper, is gently rubbed over the surface. It is extremely important that all grease should be removed, and, as a further precaution, before the aluminium is heated, it may be wiped over with a rag soaked in benzole or petrol. The great aim in the application of Kaylon is to avoid overheating the metal, and the solder should just become fluid, but not absolutely liquid. This state should be maintained while the solder covering the aluminium is rubbed in different directions by means of a special wire brush, enabling the Kaylon to bind well with the surface of the metal, any oxidation of the surface beneath the solder being removed by the stiff bristles of the brush. The faces of the two pieces of metal to be joined are first tinned, and are then placed together, and the heat applied until the Kaylon runs and so forms a connecting skin. This patent solder is claimed to excel others in that it is more permanent, owing to its freedom from oxidation when exposed to the air. Kaylon is sold by Messrs. G. T. Riches and Co., 19, Store Street, Tottenham Court Road, London, W.C.

Catalogues Received.

A leaflet describing Cox-Walker electric lamps. Cox-Walkers, Ltd., North-Eastern Electrical Works, Darlington.

The Tynesider seat. A pillion seat for attachment to the carrier. T. E. Henderson Co., 25, Albion Road, North Shields.

The British Excelsior motor cycle. Bayliss, Thomas and Co., Excelsior Works, Coventry. The working of these machines is illustrated by clear half-tone blocks and line drawings.

We are in receipt of a folder from the Benjamin Electric, Ltd., 1a, Rosebery Avenue, E.C., dealing with the Benjamin electric motor cycle horn, which is to be found on some of the best known American motor bicycles.

The British Montgomery Sidecar Masterpiece. A booklet containing numerous models of Montgomery sidecars of all types and prices. The book is well got up and illustrated, and makes interesting reading.

MOTOR CYCLES FOR SALE.

B.S.A.

B.S.A., 1912¼, 3½h.p., wicker sidecar, 2-speed, free engine, new B.S.A. carburetter, perfect condition; £38/10.—Woods, South-western Stores, St. John's, Knaphill, Woking, Surrey. [9414

B.S.A. Model de Luxe Auto-Wheel and shock absorber, with B.S.A. special Auto-Wheel bicycle, 1914, painted all black, oil bath gear case, coaster hub brake, acetylene lamp, Dunlop tyres, good as new, not ridden 200 miles; accept £17.—Beaty, Strathnairn, Alderley Edge. [X3020

Calcott.

1912 Calcott, 2½h.p., splendid condition; £16/10, no offers.—Gaught, Hairdresser, Coventry. [X3008

Calthorpe.

CALTHORPE, 2½h.p., perfect order; £18/10.—Washington, Middlewich. [X3069

CALTHORPES.—All models in stock.—Lamb's, 151, High St., Walthamstow. [9101

CALTHORPE, 2h.p., 2-speed, 1914, splendid condition; £18/10.—Spinks, Lynn Rd., Ely, Cambs. (1) [9383

CALTHORPE-J.A.P. Fixed Engine 1915 Motor Cycle; £22/10.—Marshall, Castle St., Cambridge. [X2491

CALTHORPE, 2h.p., 2 speeds, 1914, not run 500 miles, condition as new, faultless; £20.—Keen, 2, Germain St., Chesham, Bucks. [9340

CALTHORPE, 1915, 2-stroke, not run 1,000 miles, fully equipped, in excellent condition; 21 gns.—F. Doggett, Girton, Cambridge. [9423

CALTHORPE, 1915, latest 2-speed lightweight models in stock; cash or extended terms.—Eagles and Co., High St., Acton. [X3074

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CALTHORPE, 1915, 2-stroke, 2-speed, just arrived from works; immediate delivery, fitted with special magneto; £31/18.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9427

1915 Calthorpe-J.A.P., 2-speed and clutch, £34/15; also 2¼h.p. 2-stroke, 2-speed, £31/8/6; delivery from stock; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6409

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CAMPION Motor Cycle and Sidecar, 1914, 6h.p. twin, 3-speed, free engine, as good as new, very fast; £55, or near offer.—Bridges, The Lodge, Chesterfield Rd., Mansfield, Notts. [X3009

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CHATER-LEA, 3½h.p., just overhauled, in good running condition, new accumulator, B. and B., lamp, horn; £8, or nearest.—27, Albert Rd., Walthamstow. [9484

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3½h.p. Clarendon, mag., spring forks, etc., running order; £10. Evenings 4 till 7.—19, Orlando Rd., Clapham Common. [9419

Clyno.

CLYNO Combination, 1913, fully equipped, special lubricating tank and lighting system, excellent condition; 50 gns.—Doggett, Girton, Cambridge. [9422

CLYNO, late 1913, 6h.p. combination, 3-speed, kick starter, with handsome Clyno coach sidecar, in excellent order; 60 gns.—Lamb's, 151, High St., Walthamstow. [9102

CLYNO 1912 5-6h.p. Combination, 2-speed, kick start, free engine, new coachbuilt body, recently overhauled, spares; £38.—Coleman, 3, Parsons Hill, King's Norton. [X2728

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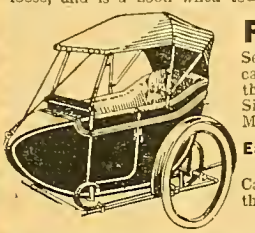

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DOUGLAS, 2¾h.p., 1912-13, 2-speed, speedometer, lamps, horn, good condition; £30.—Scorey, 547, Holloway Rd., N. [9372

1915 Douglas, 2¾h.p., one only in stock.—Wire or telephone, 388 Cambridge.—Robinson's Garage, Green St., Cambridge. [0612

1915 Douglas, 2¾h.p., only done 200 miles, owner enlisted; £45.—Moffat, Town Hall Garage, Yeovil. Tel.: 50 Yeovil. [9203

DOUGLAS, 3½h.p., late 1914, coachbuilt sidecar, and all accessories, excellent condition; £68.—Turpin's, 29, Preston Rd., Brighton. [0716

DOUGLAS.—All models from stock from sole wholesale and retail Midland agents, Colmore Depot, 31, Colmore Row, Birmingham. [X3036

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DOUGLAS, 1912, clutch, 2-speed, just overhauled by makers, accessories; nearest £35; view Bristol.—Box 9,037, *The Motor Cycle* Offices, Coventry. [X3025

DOUGLAS, T.T., 1914, 2¾h.p., 2-speed, lamp, horn, tools, in good condition, property of R.E. officer at Front; £38.—Bishop, St. George's Av., Northampton. [X2958

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ENFIELD Combination, 1915, in stock; 80 gns.—Ratcliff Bros., Frinton-on-Sea. [X2624

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2¾h.p. Forward, 3 speeds, 1914, pedal starter, lady's frame; great bargain, £30, or offer.—J. M. Sinclair, Lieut., 9th R.J.R., Seaford, Sussex. [9394

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F.N. Lightweight, 2 speeds, clutch, just overhauled, tyres good; £20.—Earl, 5, Heath St., Hampstead. [X3113

2¾h.p. F.N., long bars, dropped saddle, brass tank, Hellesen ignition, overhauled; £8.—Railway Garage, Staines. [9503

1910 F.N., 2½h.p., 2-speed, free engine, many improvements, new tyres, just overhauled; £20.—Cooper, Littlebury, Essex. [X3084

F.N., 4-cyl., and coachbuilt sidecar, 2 speeds, clutch, and kick starter, just overhauled, in splendid condition; bargain, £35.—Earl, 5, Heath St., Hampstead. [X3114

F.N., 4-cyl., 1911, little used, perfect running order, £5 spent on new gears July, Rom tyres, nearly new, speedometer; £28; owner buying car.—Soundy and Co., Northwood, Middlesex. [X2993

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1913 Gamage, 2¾h.p., Sturmey-Archer, clutch model, in excellent condition, with accessories; £17.—A. Mountjoy, 8, Rupert St., Pilsley, Chesterfield. [X2995

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HARLEY-DAVIDSON 7-9h.p. Twin and 4h.p. in stock.—Tarpins, 29, Preston Rd., Brighton. [0713

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HAZLEWOOD, 5-6h.p., 1915, soiled, Ivy sidecar, accessories; £68.—Osborne, Bore St., Lichfield. [X2579

Hobart.

HOBART, 2½h.p., single-speed, in stock.—Sidney Garage, 29, Green St., Cambridge. [9402

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INDIAN 1915 7-9h.p. Combination, 3-speed, electrical equipment, £17/17 sidecar, new July 10th; £87/10, no offers.—Robinson, White Gables, Colwyn Bay. [9410

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INDIAN, 1915, 5h.p., 3-speed, kick starter, new fortnight ago, 450 miles, lamp set, speedometer, and horn, absolutely as new; cost £70, sacrifice for £60.—5, The Parade, Belmont, Surrey. [9424

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James.

JAMES, 2-stroke, 1915, little used; £33.—Nowill, Belper. [9375

JAMES Combination, received last month, ridden twice only; owner going abroad; offers.—7, The Vale, Acton. [9391

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SCOTT Combination, late 1912, fine condition, Binks, 1915 lubrication; £40; full particulars sent, or exchange with cash larger combination.—Standring, 1, Ramsay St., Rochdale. [X3083

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SUNBEAM, 1913-14, 2-speed, 2¾h.p., kick starter, Lucas accessories; 41 gns.—Lamb's, 151, High St., Walthamstow. [9104

SUNBEAM, 1915, 3½h.p., and Middleton sidecar, new June, run 200 miles; £70, or near offer.—Barkston Garage, Earl's Court Rd. [X3023

SUNBEAM Agents.—Early deliveries 3½h.p. models; lists on application; exchanges entertained.—Tel.: 388, T.A.: Bicycles.—Robinson's, Garage, Green St., Cambridge. [6865

1915 Sunbeam, 3½h.p., complete with £16/16 sidecar, Lucas lamp, horn, etc., absolutely unscratched, run 400 miles; 80 gns.—Bradshaw's, The Motor House, Preston. [X2456a

Triumph.

1915 Junior, in stock.—The Premier Motor Co., Aston Rd., Birmingham. [9365

TRIUMPH, 3h.p., 1906, good running order; £11.—Marshall, Castle St., Cambridge. [X2490

TRIUMPH, 1910, F.E., in good running order; £22.—J. Brackley, Kirtlington, Oxon. [X3018

1914½ Triumph, 4h.p., 3-speeds, lamps, horn, tools, as new; £45; deposit.—Pulleyn, Joiner, Heworth, York. [X2721

FOR Sale, 1914 Triumph, 4h.p., 3-speed Sturmey-Archer, excellent condition; £45.—Apply, Wallingford Cycle Stores, Wallingford. [9390

TRIUMPH 3½h.p. Motor Cycle, in excellent condition; £25; will ride 20 miles.—Blackshaw, 38, Sherborne St., Gorton, Manchester. [9483

1915 Junior Triumph, fitted with lamp, horn, rear light, ridden few miles only, equal to new; £36.—Parker and Son, St. Ives, Hunts. [9478

3½h.p. Triumph, 2-speed, coachbuilt sidecar, horn, lamp, etc., splendid condition; £30.—Shearman, Railway Terrace, Rothwell, Leeds. [X3078

TRIUMPH, late 1913, 3½h.p., 3 speeds, all accessories, plenty spares, just overhauled, perfect condition; £40.—Evans, Highertown, Minehead. [X3024

TRIUMPH, 1914 model, 4h.p., 3 speeds, clutch, lamp, horn, speedometer, spares, in perfect condition; owner at Front; £45.—Scorer, 33, Percy Gardens, Tynemouth. [X2945

TRIUMPH, 1909, 3½h.p., very good condition, engine thoroughly overhauled, genuine, sound machine; £18.—Layton's Garage, Bicester, Oxon. 'Phone: 35 Bicester. [X3119

1912 Triumph, lamp, horn, and many spares, lately overhauled by makers; any trial or inspection given; £27.—James Thompson, jun., Newark, Sanquhar, Dumfriesshire. [X2960

TRIUMPH, late 1914, clutch model, 3-speed, as new, done only 50 miles, since stored, as owner is at the war; £55, or near offer.—Gilbert, Comp Farm, West Malling, Kent. [9044

TRIUMPH, 1914½, 3 speeds, and clutch, good condition, with fortnight old semi-sporting coachbuilt sidecar; £56.—2nd. Lieut. Meredith, 2-7th Cheshires, Bedford. [X2736

TRIUMPH, T.T., 3½h.p., late 1913, done 2,500 miles, Philipson pulley, Stewart speedometer, Lucas lamp and mirror, very fast, new condition; £37/10.—Quiniswood, Thurshy, Carlisle. [X2939

1914 4h.p. 3-speed Triumph and 1914 coachbuilt Godiva sidecar, lamps, speedometer, horn, spare belt, tube, valves, all in good condition; £53.—Philpott, Tanfield, St. Peter's Rd., Margate. [X2959

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MOTOR CYCLES FOR SALE.

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TRIUMPH, 1911-12, 2-speed, free engine, and Bramble coachbuilt sidecar, luggage grid, 3 lamps, re-enamelled, and thoroughly overhauled; price £32; trial on application to B.J.S., 20, Wantage Rd., Reading. [9458

TRIUMPH, 1914, 4h.p., 3 speeds, and clutch, with Millford chassis coachbuilt sidecar, perfect condition, done 1,000 miles, new Kempshall tyre; £60.—Hinchcliffe, 43, Wombwell Main, near Barnsley. [X2940

1913½ 3-speed Triumph, with new coach sidecar, engine and gear recently overhauled by makers, new tyre, lamp, and accessories, splendid condition; £45 each.—Box L967, *The Motor Cycle* Offices, 20, Tudor St., E.C. [8793

£10.—Triumph, good accumulator model, recently overhauled by makers, modern B. and B. carburetter, new non-slip Dunlop and inner back, recently driven Cornwall-London in day, good condition.—Stewart, Electricity Works, Ilfracombe. [X3011

1915 Junior Triumph, new Middle May, roller bearing big end, enamel and nickel like new, not run 1,000 miles, head lamp and Lucas acetylene tail lamp, all tools and accessories; cost as now fitted £44/10, price £39.—Egerton, Thornhill House, Stanhope Lines, Aldershot. [9462

TRIUMPH, 1914, 4h.p., 3-speed, and clutch, with cane-bodied Gloria spring wheel sidecar, capital order throughout, thoroughly overhauled guaranteed sound, well tyred, good appearance, complete; price £55, no offers.—Layton's Garage, Bicester, Oxon. 'Phone: 35 Bicester. [X3120

Velocette.

VELOCETTE.—New 1915 models in stock: Model A, £27; model D, 2-speed, chain drive, £35/10; model DL (special open frame, lady's), £36/10, the most economical lightweight.—The Premier Motor Co., Aston Rd., Birmingham. [8674

V.S.

V.S., 6h.p., 2 speeds, free engine, kick starter, wicker sidecar, lamps, horn, accessories; £22.—Foxall, 17, Birkenhead Av., Kingston, Surrey. [X3006

Williamson.

WILLIAMSON New 1914 Water-cooled Combination; £99/5, or close cash offer.—Motories, 68, Horton St., Halifax. [0706

8h.p. Water-cooled Williamson and sidecar, 1914, 70 gns., or exchange with cash for Singer, Standard, or Calthorpe light car.—Bowdens's Garage, Ivybridge. [X2938

WILLIAMSON 1914 Water-cooled Combination, excellent condition, hood, screen, Binks carburetter, electric horn, speedometer, lamps, etc.; £55; any trial; no offers.—Pendene, Warwick Rd., Wanstead, Essex. [X2987

Wooler.

1915 Wooler, 2¾h.p., 2-stroke, variable gear, free engine, new March, not ridden 500 miles; cost complete with accessories £50, accept £37/10; must sell.—J. Storey, Beaumont Arms Hotel, Shepherd's Bush, W. [9416

WOOLLER, 1915, 2¾h.p., 2-stroke, variable gear, Stewart speedometer, long horn, Lucas head light; cost £56; mileage under 1,500, condition as new; £47, or offer.—Seen at Blake, 216, Westbourne Grove, W. [9393

Yale.

YALE Motor Cycle in stock, 8h.p., 2-speed, kick start; £59/10.—Jones, The Broadway, Muswell Hill. Sole agent for N. London, trade and retail. 'Phone: Hornsey 2562. [7636

Zenith.

ZENITH, 1914, Gradua gear, condition like new, 4h.p.—Collyer, 313, High Rd., Wood Green, N. [X3067

1912 Zenith-Gradua, in good condition; 36 gns., great bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X2593

8h.p. Zenith 1914 Combination, countershaft, clutch model, perfect order; £65.—Particulars, Tatham, Shade, Todmorden. [X2991

ZENITH-GRADUA, 1912, 3½h.p., good order, lamp, lond bell, good tyres; £25.—Humphreys, Red Cottage, Farnham Common. [X3016

1914½ Zenith, 5h.p., countershaft, as new, bargain, spares; £46.—1, Beechworth Villas, Dawley Rd., Harlington, Middlesex. [9451

ZENITH-GRADUA, 1913, 4h.p. J.A.P., T.T. model, very fast, head lamp, new belt, fine condition, engine in perfect condition; best offer over £27.—S.M.C., 30, Homefield Rd., Chiswick. [X2723

ZENITH-GRADUA, 1913½, 6h.p., and Millford Corvette sidecar, semi T.T. bars, lamps, horn, speedometer, spares, carefully used, fast; £50.—10, Netherton Rd., St. Margaret's, Twickenham. [9438

ZENITH, 1915 models in stock, 4-5h.p., countershaft gear, £68/7; 8h.p. countershaft, £80/9/6. Sidecars in stock to fit. Exchange or extended terms.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0479

ZENITH, 1914, 4-5h.p. twin J.A.P., bought November, not done 3,000 miles, Watford speedometer, lamps, and full set spares, just been thoroughly overhauled, excellent condition; £45.—E. A. Ridley, 30, Tavern St., Ipswich. [9449

MOTOR CYCLES FOR SALE.

Ladies' Machines.

1914 Lady's Douglas, complete, perfect condition; accept £46.—Bowler, Nottingham Rd., Loughborough. [X2724

LADY'S Humber, 2h.p., free engine, pedal starting, in absolutely new condition; £22.—Alexander's, 115, Lothian Rd., Edinburgh. [9399

VELOCETTE, Model DL, special open frame lady's, 2¼h.p., 2-speed, 120 miles per gallon; £36/10; immediate delivery.—The Premier Motor Co., Aston Rd., Birmingham. [8675

Miscellaneous.

HEBDEN'S Have in Stock:

1915 Enfields 6h.p. Combinations, 3h.p., and 2¼h.p. lightweights.

1915 Indians, 3½h.p., 5h.p., and 7h.p., with or without sidecar.

1915 James, 4¼h.p. 3-speed combinations and 2¼ h.p. 2-stroke 2-speed.

1915 Wolf-Peco, 2¼h.p., 2-stroke, 2-speed; £33.

1915 Wolf, 2½-3h.p., 2-stroke, 2-speed; £31.

1915 New Imperial-Jap, 2½h.p., 2-speed; £34.

1915 Enfield 6h.p. Motor and Sidecar, fit with hood, screen, Lucas head lamp, 70/- set Lucas rear light, horn, sidecar lamp, guaranteed as new, not run 300 miles; cost £98, accept £92.

1914 6h.p. Enfield and Sidecar, complete, as new; £69.

1913 6h.p. Enfield and Sidecar, complete; a gift, £50.

1912 Humber, 3½h.p., 2-speed, 1914 engine, new Canoelet sidecar; £38.

1912 5-6h.p. Clyno and Sidecar, 2-speed; a bargain, £40.

2¾h.p. Douglas, just been overhauled, perfect; £18.

1912 2¾h.p. Enfield, 2-speed, complete; a bargain, £23.

1915 2½-3h.p. Wolf, 2-speed, as new; £27, complete.

4h.p. Riley and Coachbuilt Sidecar, 2-speed, free engine, kick-starter, good order; £15.

1915 New Humberette 2-seat. Car, 8-10h.p., 3-speed and reverse, non-skid tyres on back; best offer accepted.

1915 10h.p. Singer Car, dynamo lighting set, dickey seat.

1915 New Williamson Cycle Car, 2-seat., 8h.p., 3-speed, water-cooled; £120.

HEBDEN'S Motor Mart, St. James St., Burnley. Tel.: 488. [9493

PALMER'S Garage and Motor Auction Rooms, 183, 185, 187, 189, High St., Tooting.

PALMER'S Garage, Tooting.—The pre-eminent place for purchasing motor cycles and accessories. Auctions fortnightly.

PALMER'S Garage, Tooting.—3h.p. Rex, low built, fast, engine just re-bushed; £8.

PALMER'S Garage, Tooting.—3h.p. 1913/14 Royal Enfield twin, 2-speed countershaft, lightweight, as new; £37/10.

PALMER'S Garage, Tooting.—3½-4h.p. 1914-5 Douglas combination, as new, tyres hardly scratched; £75.

PALMER'S Garage, Tooting.—2¾h.p. N.S.U. twin lightweight, 2 speeds, F.E.; £17/10.

PALMER'S Garage, Tooting.—2½h.p. Minerva, £4; 4½h.p. F.N., 4 cyls., £10.

PALMER'S Garage, Tooting.—3¾h.p. Scott, 2-stroke, 2 speeds, 2 cyls., 1913 late model, as new; £37/10.

PALMER'S Garage, Tooting.—2¾h.p. nearly new Levis lightweight de luxe, 2 speeds, 2-stroke; £35.

PALMER'S Garage, Tooting.—3½h.p. Humber, 2-speed, £18; 3½h.p. Premier, 2-speed, £25.

PALMER'S Garage, Tooting.—7-9h.p. Bat-Jap, 2-speed, £20; 3½h.p. Centaur, £10; 3½h.p. Fafnir, £12/10.

PALMER'S Garage, Tooting.—Write at once for illustrated duol catalogue of auction sale containing also over 50 photographic illustrations of automobiles in stock. [9488

150 Motor Cycles and light cars for sale; low cash prices.—Motories, 68, Horton St., Halifax. [0708

4h.p. Douglas, condition as new, 2-speed, kick start, Lucas lamps, horn, Watford £4/4 speedometer; £55.

2¾h.p. Sun, nearly new, Lucas lamp, horn, 2-speed, free engine; £35.

3½h.p. Rudge, free engine, lamp, just been overhauled by makers; £27.—L. H. London, Leighton Buzzard, Beds. [9429

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Indian Models.

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Model C. 7 h.p. Twin **Indian,** 3-speed gear, electrically equipped, kick starter, and speedometer	73	10	0
Model D. 7 h.p. Twin **Indian,** Road Racer, single speed and clutch	57	0	0

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MOTOR CYCLES FOR SALE.

Miscellaneous.

3½h.p. Motor Bicycle and sidecar, done 750 miles; good condition; £30.—99, Churchfield Rd., Acton. [9441

3¼h.p. Fafnir, in good condition; also 3½h.p. Rex, wants overhauling; seen any time; £20 the two.—156, High St., Peckham. [9421

IF You Want Bargains in second-hand motor cycles you can get them at Wauchope's (cash or easy terms), 9, Shoe Lane, Fleet St., London. [2000

EAGLES.—James, 3½h.p. 1914 twin, 2-speed countershaft gear, kick starter, enclosed chain drive, T.T. handle-bars, all accessories, new condition; £47/10.

EAGLES.—O.K., 2h.p., late 1914, as new, 2-speed countershaft gear, belt and chain drive, semi T.T. handle-bars, all accessories; £23.

EAGLES.—N.S.U. 3h.p. twin, 1914, loop frame, rear springing, 2 speeds, free engine, kick-starter, footboards, Dunlop heavy tyres; £35.

EAGLES.—Rover, 3½h.p., 1914, 3-speed model, with footboards, front and rear lamps, accessories; £42.

EAGLES.—Bat-Jap, 8h.p. twin, 1911-12 model, 2-speed gear, free engine, spring frame; £29/10.

EAGLES.—N.S.U., 6h.p. twin, 2 speeds, free engine, Kempshall tyres, footboards, coachbuilt sidecar; any trial; £28/10.

EAGLES.—Precision, 4¼h.p., 1913, 2-speed, countershaft gear, kick-starter, chain and belt drive, coachbuilt sidecar; £39.

EAGLES.—N.S.U., 3½h.p., 1912, model de luxe (85×88), Amac latest carburetter, N.S.U. 2-speeds, adjustable pulley; £25.

EAGLES.—Any of the above can be had on approval, "The Motor Cycle" deposit system.—Eagles and Co., High St., Acton. Tel.: 556 Chiswick. [X3075

5-6h.p. Motor Cycle and wicker sidecar for 2, twin, 2-speed, B. and B., Bosch, 2½ Dunlops, powerful; £26, or exchange light machine.—Rosebank, Hatton, Hounslow. [9389

SECOND-HAND Motor Cycles.—We have a large stock of machines in excellent condition at very low prices to clear; send us your requirements and we will guarantee to satisfy you.—The Morris Garages, Oxford. [0314

COLMORE Depot only advertise those machines which they have in stock. They are here at the time of writing, but may be sold when this advertisement appears. Anyhow, write at once.—Colmore Depot, Birmingham. [0714

ONE F.N. 2-speed Motor Cycle, lightweight, £25; one F.N., 4-cyl., single speed, £25; one O.K. Junior 2-speed lightweight, £25; one Zenith, 6h.p., and sidecar, free engine, and kick starter, £65.—Graves and Co., High St., Mablethorpe. [9436

IF You Want a cheap motor cycle (solo or combination), you should write or call upon Morgan and Maxwell, The London Motor Mart, 80, High Rd., Streatham, who have Alldays, Auto-Wheels, Bat, Bradbury, Brown, B.S.A., Clyno, Douglas, Enfield, F.N., Humber, Indian, James, J.E.S., Levis, Matchless, New Hudson, N.S.U., Rex, Rex-Jap, Rudge, Singer, and Zenith mounts in stock. Cheap sidecars, speed gears, magnetos, belts, tyres. Write us immediately; we can save you money. [X2562

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PHŒNIX Sidecars from £4/17/6 to 14 gns.; write for catalogue, fully illustrating the various models.

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PHŒNIX Sidecars.—See our latest design underslung chassis, coachbuilt sidecar; 10 gns.; easy terms arranged.

PHŒNIX Sidecars.—We are also making a special coachbuilt sidecar; £8/15.

PHŒNIX Sidecars on hire; exchanges made; good prices allowed for other makes in exchange.

PHŒNIX Sidecars, second-hand; we have always a large selection from 50/-; weekly list published.

PHŒNIX Sidecars are built as sidecars should be; our reputation is a guarantee; see testimonials.

PHŒNIX Sidecars.—100 complete sidecars always on show; call, write, or 'phone.

PHŒNIX Sidecars are manufactured throughout in our own works; originators of the Phœnix Trimo forecar, popular throughout the world.

PHŒNIX Sidecar Dept. (Proprs. Phœnix Motors, Ltd., established 1889), 736, Holloway Rd., and 4, 5, 6, Criterion Mews, London, N. Tel.: Hornsey 449. Telegrams: Sycamix, Upholl, London. [2218

COACHBUILT Oakleigh Sidecar, nearly new; genuine bargain, £7/10; photo.—31, Borough, Farnham. [9378

TORPEDO Sports 1914 Sidecar, lamp, suit Zenith; 6 gns.—Railway Garage, Staines. 'Phone: 46. [9502

COACH Sidecar Bodies made to suit any chassis from £3.—Grey Friars Bodies Co., Croft Rd., Coventry. [X1600

CANOELET Sporting Models and several others in stock from £8.—Lamb's, 151, High St., Walthamstow. [9107

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SOUTH AFRICA.—Central News Agency, Ltd. PARIS.—Smith's English Library, 248, Rue Rivoli.

Support for Spring Frames.

SUPPORT for our campaign for rear sprung motor cycles has reached us from many quarters. From readers north, south, east, and west we have received letters urging the desirability of springing the saddle-pillar or the rear portion of the frame of modern motor cycles. Besides this, from evidence we have already collected more than one manufacturer has not passed the subject over without giving it earnest thought and consideration, and though we may see no immediate change in respect of various leading types, the change will come in certain makes sooner or later. A number of firms, too, have been privately testing spring frame devices for some time past, and may ere long hit upon a design which satisfies their ideals both in efficiency and appearance, for as we have already pointed out, the designing of a springing device efficient in absorbing road shocks, which does not develop rattle and is yet inoffensive to the eye, is a most difficult achievement. But motor cyclists must be patient; pressing as the need is for greater comfort, the bad road surfaces we have alluded to are by no means universal.

It will be obvious, too, that an energetic campaign could not be pursued at this juncture with the country, and especially the engineering section, in the state it now is consequent upon urgent Government demands, but a perfect spring-framed machine would be of real advantage to the Government at this time. The shocks to every part of the machine will be cushioned, and the reliability of the machine thus increased. How many cases of broken mudguards, stands, leaky tanks and such like could be overcome by the adoption of a springing device it would be difficult to estimate. But experienced riders know the outstanding need, and though many continue to buy rigid-framed machines, they would willingly adopt spring frame mounts if their pet manufacturer marketed one. The chief need for springing is the huge potential field which would be attracted to the ranks of motor cyclists, particularly of the middle-aged class. Now is the opportunity for mechanical experts to evolve designs which will give them a sure start over their competitors.

The Wastage of War Vehicles.

ONE of the questions which must have entered any thinking motorist's mind in connection with the war is, What will become of the hundreds of Government motor cycles, motor cars, and lorries after the war? It is a well-known fact that the wastage on motor vehicles is tremendous—far and away more serious than was ever supposed, not to mention the fact that many times the number ever contemplated as likely to be required are in actual use. Collisions, breakages, fires and what not have already produced many a valuable scrap heap, and if this turmoil continues for many months to come, as there is every prospect of it doing, there will be a big field for the bargain hunters ere long. It is a great pity that many of the damaged motor vehicles, the services of which have already been dispensed with by the Government, cannot be released at once, as with the dearth of materials for the manufacture of new vehicles, the prices which would be realised are, at the moment, likely to be greatly in excess of the figures they would fetch when times are more normal and "scrapped" vehicles easy to obtain. But the Government is too much involved in a much more important task for it to be expected that anything can be done for some time to come, notwithstanding the loss of several hundred thousands of pounds. One can, therefore, only conjure up in one's mind what a heap of treasure there is lying aside at the different bases, and how tempting it would be to many to pick out those vehicles which, after the necessary attention, are still capable of further service; for it must be remembered that the war has yet been much too short to wear out a first-class vehicle.

An index to the advertisements in this issue will be found on the page facing the back cover.

Motor Cyclist Volunteers on Active Service.

OUR gallant Italian Allies in their campaign against Germany and Austria are, needless to say, utilising motor traction and motor cycles on an extensive scale. In one particular direction, and that is the active utilisation of motor cyclist volunteers, they have gone a step further than the British authorities. Whilst the members of volunteer corps in various parts of England are spending their week-ends in training with little or no encouragement from the War Office, the Italian Government has sent at least one section of motor cyclist volunteers to the Front. Together with a corps of pedal cyclists, they numbered about 500, and great scenes of enthusiasm were witnessed in Milan when they left for the frontier last month.

The majority of the machines employed by the Italian motor cyclist volunteers are of British manufacture, but there are a few of Italian build. The entry of Italy into the war and the use of British motor cycles by the Government will mean fresh opportunities of demonstrating the reliability of the British machine, which already has gained an enviable name.

SCENES DURING TRAINING OF THE ITALIAN MOTOR CYCLIST VOLUNTEERS. A SECTION OF WHOM ARE NOW ON ACTIVE SERVICE.

Footboards v. Footrests.

I am rather surprised to see so many designers equipping their machines with footboards. To my mind the best sprung footboard, whatever its angles and insulation, cannot afford the same comfort as a couple of pairs of rigid footrests. They limit the legs to one position and to one angle, and the contact between their surfaces and one's boot sole is spasmodic. Two pairs of footrests give you something to push against when you brace yourself for a speed burst, and your boot sole swings round them, whereas it is jerked off a flat board. Last, but not least, when the long awaited tumble comes, you can kick the damaged footrests straight, supposing you have gone to earth with sufficient heaviness to kink them all; but if the machine had footboards, you can only heave the splintered relics over the fence, and wonder what you are to do with your feet till there is a chance to procure spares. However, others appear to differ on the point; and I notice that the *modèle de luxe* is generally equipped with boards.

A Novel Tyre Repair Kit.

Many tribulations have rendered me so expert with the standard tyre repair kits that I could almost mend a puncture with gum and postage stamp edging. So I invariably turn a rather glassy eye on any novel and sensational repair notions lest I should have to undergo a fresh novitiate under the new conditions. However, I plead guilty to a certain interest in a sample tube repaired under the "Mustikon" patents, which a friend showed me the other day. The puncture, it will be recalled from the description which appeared in *The Motor Cycle* of a fortnight ago, is enlarged a trifle, if necessary, and cut round, if its shape is irregular. Then a kind of glorified indiarubber collar stud is solutioned and inserted by stretching the tube, so that one boss of the stud is inside the tube and the other outside, the rubber of the tube being allowed to contract round the shank of the stud, which is of greater diameter than the puncture. This sample repair had been made without solution, and was airtight, so that I originally fancied I had hit on a design which eliminated messy and odorous solutions. I rejoiced greatly, for the modern solution is more volatile than its inferior predecessors, and is apt to dry up during the intervals between punctures. But I am informed that the studboss is meant to be solutioned to the tube, to resist the effects of friction against the cover. Even so, the patent is interesting; it should make a very strong job.

The Best Handle-bars.

I notice the trade seems to be settling down to a standardised type of handle-bar. A common type is fairly narrow, brought well back towards the saddle, upraised considerably to a point an inch or two behind the grips, and the tips carrying the actual grips are sharply dropped. The idea is that the rider can sit straight up, and that the grips then lie at the natural angle for his hands and wrists. Personally, I detest this type of bar. It is probably first-rate for sidecar work of the ordinary tourist variety, but it gives one comparatively poor steering control for fast work, and especially in fast cornering, for it tempts one to concentrate one's weight on the back wheel; above all, it creates the tendency to slouch. It fits you equally well whether you sit bolt upright, as if you had swallowed the poker, or whether you hutch yourself like a half-filled sack of flour, with an ugly backward hump in your spine. Purchasers should be careful to specify the type of handle-bar which they fancy. I plump every time for the wide medium dropped bar, which compels me to keep my backbone straight, which affords immense leverage for close steering and for correcting skids, and which keeps part of the weight of my body on the front wheel, and so eliminates the unspeakably perilous front wheel sideslip, alike on grease and in fine steering under emergencies.

Average Speed.

"Miles's" article in our issue of July 15th naturally attracted such a speed merchant as myself; and I feel I have a right to discuss it, because I habitually cover more than twenty miles in an hour, and yet, as I have ridden petrol vehicles for eighteen years and covered nearly a quarter of a million miles without one serious accident, I dare to call myself a safe man. "Miles" is perfectly right in recommending a light 5-6 h.p. twin for fast work, though he omits to mention that "light" 5-6 h.p. machines are few and far between, the weight of this class being much nearer 3 cwt. than 2 cwt. He goes on to say that the man who does over thirty-five miles in the hour is "some" rider, and that forty miles in the hour is practically beyond the compass of anybody but a fool who takes terrible risks. My own experience is that a 35 m.p.h. *average* is about the limit of safety for motor bicycles. But I am commenting on the article principally in order to introduce a point which I have not seen in print before, namely, that a fast car is safer at high averages than a fast bicycle—a point which some of our readers will not easily concede, and in which I disbelieved until a lurid member of our staff took me in hand. In the early morning I have done forty miles in the hour on motor cycles on several occasions; but I agree with "Miles" that it is risky, despite the ownership of a cycle which can touch 65 m.p.h., which probably accelerates faster than any car, and can certainly corner faster than any four-wheeler which is not skidded round every bend. The risk lies in the caution with which a two-wheeler must be decelerated. However powerful its brakes, it is dangerous to stop it so rapidly that a skid—wet or dry—may be provoked; and at "forty" averages occasional emergency brakings are inevitable.

Reliability, Simplicity, and Accessibility.

THEIR RELATIONSHIP AND A FEW SUGGESTIONS.

THE heading of these notes sums up the ideal after which all good designers strive, and which a large majority of motor cyclists earnestly desire. There is, however, a minority who clamour for increased power and speed, and this minority, combined with the advertising value of a win in a hill-climb or speed event, has somewhat blinded us to the chief importance of the motor cycle.

Undoubtedly, racing and hill-climbs have improved the motor cycle of a few years ago beyond all recognition; but the object of the motor cycle is to provide a cheap, simple, and reliable form of transit which the man in the street can own, ride, and understand with the minimum of trouble and the maximum of pleasure.

Now, the ordinary man does not require great speed. He would seldom touch 40 m.p.h. whatever the power of his machine, but he requires a vehicle which will average the legal limit, or a little over; in any circumstances, a machine which will carry him over any ordinary hill (not up Snowdon, or any silly freak climb) with absolute certainty, a machine which is flexible and easy to handle in traffic, and, above all, a machine which does not go wrong, or, if it does, is easy to put right. This brings us once again to the words of the heading, "Reliability, Simplicity, and Accessibility."

Reliability.

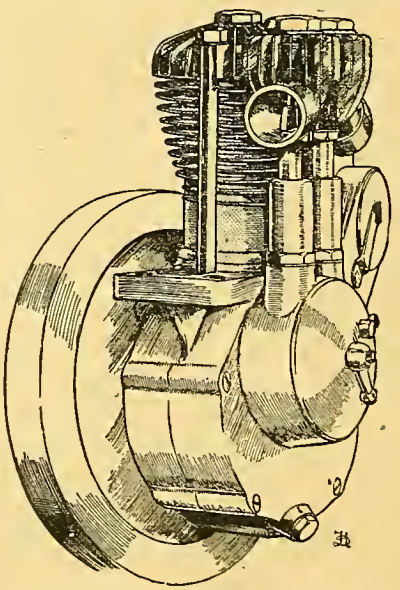
The word reliability in regard to motor cycles has developed a somewhat misleading significance, for one has come to look upon a machine as reliable, which is capable of withstanding a strenuous trial, possibly extending over six days, and climbing freak gradients without mechanical breakdown. A machine which fulfils these conditions may or may not be reliable. It may be in perfect condition and ready to do the same trip all over again, or it may be absolutely "all in" and require serious tuning up or even internal repair before it is capable of further serious touring.

Reliability should include freedom from wear and petty attention as well as freedom from mechanical failure on the road. Therefore, it may be wise to sacrifice a small amount of mechanical efficiency and specialise on large wearing surfaces, efficient lubrication, the exclusion of mud, dust, water, etc.

It is well to remember that the replacing of a worn part generally costs as much as a good many gallons of fuel, so that an increase of durability will more than counterbalance a slight decrease in mechanical efficiency due to high compression, speed cams, etc., especially as replacements only too often mean delay and perhaps a week off the road. It is too often the case that the failure of one small part may mean the replacement of several.

Simplicity.

In nine cases out of ten simplicity and reliability go hand in hand. The fewer the parts (in reason) the less there is to look after, and the fewer the parts liable to wear out, provided the wearing surfaces are well up to the work intended for them. There is such a thing as dangerous simplicity, which is generally synonymous with bad design, for to make one part do the work usually allotted to two or more parts sometimes introduces further and less obvious complications.



Complete engine, as suggested in article.

Take an instance in which reliability and simplicity are a matter of compromise. The writer is one of those who maintain that perfect reliability cannot be obtained without some form of mechanical lubrication, and yet mechanical lubrication necessitates a mechanical pump, and the pump will require some form of drive, thus adding materially to the number of parts. The writer believes that mechanical lubrication is at least as essential to reliability as a magneto, but being (though firmly convinced on the point) one of a small minority, he proposes to leave this subject alone for the time being.

Simplicity should not be confined to the engine alone, but should extend to gears, transmission, frame, and fittings—especially to fittings which require much more attention than they generally receive. Take, for example, lamp brackets and horn clips. Manufacturers of these accessories are forced to supply fittings (usually clips) suitable for attachment to various parts of any machine, with the result that they are often flimsy, awkward to get at, and nearly always dust traps. Machines should be designed with special provision for such fittings, so that one or two sensible sized nuts should be capable of holding them firmly and neatly on their proper lugs. Here we come up against the difficulty of specially made accessories for special machines, but this has nothing to do with simplicity.

Accessibility.

Accessibility and simplicity usually go together, but accessibility and reliability frequently lead to a compromise, and it is sometimes difficult to be certain how much one may be sacrificed to the other. This is the point where the experience and judgment of the designer are chiefly to be recognised, and there is a large divergence of opinions on the subject.

Sometimes accessibility has to be sacrificed on the score of manufacturing difficulties or expense, but always the term accessibility should include ease of dismantling at home for repairs or cleaning, just as much as accessibility for small adjustments on the road.

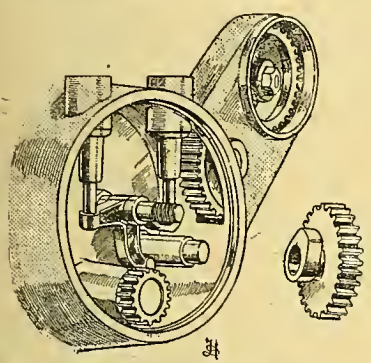
The following notes have been compiled as a result of considerable experience on the road and in the shops, with the idea of suggesting a few desirable features, but as they are purely expressions of personal opinion they must be taken for what they are worth. Some of the ideas are not original, but are in use on certain machines at the present time. As far as possible, the notions have been made applicable to any type of machine, though the engine details are suitable only for single-cylinders.

Engine Details.

The writer has no idea of setting forth to explain the merits of "an ideal motor cycle," but merely to outline a few possible refinements on a plain straightforward machine. The sketches show an engine with an outside flywheel, because this happens to be his personal ideal, but most of the features are equally applicable to the more usual type.

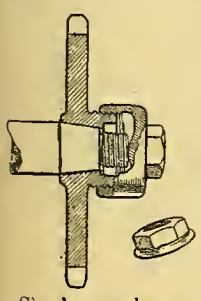
Firstly, with regard to the cylinder, the detachable head type offers so many advantages from the point of view of accessibility that it is obviously desirable. This design has other advantages which are not so obvious, and which need not be mentioned here, and its one disadvan-

Reliability, Simplicity, and Accessibility.— tage (that of leakage at the joint) is so easily obviated by proper constructional process that it may be ruled out. The head may be detached with comparative ease for cleaning purposes or valve grinding, and the carbon deposit can be quickly removed from spots which would otherwise be inaccessible. There are various methods of holding the head in place, of which the A.J.S. crossbar with two long bolts is the most simple, though the three and four bolt principle, as used in American designs and in the case of the Blackburne, is, if possible, more effective for large bore engines. The long bolts should be made to swing at their lower points of attachment, and the lugs in the head slotted so that the head may be easily removed without being lifted unduly high. The cam gear for a single-cylinder engine may be arranged in a number of simple ways, and one of the most satisfactory methods from a



A possible form of single cam timing gear described in the accompanying letterpress.

touring point of view is that illustrated, which is typical of the 1915 Premier and all Blackburne models. Here one cam only is used, and lies directly below one of the tappets (either tappet is suitable, provided the design is arranged to correspond). Both tappets are operated through rockers, one being of the "bell crank" variety. These rockers must be correctly profiled to give a longer lift to the exhaust valve than to the inlet valve and may be carried on a common pivot, which may with careful design also act as a holding down bolt for the circular timing case cover. The combined cam and gear wheel may be mounted so as to rotate on a large diameter fixed spindle, which is hollow and drilled in such a manner as to supply oil from the crank case direct to the bearing surface.



Simple sprocket or gear wheel remover.

Magneto Drive.

A gear drive for the magneto has many advantages over a chain drive, as, should the valve gear need inspection, it is not necessary to remove first of all the sprockets and chain cover, which is both a tiresome and messy job, and necessitates retiming the magneto. In the design sketched herewith it is only necessary to remove a single large nut or wing bolt to free the circular recessed timing cover, and there is no need to disturb the magneto timing. The magneto may be mounted either in front of or behind the cylinder as preferred, and a single wheel between the camshaft and magneto is all that is required.

If, as is intended, the magneto drive cover is cast with the timing case, the fixing for this intermediate wheel requires a little ingenuity, but it can be done satisfactorily, and once in position need never be disturbed.

Opposite the gear on the magneto-shaft should be an inspection cap large enough to permit the withdrawal of the gear, and the gear should be fitted with a withdraw nut, such as that used on the Abingdon, Triumph, etc.

Enclosed Valves.

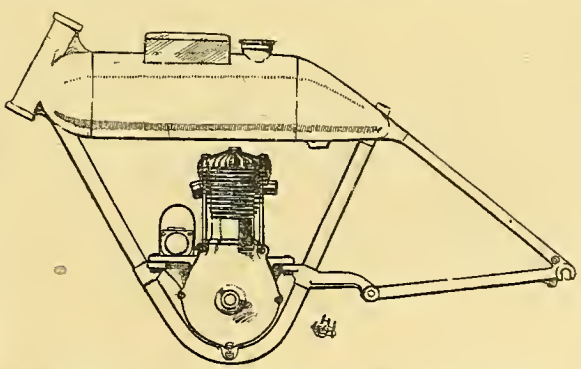
The next suggestion shows a method of enclosing the valve tappet without causing inaccessibility, but it may here be said that this device is only applicable to engines with a good space between the valve chest and timing cover. The idea is clearly shown in the part sectional sketch, which shows a metal case sliding on an extension of the valve guide. The lower end of the case is made to screw on to the outside of the tappet guide, and as the upper end of the spring takes off from the inside of the case, the spring is held at its normal compression. Thus the tappet gear is enclosed and the spring held well away from the cylinder heat, and if a fibre washer be placed round the tappet guide oil cannot leak out or dust work in. On unscrewing the case the spring compression is released, and the valve cotter can be removed with the fingers.

Diagram of enclosed valve device, showing cover free and no compression on valve spring.

Engine Fixings.

Engine fixings are, of course, largely dependent on frame design, and the type of fixing which the writer prefers on the score of accessibility and simplicity practically necessitates a loop frame (which in itself is a very desirable point). The fixing consists of platforms cast with the crank case and resting on corresponding platforms on the frame. One of these platforms may conveniently carry the magneto, and a locating and steadying flange may be arranged on the crank case. This practice is common in America, but is confined to a very few makes in this country. The Clyno two-stroke is an excellent example. The Arno attains the same end without the use of a loop frame. One of the chief advantages of this type of fixing is the ease with which it is possible to remove the engine unit from the frame without springing the frame or feeling for bolt holes which cannot be seen. Another item in its favour (especially in conjunction with a loop frame) is the fact that the bolts which hold the two halves of the crank case together carry no strain, and can consequently be replaced by comparatively light screws with countersunk screw heads to replace the nuts. This obviates ugly dirt collecting bosses and nuts.

One other important detail in connection with the crank case deserves attention. The drain plug (ordinary taps are no good) should be of large diameter, and so placed that it *does* drain the crank case, and yet is reasonably accessible.



Suggested frame and tank construction. Observe unusual engine fixings.

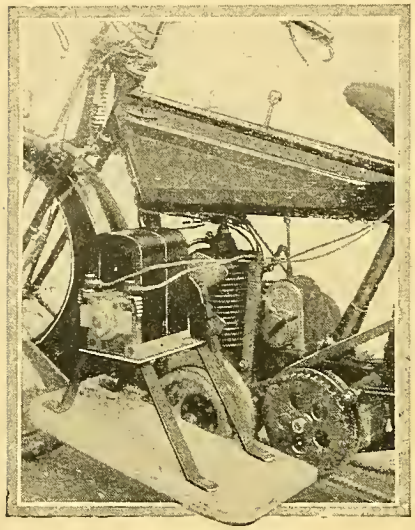
A Plea for Outside Flywheels.

Before leaving the engine, the writer would like to put in a plea for outside flywheels under all the three headings of this article. Nothing could be more simple and reliable than a properly designed one-piece crankshaft and single flywheel. There are not two flywheels to get out of truth and cause vibration and loss of power, or to be erected out of truth, which is a very common fault even on quite good makes of engine. The big end bearing gets *some* chance of being lubricated (even with splash lubrication) when it is not protected from oil by a flywheel rim fitting closely round it on either side, or by the action of centrifugal force, which tends to keep the oil or oil-filled vapour away from it. It is not necessary to remove one side of the crankshaft to take up the big end bearing in case of wear, and the big end, being necessarily of the split type, is adjustable, and is accessible in the case of wear. One very important feature must, however, be remembered in designing a split big end bearing. Large diameter special steel bolts *must* be used, or trouble will occur due to bolt stretch. Many cases of so-called "big end wear" have occurred recently on small solid crankshaft engines, and in nine cases out of ten no undue wear has taken place, but the slackness is due to the stretch of the bolts which secure the cap to the rod.

(To be concluded.)

AN ELECTRICALLY-EQUIPPED TWO-STROKE.

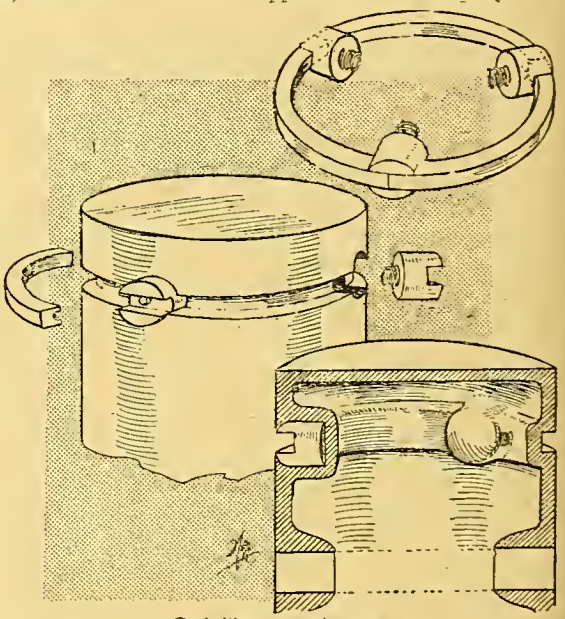
AN Allon two-stroke motor bicycle, recently made to the order of Sir Henry Norman, Bt., M.P., who is a member of the R.A.C. Committee for the War Office, contains some novel features. The machine is equipped with a permanent magnet Mira dynamo generating 120 watts (10 ampères at 12 volts), by means of which a small searchlight, an X-ray set, or a signalling apparatus can be worked. The electrical equipment has been carried out by the High Tension Co., 62, Belvedere Road, Westminster, S.W. The engine is provided with a fan fixed to the end of the dynamo shaft, so as to create a draught on the cylinder when the machine is running on the stand. The Whittle belt-driven dynamo can be quickly slipped off when it is desired to run the machine on the road, a notch in the pulley being provided to facilitate this operation.



Allon machine with Mira dynamo tor supplying current for small searchlight, X-ray set, or signalling apparatus. The batteries are carried in a special box on the carrier.

A NOVEL PISTON RING.

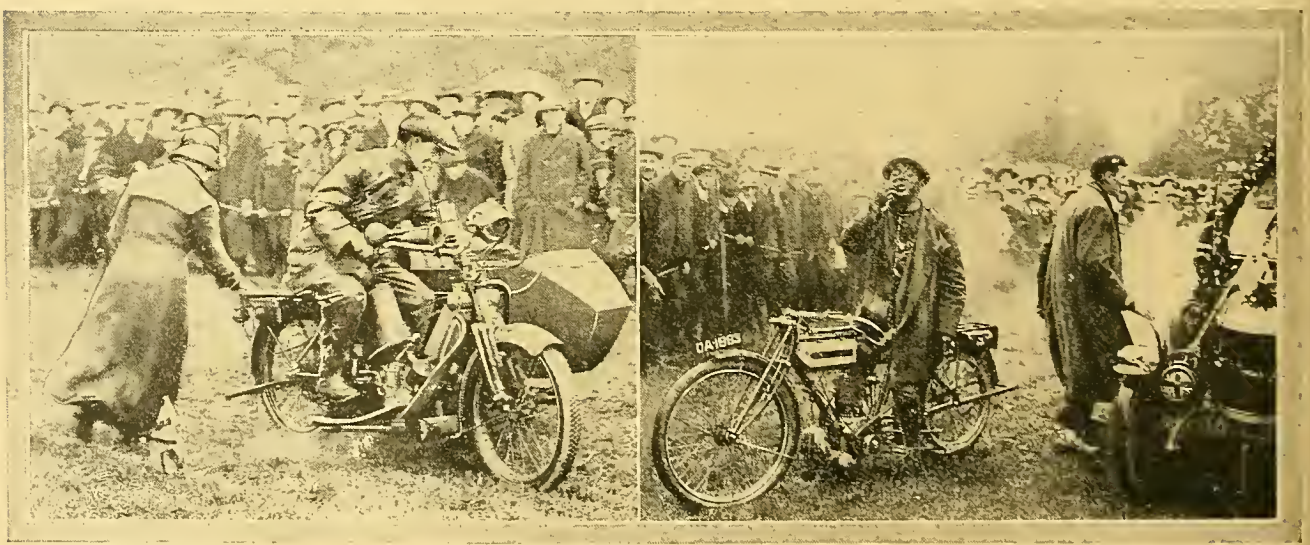
WE have received particulars of a novel piston ring, the invention of Mr. T. Gaskell, 66, Portland Place, North Stockwell, S.W. From the accompanying sketch it will be noticed that the ring is divided into three segments, the joints occurring in a slot cut in one of the three plungers with which the piston is provided. Behind each plunger there is a spring tempered so as to stand the necessary heat. It will be further noticed that in the sketch of the piston, the plunger facing the reader is provided with a peg, the object of which is to prevent the ring from turning. The result is what is claimed to be a practically unwearable piston ring. It has great depth, is always kept up well against its work by means of the springs, the compression cannot leak past it, and it is easy and not expensive to manufacture. Moreover, it possesses the advantage of the piston only needing one ring to keep perfect compression, with the result that less friction and consequently greater efficiency are obtained. The device, though it has not yet been tried on motor cycles and cars, has been used with considerable success in gas engines and air compressors, and we look forward to hearing more about it at no very distant date.



Gaskell's patent piston ring.

EXPORT OF TYRES.

THE Dunlop Rubber Co. write that attempts are being made to purchase motor tyres from the trade in small quantities for export, and they point out that all their tyres are sold on the condition that they are not re-sold for export, except when fitted to cars. Moreover, apart from the foregoing, which is a condition applicable to Dunlop tyres in normal times, a Government prohibition exists against the export of pneumatic tyres, and persons who make themselves in any way parties to the evasion of this prohibition incur serious penalties.



Motor cycle scenes in the gymkhana, which formed part of the Bank Holiday gala programme, in aid of the British Red Cross Wounded Soldiers' Home at Erdington, Birmingham. (Left) A Scott rider in the musical chairs event. (Right) Rider of a T.T. Triumph devouring a bun at T.T. speed in the mystery race. The weather was most unfavourable.

DOES AN ENGINE RUN BETTER AT DUSK?

Some Mixed Opinions on a very old Topic.

THIS question which we have revived in our columns is by no means a new one. Some people think the whole idea is based upon misconception, others are confident that the answer should be in the affirmative, but so far as we are aware no universally accepted solution of the phenomenon has been put forward. Some writers, again, treat the matter in a frankly humorous manner, others with an entire absence of that desirable quality. It is by no means inconceivable that a damp atmosphere should have some effect upon carburation, and also in consequence of the moisture, which enters the engine with the mixture, some effect also upon cooling, the results of which might be beneficial. Some light may possibly be thrown on the subject, but in the meantime we advise our readers not to take all the suggestions and statements made by our readers too seriously. "Y 2895" will be amused to know that his remarks have been taken seriously by some correspondents.

Sir,—Referring to "Y 2895's" letter on the above subject, I completely fail to see how the rotation of the earth about its axis can possibly alter the level of a road. A road which is level at noon must be level at dusk, or on any other time. Let us suppose for the sake of argument that the road which is level at noon does slope at an angle of about 45° at dusk, what will happen at midnight? Will things begin to fall off the earth? That is what one would naturally expect. How is it that the rivers do not run dry during the night? Their beds must be practically level at dusk as well as at noon, but, according to your correspondent, the bed should begin to slope at about 45° by the evening.

My experience has been that a machine will run much better at dusk in either direction than it will at noon; but if the road were to assume a slope in the evening the machine would certainly run extremely well down the slope, but I am afraid there would be very great trouble in getting the machine to go up the slope of 45°. No! the roads do *not* slope at dusk; *once* level, *always* level.

As regards plugging up the exhaust pipes, well, it needs no comment; the suggestion is ridiculous on the face of it.

G.W.P.

Sir,—The letter from "Y 2895" has made my head ache. I have forgotten all my spherical trigonometry. Is he sure about the angle being 45°? Now I have my own theory, which is this: All day long the magneto is pumping up alternating current electricity, and by dusk, of course, the whole machine is full of it—tubes, tank, and crank case; it cannot get to earth on account of rubber tyres insulating the machine. Now this current, all stored up, repels the electricity in the earth, and tends to lift the machine off the road; in fact, you might call it a repulsion motor. The copper losses can soon be reckoned up; thus tuppence to the ostler at the Blue Pig, tuppence to the waitress at the teashop, and so on. Now if "G.P.G.K." wants to test this theory, let him trail an earthing plate behind him—a good heavy copper plate with about two yards of flexible cable will answer—and all the current will run to earth after firing the engine. I am sure he will find that the machine no longer runs better at dusk.

G. PINKER.

Sir,—I think it is obvious that "Y 2895" is wrong in his theory of the earth's rotation having an effect on the running of a motor cycle at dusk. If a road is level at noon, it can never attain an angle of 45°, but 23½° is the maximum slope it can have, that angle being the same as the angle of inclination of the earth's axis. If at dusk a road did slope downwards, enabling "the machine to travel at a tremendous speed," what if you were travelling the other way? A "konk out," I presume! Surely a road cannot slope in two opposite directions at the same time, nor would it kindly alter the direction of its slope to accommodate the riders thereon.

Besides these inaccuracies, "Y 2895" has evidently never learnt that the force of gravity is always exerted towards the centre of the earth, so that roads, etc., never alter their slope with regard to gravity, or else how would houses and their occupants fare if roads were alternately level and tilted up to 45°? The rotation of the earth, of course, has no effect on making a road either uphill or down.

Personally, I am satisfied with the explanation put forward by "G.P.G.K." I think the reason why engines do not start away easily in the morning is because of the low temperature of the air, and certainly not because all roads slope upwards.

BISCUITS.

Sir,—With reference to the solution of "Does an engine run better at dusk?" "Y 2895's" attempt having been puerile, will someone else explain this curious fact?

G.P.G.K.

Sir,—In your issue of July 22nd this oft-debated question is again asked, and it is suggested that the running of an engine might be improved by carbonic acid gas.

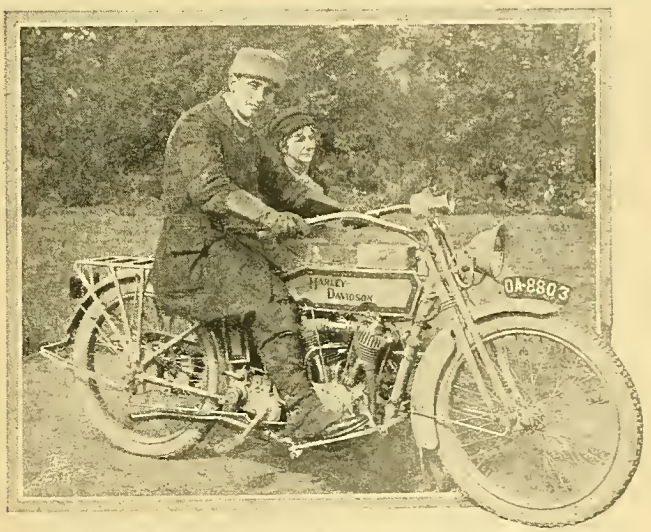
I think that an engine does run better in the evening, but I think that the explanation is to be found in the more uniform density of the air as the sun loses its power.

In the daytime an engine is running through layers of air of ever varying density; consequently each successive "suck" of the engine takes in a varying quantity of oxygen, and the impulses become now stronger, now weaker. As the air becomes of more uniform density, each "suck" of the piston takes in the same quantity of air, and the impulses become more regular.

I once saw it suggested in a motor paper that an engine ran better in mist. I have not observed this myself (most of us would throttle down in a mist to a mere crawl), but if so, the more uniform density of the air is probably the reason.

In one of the admirable novels of Capitaine Danrit—I think it is called "L'Aviateur du Pacifique," but I have not the book by me—the author, in describing the passage of an aeroplane over the ocean, speaks of "the well-known improvement in carburation towards evening." It would be interesting to know whether this is really the case in sea flying, for the improvement in uniform density would be very much less marked over the sea than over the land, if, indeed, it occurs at all.

C. M. STUART.



Albert Wilkes, the famous half-back of Aston Villa, and his electrically-equipped Harley-Davidson, with which he is greatly pleased. Mrs. Wilkes occupies the sidecar.

ROAD TESTS OF NEW MODELS.

3½ h.p. SUNBEAM WITH SIDECAR.

Engine 85 x 88 mm. bore and stroke (499 c.c.) Three-speed countershaft gear and all-enclosed chain drive. Multiple plate clutch. Gear ratios (with sidecar) 5¼, 8¼, and 14¼ to 1.

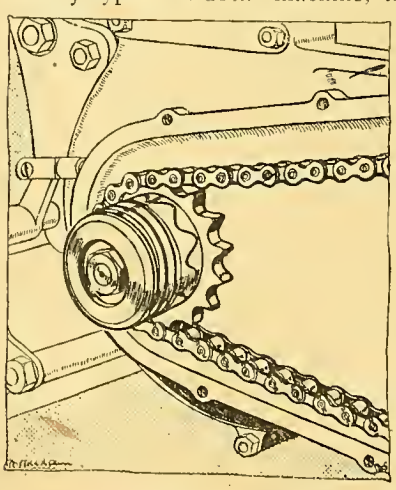
IN spite of the well-established popularity of the big twin sidecar outfit, there is no doubt that the 3½ h.p. touring single with light sidecar attachment will continue to meet an immense demand. This class of machine appeals not only to the man of limited means—the small tradesman and others, to whom the luxurious twin is somewhat out of reach—but equally to the man who does not desire his sidecar as a permanent fixture, his use for it being only occasional.

Recently one of our contributors has had the opportunity, through the courtesy of the makers, of putting a 3½ h.p. three-speed Sunbeam to a somewhat exhaustive test among the hills of West Yorkshire, his object being to test to the limit the machine's abilities when it came to really trying conditions with sidecar attached. The roads chosen, therefore, were the worst that could be found, and the manner in which the steady throb of the engine kept the back wheel spinning on gradients resembling the roof of a house was somewhat of a revelation. There is no doubt that this machine is built on the right lines for the double purpose mount so greatly in demand.

When riding solo we found that the low gear is never required. The machine picks up on the clutch and negotiates the worst of hills on middle. With sidecar attached, however, it is occasionally necessary to resort to bottom, and with the engine steadily pulsing the machine will take its double load anywhere that the wheels can grip.

A Severe Test.

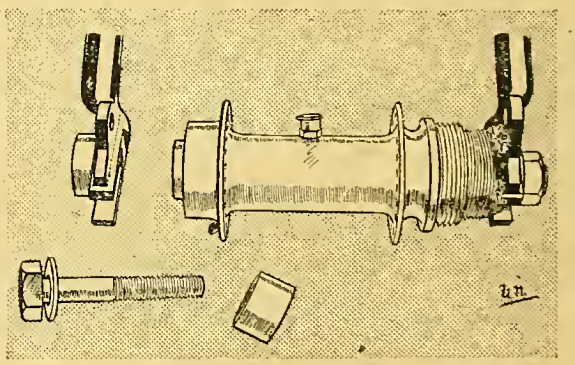
Probably the worst hill we negotiated with sidecar and a ten stone passenger was Park Rash, which is considered the worst public road hill in England. The ascent of this hill is really a creditable performance for any type of sidecar machine, the gradient at one point of the first bend being reputed to equal 1 in 2.8, while a thick layer of loose stones covers the track. The first attempt we made failed from bad driving, the machine coming to a standstill with the rear wheel spinning merrily. On the next occasion, however, a good speed was maintained throughout the climb, the engine pulling evenly and without a suggestion of "konk." Later in the day an equally successful ascent of the Scar, at the head of Nidder Dale, was made. No preliminary tuning had taken place, the machine being a standard model, and we had covered 180 miles on the previous day.



Spring drive fitted to main engine shaft on the 3½ h.p. Sunbeam.

It is safe to assume, therefore, that the rider of average ability is not likely to fail on anything he may attempt with passenger and sidecar with a machine of this type, for such hills as Park Rash are never negotiated in the ordinary sense of touring. The low gear on the 3½ h.p. Sunbeam is merely an emergency provision, which gives one a sense of security when travelling in mountainous districts, but which is seldom called into use.

As regards speed, the machine we rode could comfortably hold its own on anything resembling a level road with a 5-6 h.p. twin, though the latter, of course, obtained a considerable advantage on long up gradients. Riding solo, we could attain a speed of well over 50 m.p.h. on deserted favourable stretches. The petrol consumption was quite an agreeable surprise, for we certainly expected the energetic kick of the engine to touch our pockets when it came to footing the petrol bill. Travelling between Wolverhampton and Bradford, however, *via* Uttoxeter, Buxton, and Glossop, the consumption worked out at 87 m.p.g. riding solo. but with neither wind nor road surface in our favour. It is doubtful whether the attachment of a sidecar would make a difference of more than 8-10 m.p.g.



The Sunbeam divided back axle, which allows of the rear tyre and inner tube being withdrawn without disturbing the wheel.

The machine was pleasing to handle—particularly at low speeds. The engine would throttle down to the merest tick on high gear, and the hand-controlled clutch, could be used to ease the situation when negotiating traffic at very low speeds. Thus one can thread one's way through the most crowded thoroughfare with the engine running silently and the clutch slightly eased, the judicious handling of the clutch lever and the throttle control enabling one to pick up quickly without noise and fuss.

Where lightweight riders agree.

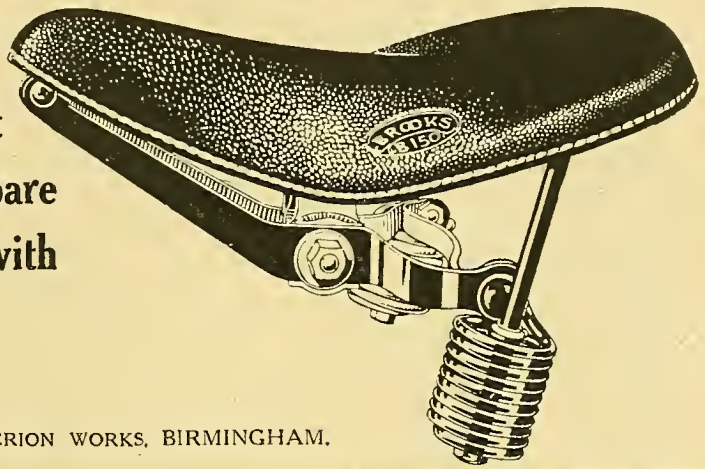
Whatever differences of opinion they may have regarding engines, carburetters, and so on, lightweight riders agree completely upon the matter of saddles.

They all realise the vital necessity for a seat that will give the same luxurious ease as is enjoyed by riders of the heavier mounts, but in a lighter and more compact form.

To meet this need we have produced our B150 model, which is constructed with all the care and skill that have made our model B170 famous wherever motor cycles are ridden.

We do not hesitate to say that there is no lightweight saddle made that can compare for comfort and quality with

BROOKS B150.



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They are built specially for this purpose from the same materials (fabric and rubber) as our famous Car Tyres, and unite the maximum of resiliency with great strength, leaving an ample margin, which reduces the chance of Tyre Trouble to a minimum.

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The Kempshall Oversize Tyre.

700 x 85 not 700 x 80

fitting your 650 x 65 rim.

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Cambridge St. Rubber Works Manchester.
'Phone: 244 Gerrard (2 lines).
'Grams: 'Studless, London."

Coventry—G. R. Bromley, Warwick Chambers, Warwick Row. Birmingham—Reginald G. Prest, 71, Lionel Street. New Zealand—Goldingham & Beckett Ltd., Palmerston. N. Scotland—Percival E. Pole, 27, Jamaica St., Glasgow.

C.D.C.

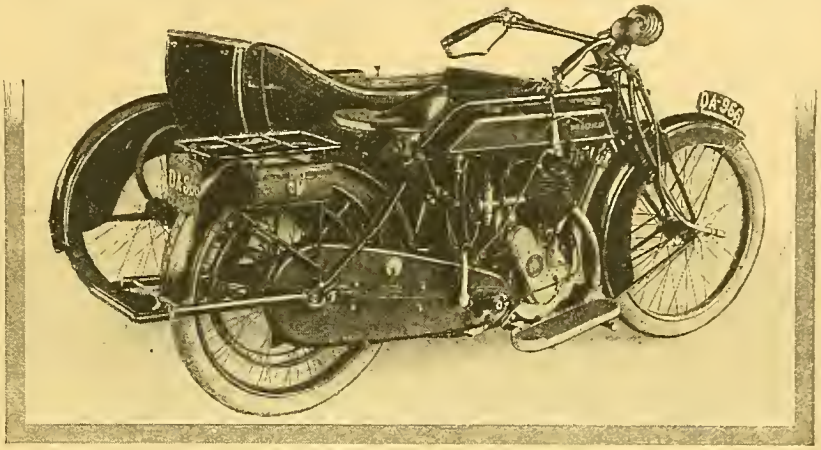
Road Tests of New Models.—

Mechanical Features.

In connection with this slow running, the ingenious thrust absorbing device on the engine sprocket is worthy of mention, for not the slightest suggestion of snag was perceptible at low speeds. The device consists of two deep-toothed ratchets on the engine-shaft, which are held engaged by a strong coil spring. Each thrust of the engine tends to cause these ratchets partly to disengage against the pressure of the spring, and thus a perfect cushion drive is given, though no slip or loss of power occurs. Upon the efficiency of this device, which is carefully set by the testers, and thereafter requires no further attention, depends not only the comfort of the rider, but the life of his rear tyre and the whole transmission system.

The clutch, which is of the multi-disc pattern and of large size, can easily be adjusted to suit one's tastes, while it is only ten minutes' work to take out the plates for a periodical cleaning.

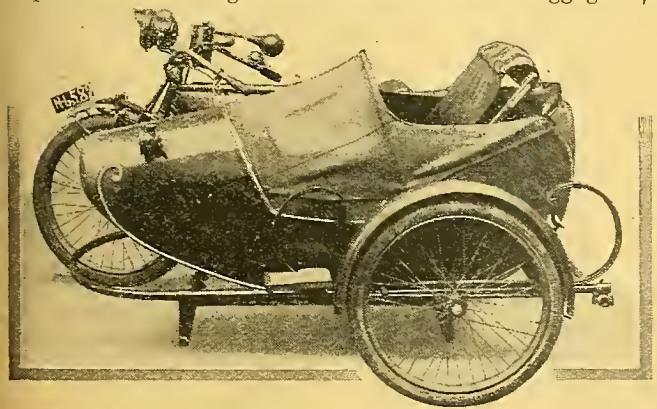
While the machine was in our possession, it became necessary to change the rear cover, and it was relieving to be able to perform this tedious undertaking without removing the wheel—a messy and irritating performance when an enclosed chain drive is involved. All things considered, the machine appealed to us as an excellent mount for real hard work of any kind, and it fully meets the demands of the rider who desires to climb "anything" without loss of dignity, and, when occasion demands, without shedding the fair one.



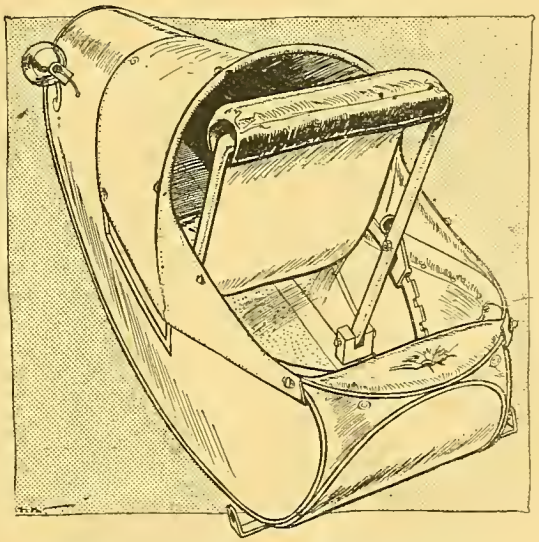
The standard 1915 3½ h.p. Sunbeam passenger outfit.

An Adjustable-seated Sidecar.

WE recently had the opportunity of inspecting a new sidecar body, the invention of Mr. B. Graham Wood, the chief novelty of which is an adjustable seat on the deck chair principle. The accompanying sketch clearly shows the method of operation. The frame which carries the back is hinged at the bottom and held in the desired position by a rack on each side. The hammock part of the seat is padded at each end and spring supported; this does away with a sharp ridge which might otherwise be uncomfortably evident where the canvas part is attached to the frame. The seat can be removed in a moment when the whole of the roomy sidecar is available for goods. If the seat is adjusted in a forward position a child's seat can easily be accommodated behind it, and the space beneath the seat is capable of containing a considerable amount of luggage and spares. A large storm apron is fitted attached to a bent rod and quickly removable; a small box is placed in the rear suitable for the tool roll and spare tube, and the construction is such that the body should be light in weight as well as very roomy and comfortable. Mr. Wood assured us that he slept in the sidecar several nights when on a camping holiday. The design has been submitted to a large firm of sidecar manufacturers, and it is not unlikely that this sidecar may ere long be offered to the public.



A new sidecar, the feature of which is the adjustable seat made on the deck chair principle.



Sketch showing rack and notches allowing seat to be adjusted on the Wood sidecar.

"THE MOTOR CYCLE" RECRUITING SECTION.

Last Week's Record Number of Recruits. More Motor Cyclists Wanted.

THE training of suitable cyclists of good physique at the Excelsior motor cycle works has now commenced. By the special consent of Lieut.-Colonel Bradley, Commanding Officer of the M.M.G.S., men who are passed by Mr. Geoffrey Smith to undergo training at the Excelsior works, under Mr. W. H. Carson's supervision, will receive a messing allowance of 1s. 9d. per day in addition to their ordinary pay.

As a result of calls from the Royal Engineers headquarters, the waiting list for despatch riders has now sunk to a low margin, and motor cyclists of long experience who are able to perform all ordinary running repairs are now invited to undergo test to be placed on the waiting list. Particulars of enlistment may be obtained on application to Mr. Geoffrey Smith, editor of *The Motor Cycle*, 19, Hertford Street, Coventry, and applicants for positions as despatch riders should clearly state at the head of the letter the section they desire to join.

Recruits continue to come up very satisfactorily for the new batteries now being formed in connection with the M.M.G.S. Last week's inspection produced a record number of candidates, over ninety presenting themselves for enlistment, though a number were weeded out by the doctor, and one or two others were rejected for various reasons. The list at the bottom of the page gives the successful applicants for service.

Trooper A. R. Sharpe, of the Surma Valley Light Horse, who is coming home from Cachar, India, to enlist in the M.M.G.S. As we have already remarked, the number of men coming from various and outlying parts of Greater Britain to serve their country is remarkable.

Still more men are required, and applications are invited on the form attached. Men of suitable qualifications who state that they are at liberty at once will receive a free railway warrant to attend the next inspection at the Recruiting Office, Little Park Street, Coventry, on Wednesday afternoon next, the 18th inst.

Several Scotsmen were included among last week's batch of recruits, whilst other men came from all over England and Wales.

A number of men offer their services a month in advance, but this is unwise, as with the huge number of applications which have to be dealt with one or other may be overlooked.

Two of the men accepted last week came from South Africa, where they have already seen service under General Botha. One of them, H. Pattison, is a native of Coventry, and went out to Kimberley a couple of years ago. His companion, R. V. Edouard, is a South African. A number of men from Greater Britain have already enlisted in the M.M.G.S., but we believe this is the first instance of men coming forward who have already had a taste of the present war. Their keenness and patriotism are splendid. It is interesting to note that these two patriots saw the announcement in *The Motor Cycle* whilst in Capetown, and promptly started for England.

Men Accepted for Service Last Week

Ashbridge, V. F.	French, R. E.	Pack, W.
Ashton, F.	Goode, A. W.	Palmer, A. W.
Bailey, H. W.	Gorham, S.	Pattison, H.
Barber, H. J.	Haigh, N.	Plais, S.
Bargent, H. C.	Hall, H.	Pryor, R.
Bines, W. H.	Harte, F.	Ratter, J. H. B.
Branston, W. R.	Higgins, R.	Roberts, J. T.
Branton, B.	Hincks, A. E.	Rothwell, C.
Brearley, F.	Hodgson, A.	Ruddleson, A.
Brookes, W.	Hogg, J. P. R.	Seuard, N. W.
Bruce, W.	Holden, O.	Sheppard, R.
Burgess, F.	Hurst, R. W.	Sidebottom, A.
Bury, W. T.	Jackson, H.	Smith, A.
Buxton, J. A.	Jones, R. P.	Smith, E.
Cann, E. W.	Kilburn, A.	Smith, S. J.
Clarke, C. A.	Leary, E.	Sparkes, W.
Cooper, P. H.	Leeming, J. E	Stables, S.
Connor, L. R.	Lloyd, H.	Taylor, A.
Cosslet, E. T.	Mackenzie, C.	Thompson, S.
Curran, A. P.	Marston, T. J.	Trevor, C. T.
Curtis, G. W. A.	McClelland, J F.	Trupp, W. J
Daniels, Geo.	Monk, W. H.	Turner, H. W.
Davies, A. W	Munden, W. G. S	Twist, B. A.
Davies, C.	Murray, W.	Ward, H.
Davis, G. A.	Nelthorpe, R.	Watts, A. J. R
Edouard, R	Newman, A.	Willeard, P. E.
Evans, A.	Newman, H. J.	Williams, H.
Ford, A.	North, B. E.	

7,000 MILES TO ENLIST.

R. V. Edouard and H. Pattison, men who have both taken part in the South African campaign, and have since come home to enlist in the M.M.G.S. They were both accepted on August 4th.

Name .....

Address .....

.....

Age ..... *Height* .....

Chest measurement .....

How long have you been a motor cyclist? .....

Can you do running repairs? .....

Have you had any previous military training, and, if so, when? .....

.....

Are you medically fit? .....

Occupation .....

When free? .....

Date .....

After filling in the above particulars return to:

MR. GEOFFREY SMITH,
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South Midland Divisional Area,
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Unlimited Hill Climb	ZENITH	tied FIRST

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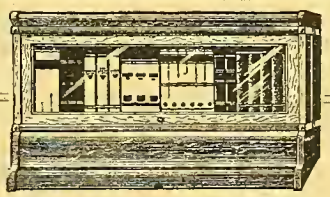

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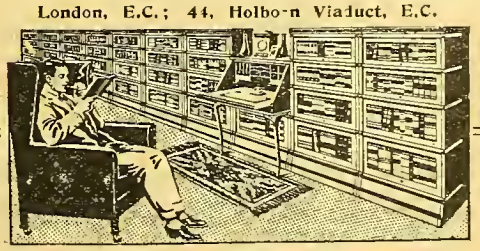

FURTHER
SUNBEAM SUCCESSES

By 2nd Lieut. R. E. Barnard at the All-Khaki Motor Cycle Race Meeting, Brooklands, Saturday, August 7th.

THREE FIRSTS, ONE SECOND, TWO THIRDS & SPECIAL AWARD.

Event 3.—½-mile Sprint Race, 1st, 48·91 m.p.h.

Event 4.—½-mile Sprint Race, for Racing Machines, 3rd, 50 m.p.h.

Event 6.—½-mile (1,000 c.c.), 3rd, 51·72 m.p.h.

Event 9.—Slow Race, 1st.

Event 10.—Hill-climb, 2nd.

Event 11.—Hill-climb (1,000 c.c.), 33·36 m.p.h.

Also Aggregate Cup for best performance.

There was an entry of 190.

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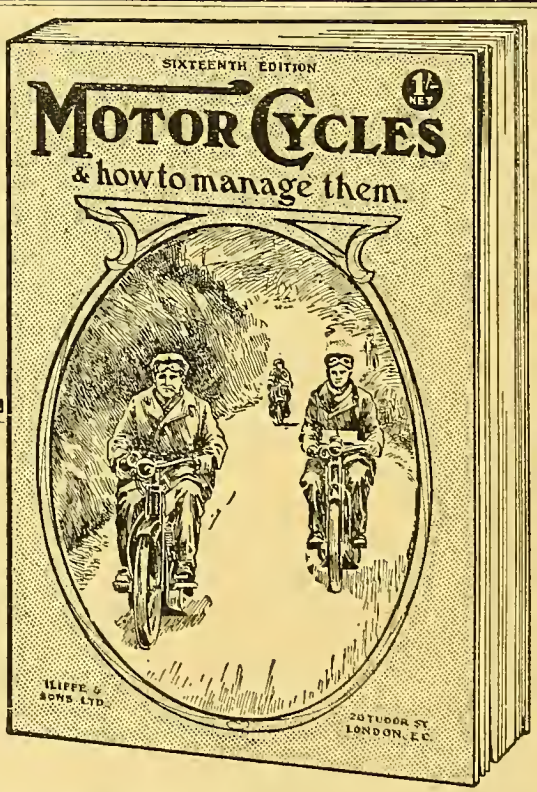

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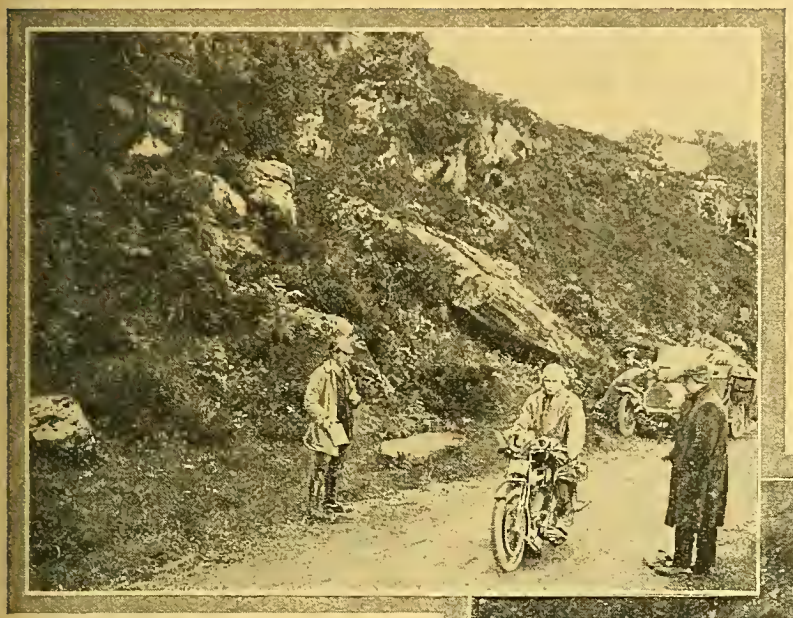
Cork One-day Trial Awards.



THE following are the awards in the one-day trial of the Cork and District Motor Cycle Club on the August Bank Holiday, which was reported on page 137 of our last issue.

First-class awards were won by:

R. S. Russell (2¾ Douglas), figure of merit 5.11.

E. G. Jack (3½ Rover), figure of merit 5.01.

F. L. Dooly (4¼ B.S.A.), figure of merit 5.00.

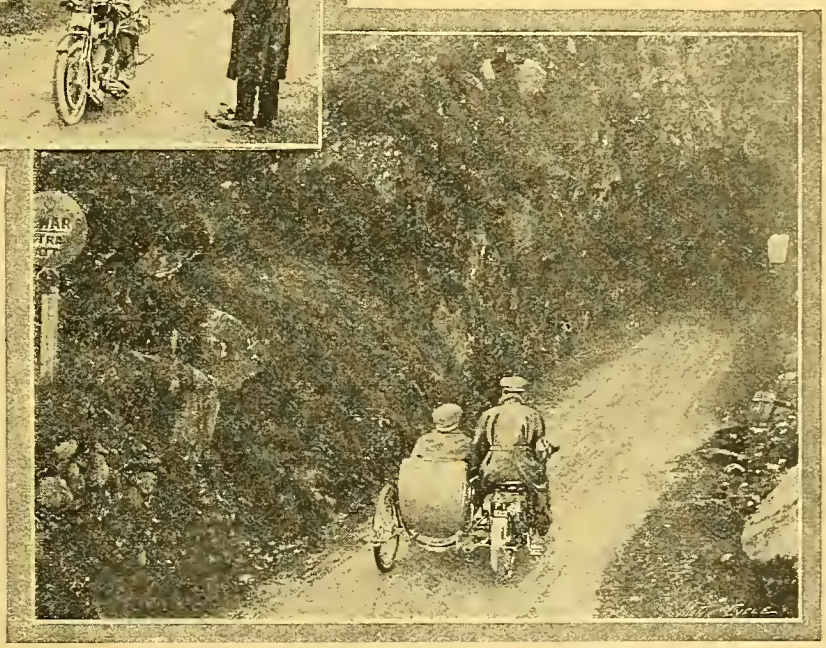
E. W. Whitaker (4¼ B.S.A.), figure of merit 4.50.

D. Lucy (2¾ Douglas), figure of merit 4.09.

Second-class awards were won by: J. Hennessy (5 Indian), G. Pring (4 A.J.S. sc.), J. Cross (6 Enfield sc.); third-class by R. Swanton (3½ Indian), C. W. Ryan (3½ Indian), Sergt. Hughes (2¾ Douglas), Lance-corpl. Thompson (4¼ B.S.A.).

Russell had the best figure of merit in the flexibility test, and consequently holds the Hugh Gibson cup for one year. The team prize was won by the trio consisting of Russell (Douglas), Dooly (B.S.A.), and Whitaker (B.S.A.), each of whom secured five marks

On Ballaghosheen Pass, Swanton and Hughes failed, and on Sheedy Mountain, Ryan, Pring, Musgrave, and Cross failed. No sidecar machine made a clean ascent of the last named hill, but the fact that it was climbed by the official observer, Mr. Lister, on a 6 h.p. A.J.S. with sidecar indicates that it is not an impossible hill.



CORK AND DISTRICT M.C.C. ONE DAY TRIAL.
(Reported on page 137 of our last issue.)

(Upper) E. W. Whitaker (4¼ h.p. B.S.A.) in the slow test. He covered 110 yards in sixty-two seconds.

(Lower) W. P. Musgrave (4 h.p. Triumph and sidecar) entering the tunnel under the mountains that divide Cork and Kerry on the Glengarriff to Kenmore road.

MIDLAND MOTOR CYCLISTS' VOLUNTEER CORPS FIELD DAY.

ON Sunday last the corps paraded on the Coventry Road for a reconnaissance. The elementary stage of the corps training has now been completed, and the more difficult courses commenced. Sunday proved to the men that all their past experiences have to be brought in even to get through one section of the opposing screen.

Commandant Silver split the corps up into patrols, each patrol working on its own initiative. This meant that each man had to bring in an accurate report—that is if he succeeded in getting through.

The opposing force was represented by a skeleton army, consisting of some of the fastest men. Each of these men carried different coloured flags, representing artillery, cavalry, and infantry.

The patrols, proceeding *viâ* Maxstoke, took advantage of the old ruins as an observation post. From here were detected a force of infantry holding the roads at each fork. Further reconnaissance was made, and it was found that the infantry was supported by artillery posted on the surrounding ridges, the batteries being supported by cavalry. Large sketches were made, and a report made out on the various positions held.

The bearings and altitudes were taken, and in the report was included a chart showing the accommodation for troops.

Difficulty was now experienced by the patrols in gettting through the enemy's line, and it was found that practically only one road, and that a byway, was open. A patrol under T. Officer Egginton was detailed off to make the attempt.

Another patrol broke through the first line and got on to the Coleshill-Atherstone Road. Further on the patrol ran into an ambush of cavalry, and was cut off. On the roll being called it was found that very few had got through, but all the men had brought in good reports.

ROAD REPORTS.

BAD STRETCHES NOTIFIED BY READERS.

SINCE the publication, on page 114 of our issue of July 29th, of bad stretches of road that it is advisable, if possible, to avoid, we have had many more communications from readers on the same subject. The result is that we are now enabled to give a second instalment of road reports in different parts of the country, and we have to thank our correspondents for the information supplied.

KENT.—We have received information of the bad condition of the road between New Inn Green and Newington, on the Ashford-Folkestone road. The Hythe-Sandgate road is reported to be full of pot-holes. The road from Hythe to Folkestone is in very bad condition. In Hythe itself there are some very bad turnings, and the streets are very narrow, while motor 'buses practically prevent any passing. The road is also bad between Green Street Green and Knockholt on the Sevenoaks-Bromley road. This is made worse by a high hedge which conceals the road.

LINCOLNSHIRE: NEW HOLLAND-GRIMSBY - LOUTH - MABLETHORPE - SLEAFORD - LINCOLN - BOURNE.—All the principal roads of this county are in first-class condition. In the above districts no trouble whatever is experienced with military patrols, and there are apparently few restrictions, if any.

THE GREAT NORTH ROAD: LONDON-STILTON - GRANTHAM - DONCASTER - HARROGATE.—This main highway is now in excellent condition from London to Doncaster (166 miles), with the exception of portions between Alconbury and Stamford, which are only moderate. Again, the stretch from Doncaster *via* Wetherby to Harrogate is in fairly good condition. The Harrogate-York road is also in excellent condition; this remark applies as well to the York-Market Weighton-Hull road.

DEVONSHIRE.—The main road between Bideford and Clovelly is in a disgraceful state—so bad that it is not recommended to be traversed at all. The avoiding road going from Barnstaple is to cross the bridge at Bideford, turn sharp left, and follow the river to Sandcross, and then go from Packham, turning to the right by the schools, keeping straight on over the next cross roads, and then take the next turning to the right, leading into the main road, about 200 yards from the turning to Clovelly. The main road is being repaired, but the repairs are not progressing very rapidly.

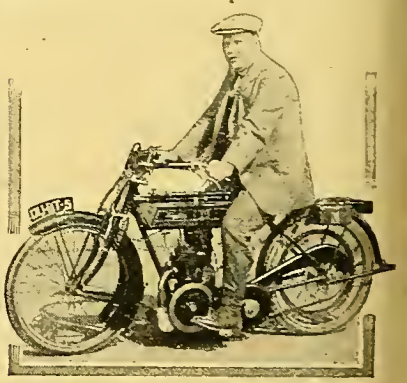
SOMERSET.—The Bridgwater-Minehead road is not very good.

SUFFOLK.—The road from Ipswich to Felixstowe is in good condition.

ESSEX.—The main London-Colchester road is in a very fine condition, and only occasional bumpy patches are encountered. The secondary roads, such as from Chelmsford to Tollesbury, Burnham, Maldon, etc., are quite good, and tarred through the larger villages. We suggest to motorists on their way to Colchester, etc., when passing through Chelmsford to take the road on the left at the parting. This road has been lately repaired, and has a splendid surface for a mile or more, whereas that on the right leads through the old part of the town, and is extremely narrow and usually congested with traffic. The road from Colchester to Clacton, Walton, etc., is good, but dusty at times.

DORSET.—We have been informed of the very bad condition of the road between Wilton and Hindon and Mere. In our issue of July 29th we refer to this road as being in bad condition, but our correspondent states that, while he agrees as to this, the road from Wilton to Shaftesbury is practically impassable.

HERTS.—The road leading into Hemel Hempstead from St. Albans through Marlowes is in very bad order; the alternative route is through Cottrells to the north of the railway.



AN OWNER WANTED.

A parcel of half-a-dozen photographs, of which the above is one, was found in a Coventry-Birmingham train on Sunday, July 11th. The only mark was the name of the machine—a two-stroke Excelsior—and the prints were sent to the makers, Bayliss, Thomas and Co., who wish to restore them to their rightful owner.

NORTH WALES.—A correspondent informs us that the Holyhead Road between Corwen and Cerrig-y-Druidion is not by any means the worst piece of road in Wales. If anything, the road between Cerrig-y-Druidion and Pentre Voelas is much bumpier. Of all the main through roads in North Wales he states that that from Denbigh to Mold is the worst at the present time. The road from Llangollen to Corwen (main Holyhead Road) is much broken up and stony.

We shall be glad to receive further reports of further exceptionally bad stretches of road, and in writing us readers should remember that we are as desirous of hearing of repairs that have been made to bad stretches as of bad parts themselves.

The "All-khaki" Motor Cycle Race Meeting.

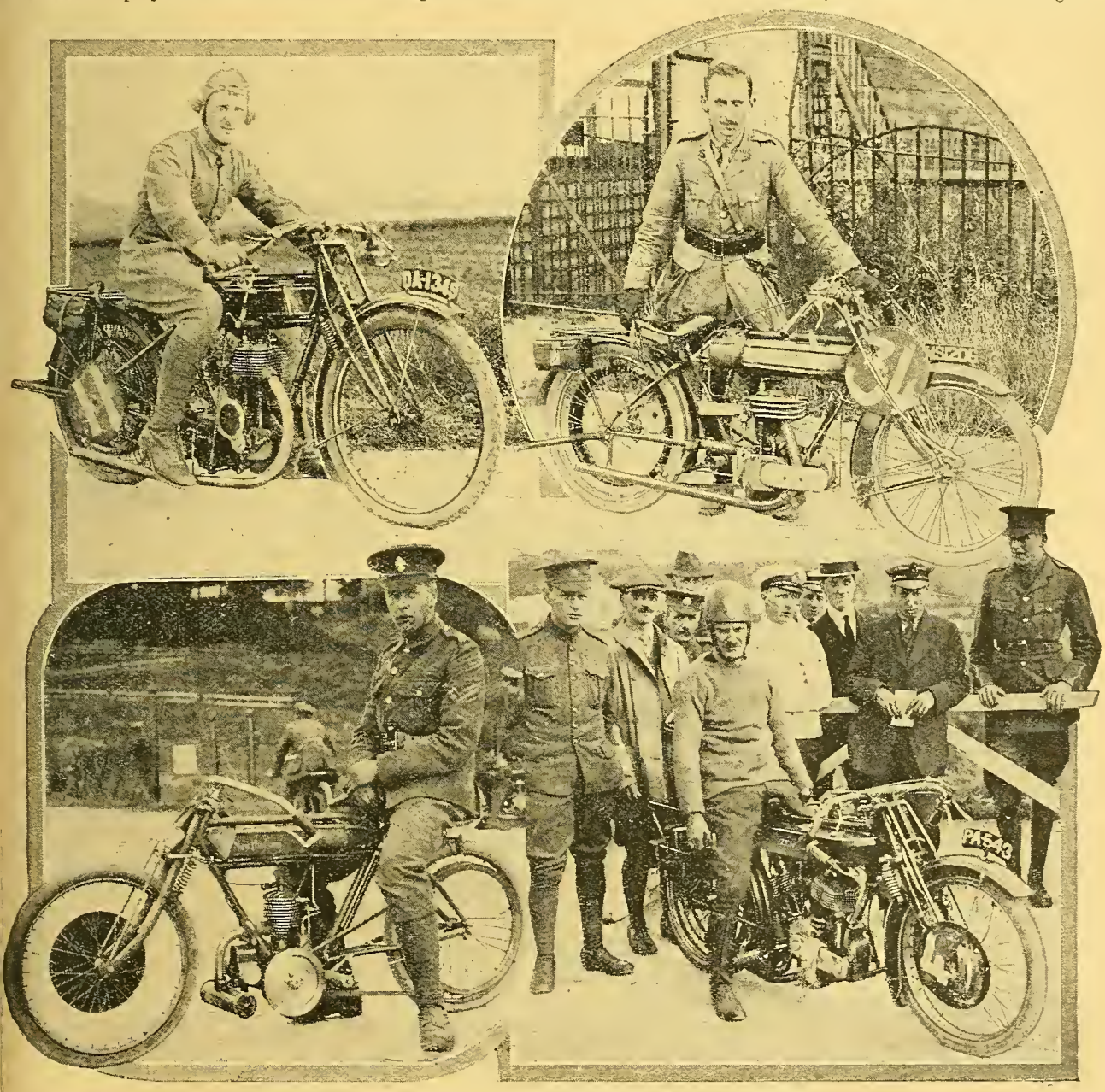
FIRST ARMY AND NAVY MEETING PROVES GREAT SUCCESS.

THE "All-khaki" motor cycle race meeting run at Brooklands on Saturday last by the British Motor Cycle Racing Club was an unqualified success. Everything went off without a hitch; even the weather, which had been unpropitious in the morning, cleared up after noon, and the sun shone brightly after lunch.

The difficulties of organisation were great. The only available portion of the track was the railway straight, and so there was no proper enclosure for the spectators. Experienced officials, owing to many of them having received their country's call, were few and far between, so the marshalling of the competitors and the keeping of the spectators off the track was by no means an easy matter. However, all the events were most successfully run off. The half-mile sprint races were started from one of the telephone boxes near the flying ground, and the races were run towards the members' bridge. The finish was marked by the timing box on wheels known as the "bathing machine," which is so familiar a feature at B.M.C.R.C. meetings. On each side of this a portion of the track was railed off for the public, while a number of spectators were also allowed on the opposite side of the course.

How it came about.

To digress for a moment, we may mention that the originator of the "All-khaki" race meeting idea was Mr. F. C. M. Houghton, of the 25th Div. Cyclist Company, whose letter containing the



SOME OF THE WINNERS AT BROOKLANDS ON SATURDAY.

(Upper) Second-Lieut. G. Barnard (3½ h.p. Sunbeam), winner of *The Motor Cycle* Cup. Lieut. A. Lindsay (Norton), winner of the 550 c.c. half-mile sprint
(Lower) Corporal A. Ward (New Hudson), first in the lightweight race. Corporal F. E. Barker (Zenith), who won three events.

The "All-khaki" Race Meeting.—

suggestion appeared in *The Motor Cycle* some weeks ago. The idea was keenly welcomed by this journal, and no stone was left unturned to foster such a commendable notion. The B.M.C.R.C. was approached, and, thanks to the excellent organisation of this body and the help of its able secretary, Mr. T. W. Loughborough, the affair was splendidly carried out, while through the publicity afforded it by *The Motor Cycle* a large entry list was forthcoming, no less than 190 being received. Thanks to Mr. Houghton, six stalwart sergeants of the 25th Div. Cyclist Company carried out the marshalling in a most efficient manner, while the spectators, being mostly soldier men, obeyed with alacrity.

The spectators were an interesting crowd, and consisted mostly of members of the British Army of all grades, ranks, and branches, men of the Royal Naval Air Service—the armoured car section—and other branches of the Senior Service, while the drab but businesslike khaki was relieved by the light blue uniforms of interested convalescents from the St. George's Hill Hospital, Weybridge.

The Races and Results.

The FIRST EVENT WAS THE LIGHT-WEIGHT SPRINT RACE FOR MOTOR CYCLES FITTED WITH TWO-STROKE ENGINES NOT EXCEEDING 270 C.C. For this race there were only four entries. Corporal Ward romped home an easy winner. Result:

	c.c.	m.p.h.
1. A. Ward, Cpl. R.F. (1-cyl. New Hudson)	211	35.8
2. C. Knight, Pte. A.S.C., M.T. (1 Sun-Villiers)	220	33.71
3. C. H. Dimmock, 2nd Lt. 9th Royal N. Lancs. Regt. (1 Connaught)	270	31.58

EVENT 2 WAS A "ONE-DESIGN" AFFAIR OPEN TO $2\frac{3}{4}$ H.P. DOUGLAS MOTOR CYCLES. It was won quite easily. Result:

	c.c.	m.p.h.
1. L. A. Fedden, Lt. A.S.C. (2-cyl. Douglas)	349	41.47
2. G. L. Andrew, Capt. Army Cyclist Corps (2 Douglas)	349	39.82
3. M. Newnham, 1st Cl. Air Mech. R.F.C. (2 Douglas)	349	28.14

Alcock, a flight warrant officer in the R.N.A.S., finished with a buckled rim and most of the spokes missing from his back wheel due to impact with a hole in the track previous to the race.

EVENT 3 WAS THE MEDIUM-WEIGHT HALF-MILE SPRINT OPEN TO MACHINES NOT EXCEEDING 550 C.C. For this an excellent entry had been received. The winner's Sunbeam was a perfect mount superbly handled, which carried its owner to victory on more than one occasion. Result:

	c.c.	m.p.h.
1. G. Barnard, 2nd Lt. R.E. (1-cyl. Sunbeam)	499	48.91
2. S. Wright, Cpl. A.S.C. (1 Triumph)	550	45.69
3. C. L. Scott, 2nd Lt. A.S.C. (2 Douglas)	349	45.23

EVENT 4, THE MEDIUM-WEIGHT HALF-MILE SPRINT FOR RACING MOTOR CYCLES NOT EXCEEDING 550 C.C., was both interesting and popular. The winner's Norton formerly belonged to Mr. McKenna, son of the well-known politician. Kendall's Norton, also a Brooklands model, is used daily in D.R. work. Result:

	c.c.	m.p.h.
1. A. Lindsay, Lt. R.A.M.C. (1-cyl. Norton)	490	50.8
2. G. Kendall, Duke of Lancaster's Own Yeomanry (1 Norton)	490	50.28
3. G. Barnard, 2nd Lt. R.E. (Sunbeam)	499	50
4. J. Alcock, Flight W.O. R.N.A.S. (2 Douglas)	349	44.78

EVENT 5 WAS THE QUICK-CHANGE PLUG RACE FOR SOLO MACHINES OF ANY DESCRIPTION.—Spare plugs in envelopes with the competitor's numbers on them were laid at intervals on the finishing line. Competitors raced from the start, changed plugs, and sprinted back to the starting point. It was an exciting and amusing affair. Most people badly overshot the mark, while one or two seized the wrong plug. Our old friend F. E. Barker, now one of the instruction staff at an A.S.C. depot, got away long before anyone else, having changed his plug in record time. Result:

	c.c.
1. F. E. Barker, Cpl. A.S.C., M.T (2-cyl. Zenith)	350
2. A. Lindsay, Lt. R.A.M.C. (1 Norton)	490
3. H. R. Whitmore, Lce-Cpl. R.E. (2 Lea-Francis)	496

Time, 1m. 53s.

EVENT 6. THE UNLIMITED HALF-MILE SPRINT FOR MOTOR CYCLES OF ANY DESCRIPTION NOT EXCEEDING 1,000 C.C., produced another historical machine—the twin Matchless, ridden by McColl, which formerly belonged to C. R. Collier. This event was run in two heats. In the first Barnard was the winner, Edwardson (Zenith) second, and F. E. Barker third. Result in final:

	c.c.	m.p.h.
1. A. McColl, motor cyclist, R.E. (2-cyl. Matchless)	994	52.63
2. A. Lindsay, Lt. R.A.M.C. (1 Norton)	490	52.02
3. G. Barnard, 2nd Lt. R.E. (1 Sunbeam)	499	51.72
4. O. M. Baldwin, Cpl. A.S.C. (2 Matchless)	994	51.43

EVENT 7 WAS FOR SIDECAR MACHINES UP TO 1,000 C.C. OR LIGHT CARS AND CYCLE CARS UP TO 1,100 C.C.—The latter were run off first, and this heat was easily won by Chief Petty Officer W. G. McMinnies, R.N.R.S., on a racing Morgan fitted with an eight-valve M.A.G. engine. Result:

	c.c.	m.p.h.
1. F. E. Barker, Cpl. A.S.C. M.T. (2-cyl. Zenith) ...	988	46.15
2. W. G. McMinnies, C.P.O., R.N.A.S. (2 Morgan)...	1,100	45.92
3. H. F. Edwards, Pte. Artists' Rifles (2 Zenith)	994	44.78
4. F. B. Halford, Lt. R.F.C. (4 Calthorpe-Minor) ...	1,080	43.69

The Hill-climbs and Tortoise Race.

Everyone quickly evacuated the railway straight and made for the test hill, on which EVENT 8, THE JUNIOR HILL-CLIMB FOR MOTOR CYCLES OF ANY DESCRIPTION NOT EXCEEDING 350 C.C., was run off. Twenty-five yards start was allowed in this and other hill-climbs. Results:

	c.c.	m.p.h.
1. F. E. Barker, Cpl. A.S.C., M.T. (2-cyl. Zenith) ...	349	26.69
2. G. L. Andrew, Capt. Army Cyclist Corps (2 Douglas)	349	
2. C. L. Scott, Lt. A.S.C. (2 Douglas)	349	
4. L. A. Fedden, Lt. A.S.C. (2 Douglas)	349	

EVENT 9, THE SERPENTINE SLOW RACE, was an interesting and amusing affair. The competitors had to ride as slowly as possible in and out of the natural obstacles provided by the sheds of the paddock.

The test of skill was rendered the more difficult owing to the fact that that part of the paddock leading to the flying ground was in a bad condition, and the places where the cement had given way had been filled in with loose gravel. The event had to be run off twice, as no one succeeded at the first attempt, so, instead of every shed, every other shed had to be negotiated. Any competitor who put foot to the ground was disqualified. Barnard, the winner, used his clutch magnificently, and made extraordinarily slow time, which is all the more to his credit, as he won the medium-weight sprint on the same machine. The second man also put up a fine performance.

Assistant Paymaster C. P. Marcel, R.N.R., driving his Indian in the serpentine race, in and out of the car sheds.

All-khaki—and Navy Blue.

The "All-khaki" Race Meeting.—

Result :	c.c.	Time. m. s.
1. G. Barnard, 2nd Lt. R.E. (1-cyl. Sunbeam) ...	499	3 6⅖
2. O. J. S. Scholte, 2nd Lt. 3rd Bedfords (2 Harley-Davidson) ...	—	2 34⅘
3. G. H. Walker, 2nd Lt. 25th Div. Cyclist Co. (2 Enfield)	425	1 53

EVENT 10. MEDIUM-WEIGHT HILL-CLIMB FOR MOTOR CYCLES OF ANY DESCRIPTION NOT EXCEEDING 500 c.c.—

Result :	c.c.	m.p.h.
1. G. Kendall, Pte. Duke of Lancaster's Own Yeomanry (1-cyl. Norton)	490	33.36
2. G. Barnard, 2nd Lt. R.E. (1 Sunbeam)	499	32.46
3. G. H. Walker, 2nd Lt. 25th Div. Cyclist Co. (2 Enfield)	425	31.79

EVENT 11. UNLIMITED HILL-CLIMB FOR MOTOR CYCLES OF ANY DESCRIPTION NOT EXCEEDING 1,000 c.c.—The only incident was McColl's fall at the foot of the hill, due to his missing a broken footrest while mounting. He was allowed another try. The competitors' speed at the top of the hill was such that their machines made extraordinary jumps.

Result :		
1. G. Barnard, 2nd Lt. R.E. (1-cyl. Sunbeam) ...	499	33.36
H. F. Edwards, Pte. Artists' Rifles (2 Zenith)	994	
3. G. Kendall, Pte. Duke of Lancaster's Own Yeomanry (1 Norton) ...	490	32.46
R. A. Waddy, Pte. Oundle O.T.C. (2 Indian) ...	994	

At 6 p.m. the prizes were distributed by Mrs. Nicholl, wife of Major D. F. Nicholl, D.A.A., Q.M.G., who acted as steward in company with Captain Loughborough, R.G.A., and Dr. A. M. Low, D.Sc., Lt. R.F.C. Some amusement was caused by F. E. Barker winning three cigarette cases.

The Aggregate Cup, presented by *The Motor Cycle*, was won by G. Barnard, 13 points, while Barker was second with 9 points.

In view of the unqualified success of this meeting, it is hoped to be possible to arrange another in a month's time.

A great success!

That was the consensus of opinion of those who witnessed the first Brooklands meeting for not only khaki-clad men but "sons of the sea"—but British all of them.

It was a letter in *The Motor Cycle* from Second Lieut. F. M. C. Houghton that brought about this novel and interesting meeting.

An amusing feature of the meeting to practised competition men was the novelty of the thing. Many of the competitors had never ridden in a race before, some had never seen Brooklands, and up and down the track they careered like boys let loose. They bobbed up from everywhere. What an anxious time the officials had!

A. G. Reynolds, the timekeeper at the start, several times carefully gathered the competitors together on the line, and whilst busily counting off the seconds a rider would suddenly decide to give his engine a warm up, and off he would shoot down the track. Fellow competitors would resolve to do the same. Once again the men were gathered in and the worried but good-natured timekeeper would give them a proper send-off.

We would like to wager that we have seen some of the competing machines at previous important events in the Isle of Man and elsewhere.

What a good idea it was to invite a party of wounded soldiers from the neighbouring military hospital. They appeared to enjoy the fun immensely—not least of all the activities of the three "bookies" present.

The "bookies" had a fine haul in one event. They offered 4 to 1 on the field, and everybody knowing "the" winner placed money on their fancy, and the winner turned out to be a man *not on the programme!*

The fastest Douglas on the track, tuned up by S. L. Bailey, hit a hole in the track during practice and buckled the back wheel.

It was unfortunate that the state of the track precluded the possibility of complete circuits being made at speed. The defect of short sprint races is that everything depends upon a quick start. Most of the races were decided in the first 200 yards.

We suggest that the next event be named the United Services or Army and Navy meeting. By September the finishing straight will have been repaired, and the racing would consequently be much better viewed by the spectators. Intending competitors should send in their names early to Mr. T. W. Loughborough, c/o the A.C.U., 83, Pall Mall, S.W.

The eight valve Morgan driven by W. G. McMinnies was just beaten by a 7 h.p. sidecar. McMinnies told us that he could do 45 m.p.h. on his low gear ratio of 7½ to 1.

Most of the finishes were rather straggly, but in Event 4 Lieut. A. Lindsay charged through the field in the last 150 yards to win comfortably.

Just before the start one competitor, recognising a well-known official of a leading company, enquired how to tune his machine up for speed. He was recommended to remove the mudguards, which he did in quick time.

There were some cunning men in the plug changing or "finger burning" contest. Several never used a spanner at all; they had fitted the plug loosely in the cylinder, and after riding the course exchanged it with the fingers. Quite simple; the times as a result were wonderfully quick.

Expert motor cyclist spectators present agreed that practically all the competitors handled their machines most skilfully, whether in the sprint racing, hill-climbing, or slow race.

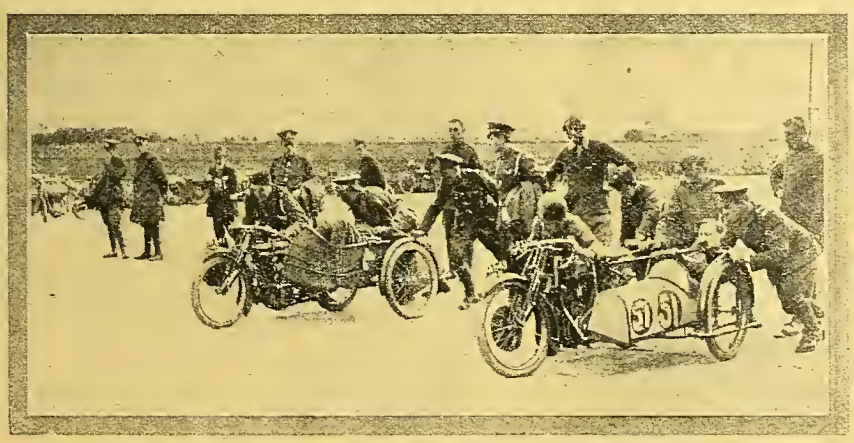
Those who tried the whole of the track were amazed at the size and depth of the holes caused by the passage of motor lorries to and from the flying sheds. It will take weeks and the outlay of much money to put it into order again.

Both naval and military men figured among the prize winners.

A jollier and more healthy-looking lot of competitors never gathered together. When Mr. Loughborough called for a naval winner to come and take his prize from Mrs. Nicholl, "Aye, aye, sir," was the ready response.

Anyone in civilian attire felt quite "out of it" at Brooklands on Saturday.

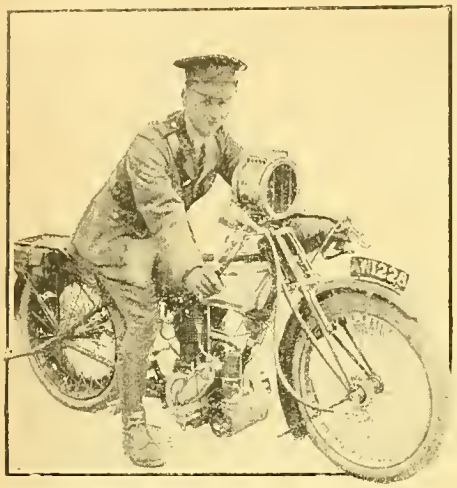
Among competitors and spectators one recognised many old Brooklands *habitués* and Six Days Trials riders, out in very different attire from those good days.



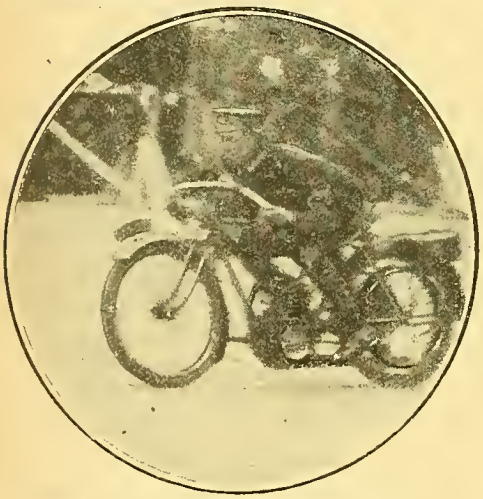
Start of the sidecar race which was won by Corporal F. E. Barker (8 h.p. Zenith).

SCENES DURING THE ARMY AND N

(A Description of the Event ar

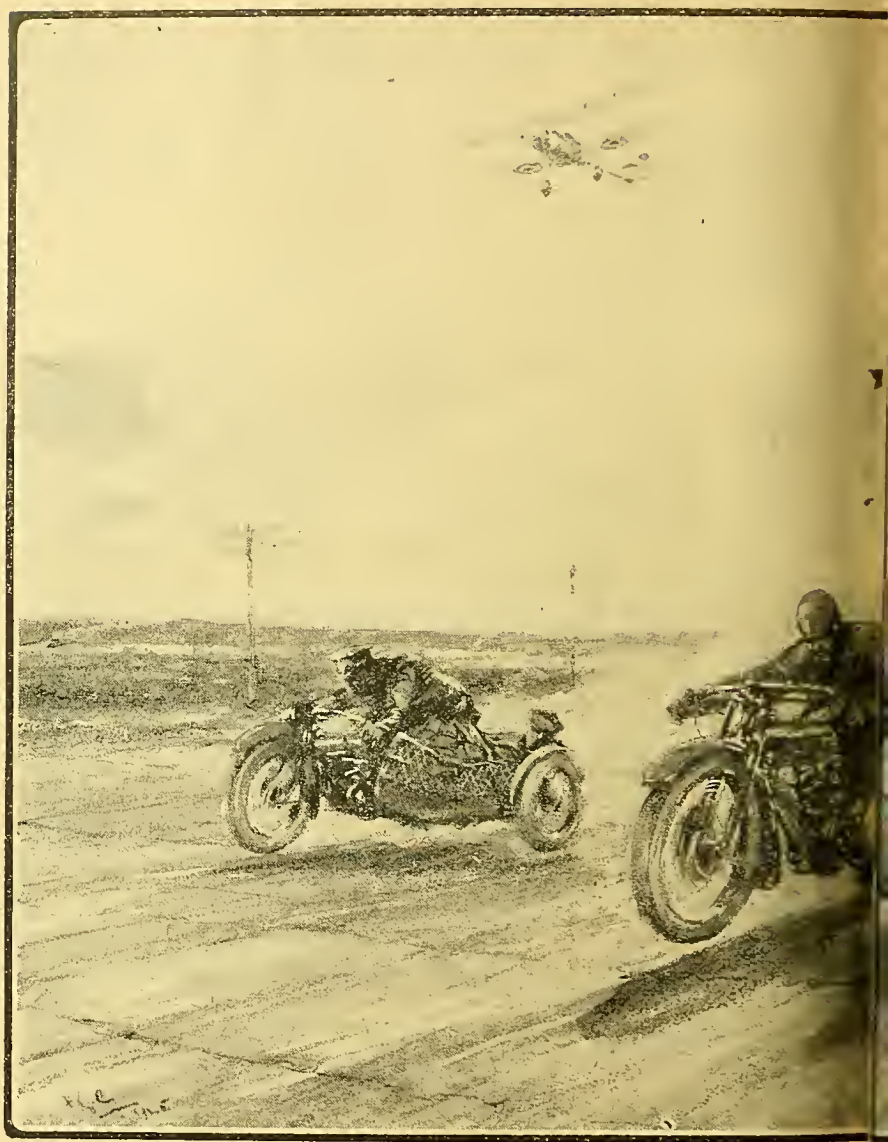


Second-Lieut. F. M. C. Houghton, 25th Div. Cyclists' Company, who originally suggested the idea of an all-khaki race meeting in a letter to *The Motor Cycle*.

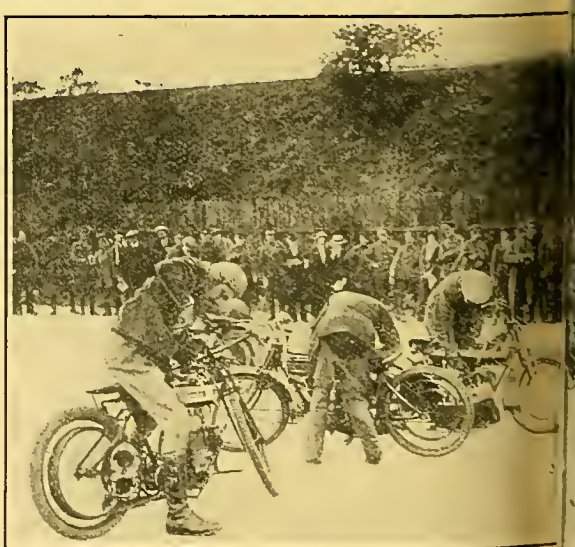


Private E. R. Mecredy (Arno) at speed in the 550 c.c. race.

Lieut. G. H. Walker (3 h.p. Enfield) topping the crest of the test hill.



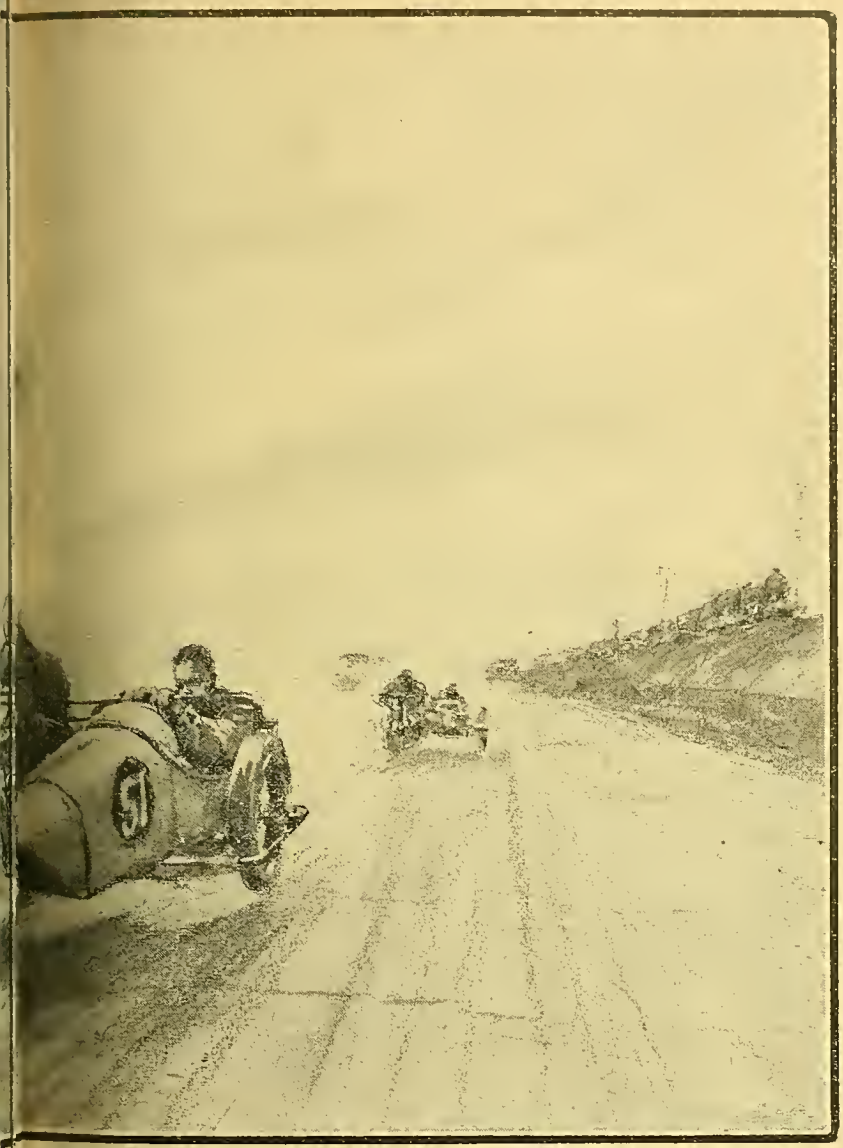
Major D. F. Nicholl, D.S.O., D.A.A., Q.M.G., steward.

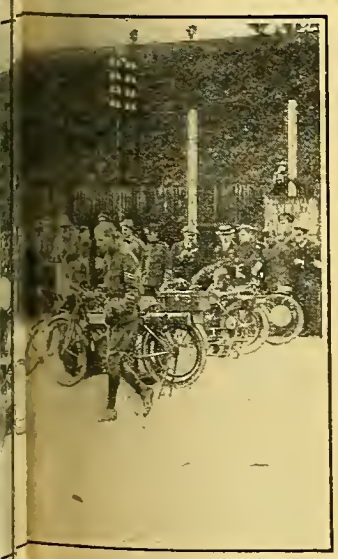


Changing sparking plugs in the race in which ma

AVY MEETING AT BROOKLANDS.

PEARS ON PAGES 159-161.)



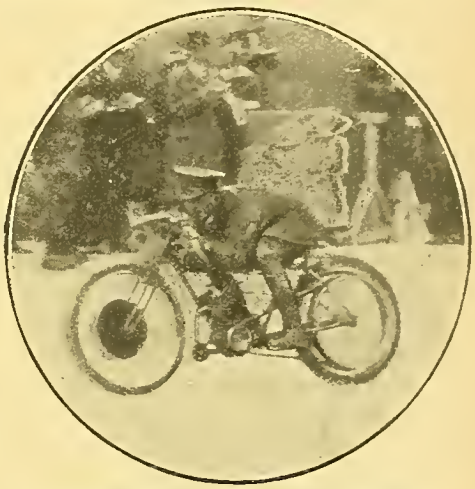


fingers were burned.

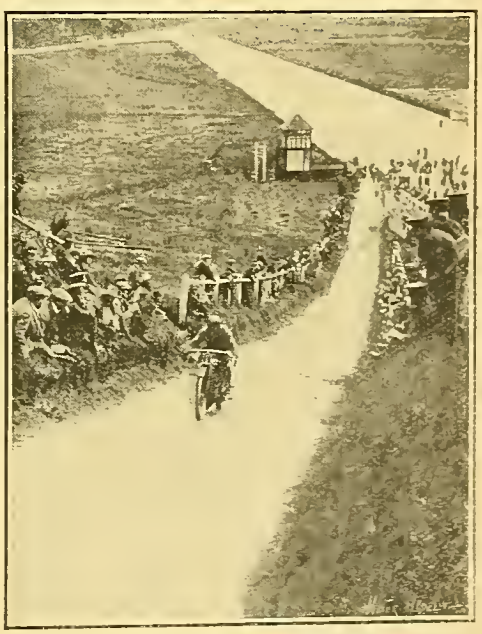
Captain A. H. Loughborough, R.G.A., steward.

Lieut. A M Low R.F.C., steward.

Mrs. Nicholl presenting *The Motor Cycle* Cup to Second-Lieut. G. Barnard, who, riding a 3½ h.p Sunbeam, made the best aggregate performance.

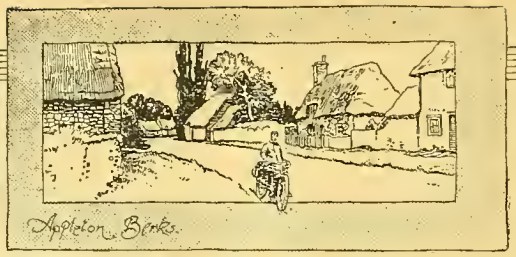


A twin-cylinder Humber, ridden by Cadet Huskinson, in full flight.



Corporal F E Barker (8 h.p. Zenith) in the unlimited hill-climb.

CURRENT CHAT



TIMES TO LIGHT LAMPS.

Aug. 12th	... ...	8.29 p.m.
,, 14th	... ...	8.26 ,,
,, 16th	... ...	8.22 ,,
,, 18th	... ...	8.18 ,,

Roads to Avoid.

The Wisbech-Peterborough road is in very bad condition between Guyhirne and Thorney.

The Accident to Mr. and Mrs. Stevens.

We are glad to announce that Mr. and Mrs. Harry Stevens, whose unfortunate accident we referred to last week, are now considered quite out of danger. Mrs. Stevens has been able to get up, but Mr. Stevens has not got on quite so well owing to septic poisoning setting in three days after the accident.

A North-country Hill-climb.

The Liverpool Motor Club anticipate holding an open hill-climb at Pen-y-ball, Holywell, on Saturday, September 11th, provided sufficient entries can be secured. The whole of the profits will be handed over to one of the war funds, and in order that the sum may be as large as possible, the prizes will be of nominal value, or they may take the form of War Loan vouchers. Entries should be forwarded to the Secretary, Mr. W. H. Bullock, St. George's Restaurant, Red Cross Street, Liverpool, forthwith.

National War Funds.

On Tuesday last the principal War Funds stood as follow:

	£	s.	d.
The Prince of Wales's National Relief Fund	5,431,671	0	0
Queen's Work for Women Fund ...	163,511	0	4
The Times Fund for Sick and Wounded ...	1,609,689	8	9
Fund of National Committee for Relief in Belgium	745,000	0	0

Glengarriff Trial Results.

Following are the awards in the two days open trial of the Dublin and District M.C.C., reported on page 131 of our last issue:

WINNER OF CUP.—Mooney (Bradbury sc.)

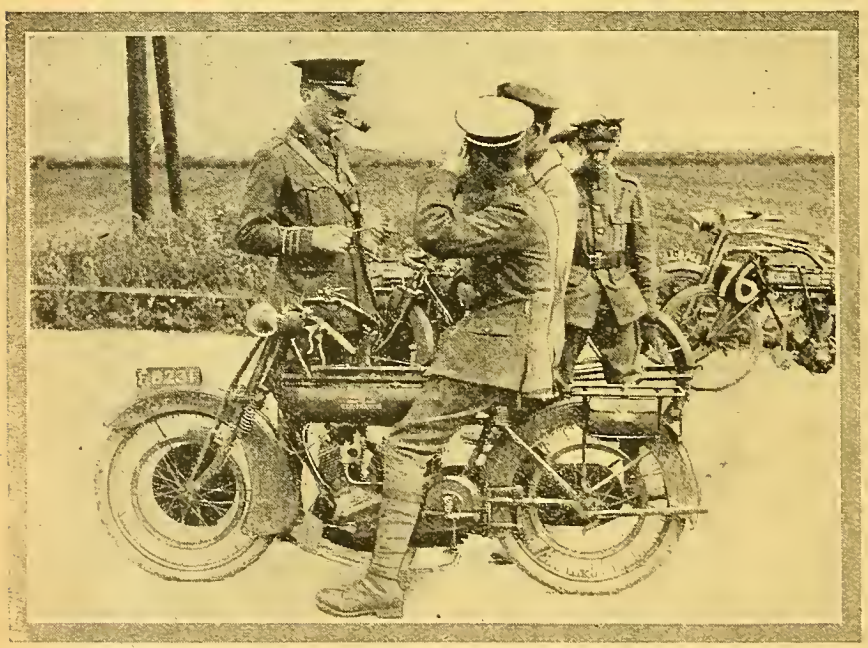
GOLD MEDALS. — Mooney, Farren (Indian), Hurse (B.S.A.), Brown (Rover), Toole (B.S.A.), Woods (B.S.A.), O'Dwyer (B.S.A.), Roche (Rover), Sullivan (Sunbeam), Hartigan (Scott), and Cunningham (Bradbury).

SILVER MEDALS.—Curtis (Indian sc.), Clarke (Rudge), Doleman (Rover), Henderson (Harley-Davidson sc.), Kettle (B.S.A. sc.), and Collins (Enfield sc.)

BRONZE MEDAL.—Ladd (Bradbury sc.)

BINKS PRIZE for best performance outside cup winner.—Farren (Indian sc.)

SPECIAL SILVER MEDALS for two-stroke performances.—Allen (Sun) and Dick (New Hudson).



SATURDAY'S "KHAKI" MOTOR CYCLE MEETING AT BROOKLANDS.
Major D. F. Nicholl, one of the stewards of the meeting, chatting to competitors.

SPECIAL FEATURES.

ALL-KHAKI RACE MEETING AT BROOKLANDS. (Illustrated)
RELIABILITY, SIMPLICITY, AND ACCESSIBILITY. (Illustrated)

Russian Orders for Motor Cycles.

Russian Government officials are or again busy placing orders for mo cycles with the leading British mar facturers. It is still difficult, if r impossible, to obtain prompt delivery a 1915 model. Indeed, we have seve times heard of premiums being offer for early delivery.

Second-hand Prices.

We have followed a somewhat differe plan this week from that hitherto adopt in giving average prices. Formerl when there were not a sufficient numb of one particular model advertised in t previous issue to give an average th model has been omitted. We have no adopted the plan of quoting those mode of which at least five weekly averag have appeared during the past tv months. In this way one gets a fair average, and at the same time a mo comprehensive list.

Make.	Year.	H.P.	Last week's average	Avera for p 8 wee
A.J.S.	1914	6 3-sp. sidecar ..	—	£72
,, ...	1913	6 3-sp. sidecar ..	£62	£59
,, ...	1914	2¾ 3-speed	—	£43
Ariel	1914	3½ 3-speed	—	£42
,, ...	1914	3½ 3-sp. sidecar ..	—	£53
Bat	1914	8 3-sp. sidecar ..	—	£56
,, ...	1913	8 2-sp. sidecar ..	£48	£51
Bradbury ..	1914	6 3-sp. sidecar ..	—	£63
,, ..	1914	4 3-sp. sidecar ..	—	£41
B.S.A.	1914	4 3-speed	—	£46
,, ...	1914	4 3-sp. sidecar ..	—	£57
Calthorpe ..	1914	2 2-speed	£21	£19
Chater-Lea .	1914	8 3-sp. sidecar ..	—	£68
,, .	1913	8 3-sp. sidecar ..	—	£52
Clyno	1914	6 3-sp. sidecar ..	—	£68
,, ...	1914	2½ 2-speed	—	£30
,, ...	1913	6 3-sp. sidecar ..	£57	£54
Douglas ...	1914	2¾ 2-sp. kick start	£43	£37
,, ...	1913	2¾ 2-speed T.T...	—	£35
,, ...	1914	4 2-sp. sidecar ..	—	£50
Enfield.....	1914	6 2-sp. sidecar ..	£60	£62
,, ...	1914	3 2-speed	—	£42
Humber ...	1913	3½ 3-sp. sidecar ..	—	£41
Indian	1914	7 2-sp. sidecar ..	£57	£62
,, ...	1914	4½ 3-sp. sidecar ..	—	£54
James	1914	4½ 3-sp. sidecar ..	—	£54
Lea-Francis.	1913	3½ 2-speed	—	£48
Levis	1914	2½ 2-speed	—	£29
Matchless ..	1914	7 3-sp. sidecar ..	—	£74
,, ..	1913	7 3-sp. sidecar ..	—	£54
New Hudson	1914	6 3-sp. sidecar ..	£63	£59
,,	1914	4 3-sp. sidecar ..	£42	£47
N.U.T.	1914	6 3-sp. sidecar ..	—	£60
Premier ...	1914	3½ 3-sp. sidecar ..	—	£52
P. & M. ...	1913	3½ 2-sp. sidecar ..	—	£49
,, ...	1914	3½ 2-sp. sidecar ..	—	£59
Rex	1914	6 3-sp. sidecar ..	—	£58
,, ...	1913	6 3-sp. sidecar ..	£35	£40
Rover	1914	3½ 3-speed	—	£46
,, ...	1914	3½ 3-sp. sidecar ..	—	£53
,, ...	1913	3½ 3-sp. sidecar ..	£35	£42
Royal Ruby	1914	3½ 2-speed	£45	£45
Rudge	1914	3½ Multi sidecar..	—	£50
,, ...	1914	3½ Multi	—	£34
,, ...	1913	3½ Multi sidecar..	—	£37
Scott	1914	3¾ 2-sp. sidecar ..	—	£60
,, ...	1914	3¾ 2 sped	—	£47
,, ...	1913	3¾ 2-sp. sidecar ..	—	£46
Sunbeam ..	1915	3½ 3-sp. sidecar ..	£77	—
,, ..	1914	6 3-sp. sidecar ..	—	£76
,, ..	1914	3½ 3-speed	—	£57
Triumph . .	1914	4 3-sp. sidecar ..	£56	£59
,, ...	1914	4 3-sp. sidecar ..	£47	£46
,, ...	1913	3½ 3-sp. sidecar ..	—	£46
,, ...	1913	3½ F.E.	£38	£37
Williamson .	1914	8 2-sp. sidecar ..	£76	£69
Zenith	1914	6 Gradua sidecar	—	£52
,, ...	1913	6 Gradua sidecar	—	£47
,, ...	1913	3½ Gradua	—	£35

Cheap Garage Accommodation.

At the Birkenhead Ferry, at the top of the stage, the Corporation have a large well-lighted and dry room in which motor cycles are stored. For twenty-four hours the charge is 2d. (sidecar 2d. extra), and for each day over the twenty-four hours from entry a charge of 1d. per day is made. There must be few places offering such cheap accommodation as this.

Important to Tourists bound for Scotland.

The main Carlisle-Gretna Road between Floriston Road End and Moss Band Road End is closed to all vehicular traffic pending the completion of a new bridge. Motorists travelling north should turn to the right at Kingstown, and so reach Gretna *via* Longtown. In the opposite direction the Longtown détour should be followed by turning to the right at Longtown about four and a half miles east of Gretna.

"The Motor Cycle" in Germany.

A member of Messrs. Iliffe and Sons' staff, Lieutenant C. E. Wallis, has sent us the photograph reproduced on this page. Lieutenant Wallis was wounded and taken prisoner as long back as last September, so that by the time the war is over he will have had a fairly lengthy experience of life as a captive in the hands of the enemy. Thanks to the efforts of the United States Ambassador in Berlin, the lot of our men in Germany has undoubtedly improved during the past few months, and certainly Lieut. Wallis and his friends look more comfortable in the photograph than was evidently the case some little time back. *The Motor Cycle* finds its way to the camp at Stralsund (where Lieut. Wallis is interned) just as it reaches practically every other country. Lieut. Wallis is one of 130 members of the staff of Messrs. Iliffe and Sons (proprietors of *The Motor Cycle* and allied papers) who have answered the country's call.

A Decompressor Lever.

An enthusiastic rider of a P. and M., who is an engineer, tells us that he has riveted to the plate of his decompressor a lever about 1ft. in length, made of flat iron $\frac{1}{8}$in. × $\frac{5}{8}$in., which is cranked slightly and fitted with a knob at the end. He can thus operate the decompressor by hand without stooping from the saddle. This he finds invaluable in traffic and for easy starting.

An Enterprising Firm.

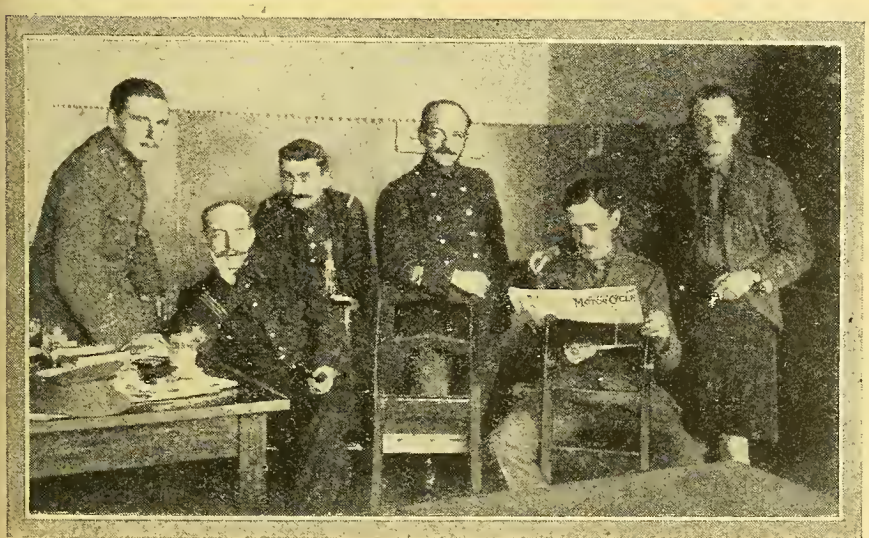
A walk round the Quadrant motor cycle factory showed that this firm at any rate had thrown itself thoroughly into the important war work that is on hand. Several new and immensely expensive machines have been installed of late in order that the firm may be in the best possible position to execute the Government work which it has undertaken.

Rims and Tyres.

We would urgently warn our readers against attempting to fit 26in. × 2½in. covers on voiturette rims suitable for 650 mm. × 65 mm. voiturette tyres. Though 650 mm. × 65 mm. is practically the same as 26in. × 2½in., the two rims are quite different, and the motor cycle beaded cover will not fit one of these rims nicely. It is sure to give trouble sooner or later if placed thereon.

Electrical B.H.P. Tests.

A new electrical testing set has been installed at the Levis works and specimen engines will regularly be tested on this installation. We recently witnessed one of the first tests on a 2¾ h.p. standard two-stroke Levis and a reading of 3 electrical h.p. was obtained at 2,300 r.p.m. Rather an interesting fact was brought to light during the test. In order to convey the exhaust gases away from the engine a pipe two and a half yards long has been made with a couple of gradual bends in it. When this pipe was fitted it was found to absorb no less than ½ h.p.



"THE MOTOR CYCLE" IN A PRISONERS' CAMP IN GERMANY.

Reading the paper is Lieut. C. E. Wallis, of the staff of Messrs. Iliffe & Sons Ltd., publishers of *The Motor Cycle*, who was wounded and taken prisoner by the Germans in the early days of the war. On the right is Lieut. Kevill Davis, who before the war was with Messrs. Bentley & Bentley, Ltd., agents for the French D.F.P. car.

Woolwich M.C.C. Paperchase.

The trail for the re-run paperchase of the Woolwich Club on Saturday next will be laid by J. Wood (of the Yeomanry), on his new Matchless, and T. J. Ross (special constable), on a T.T. Triumph. A secret course has been planned, including a new Kent hill. A gymkhana will follow.

New Identification Marks.

London has been assigned yet another additional mark for registration purposes. This is LP, previous ones being A, LC, LN, LB, LD, LA, LE, LF, LH, LK, LL, LM, and LO.

OB is the new mark for Birmingham previous marks being O and OA.

The London-Birmingham Road.

It is surprising how quickly the main road surfaces deteriorate in these times of heavy war traffic. The London-Birmingham road will probably surprise many who, owing to pressure of business, etc., have been unable to motor along this famous road for the past few weeks. Practically the whole way from Coventry to London is in a state of road waves, due to the heavy lorries, which number frequently several hundreds a day. A well-known motor agent in Dunstable with whom we chatted told us he had counted as many as fifty of one make alone.

A Proposed New Overseas Model.

Many readers who will later on be looking out for a good single-cylinder machine with plenty of ground clearance, for use where Colonial conditions exist, will no doubt be glad to learn that it is more than probable that the Norton Manufacturing Co. will, later on in the year, place a machine of this description on the market. It is intended to construct it so that at no point will the ground clearance be less than 6in. The long stroke Norton single-cylinder 4 h.p. engine will be used, and the transmission is to be by chain.

100 Miles an Hour.

The 100 m.p.h. mark is still tempting to many a racing man, and credit for such an achievement is greatly sought. With a view to rendering this prodigious speed possible on a motor cycle, the railway straight at Brooklands, on which the Army and Navy events were run last Saturday, is to be put into thorough order in the course of the next few weeks, and the two eight-valve Indians in this country are to be brought out again. C. B. Franklin, the Irishman, and Sydney George will ride the machines, and Mr. Wells is confident that one or other will be successful, as the mounts are now tuned up better than ever before, and it will be remembered that George last year came very near to attaining the desired speed.

Harry Martin is another who has several times announced his intention of attempting this coveted record. Martin will probably use an 8 h.p. twin J.A.P.

Last year Charlie Collier had an eight-valve M.A.G. engine built up into a motor cycle frame, but only appeared on it once or twice prior to the war, since when, of course, racing of all kinds has taken a back seat. It seems likely, however, when normal times are restored, that events for eight-valve twin-cylinder machines will be arranged.

LETTERS TO THE EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Lubrication of Twin Engines.

Sir,—From time to time I notice letters complaining that the front cylinder of a twin "V" engine gets starved of oil, or the back cylinder gets too much. The best remedy is, I believe, to lead the oil direct to the front cylinder.

What I want to know is, why do not the manufacturers do this in the first place, as the trouble seems to be universal? Any other course seems to me unbusiness-like. G.

A Monst r Racer.

Sir,—I enclose herewith photograph of myself and a French Peugeot racing machine. Perhaps the machine may be of interest to the readers of *The Motor Cycle*. The motor is a four-cylinder V type; Longuemare carburetter and Le Febre oiling device are also fitted Ignition is by six dry cells, contained in the triangular box mounted at the head of frame, and two sparking coils, one on each side top frame tube.

No brake nor pedalling gear is fitted, and the motor when "opened" up has a wonderful turn of speed. No one here has the pluck to leave the motor opened for any length of time.

I hope next spring to bring my touring model, a 7 h.p. Indian, to England to tour. If I cannot get passports I will try to join some department of the Government that will enable me to come over.

As I own machine and sidecar I believe I should have no trouble in enlisting in the hospital or some other service. There are lots of German residents here, but they are little liked, and I threw away a tyre pump stamped "Blumel," "made in Germany," and bought another made in U.S.A. The only thing left on my machine that is German is the Bosch magneto, and that in name only; the magneto was manufactured in Springfield, Mass.

SAMUEL RAGAN, JUNR.

Vicksburg, Miss., U.S.A.

A four-cylinder V-type Peugeot engine fitted to a motor cycle owned by a reader in the United States, who informs us that its speed capacity is such as to frighten most of his friends who have ridden it.

No. 7 Battery M.M.G.S.

Sir,—I notice in *The Motor Cycle* of July 15th a letter from G. C. Wheeler, of No. 10 Battery M.M.G.S., and should be very grateful if you would put the following correction in your next issue.

No. 7 Battery *has* been in the trenches doing its share, and, secondly, that it is *not* attached to a cavalry division.

WILLIAM W. HONYWOOD,
Lieut., 7th Battery M.M.G.S.

Timing of Two-strokes.

Sir,—Having had a trip spoilt partly through laziness and partly through want of time, may I be allowed to give some advice to other riders of two-strokes, although it is not new.

I recently sent my machine to a garage to have the driving chains shortened. Since then it has been going "rottenly." The trouble I have found is entirely due to wrong timing. Two-strokes, I believe, vary very much in this respect, consequently, I do not blame the mechanic who reassembled the engine, more especially at the present time when most garages are short-handed. As it is the simplest thing possible to check the timing, I should advise others to do this. EL 1160.

Exmoor Roads.

Sir,—Can any of your readers who are familiar with the roads in North Devon and Somerset enlighten me on the following two points?

At the top of Porlock Hill, a mile or less beyond where the new and the old roads join, a road goes off to the left down to Oareford and Oare. Another road runs from close by County Gate direct down to Oare. Is either (or both) of these roads rideable and climbable to the average touring mount? Also, how far up towards the Doone Valley could a sidecar outfit make its way?

I should be very grateful for any information on these points. EL 1969.

The Motor Cycle in the Argentine.

Sir,—Being a constant reader of your interesting journal, I take the liberty of writing you a few lines with regard to motor cycling in the Argentine, which I trust will be of interest to you and your readers. One sees many different English motor cycles out here, but the most prominent are the American Indian, there also being a great number of other well-known American makes. The prominent place occupied by the Indian is due to its fame for speed work in this country, which appeals very much to our motor enthusiasts; and, secondly, for its rear springing, with its consequent comfort, which I consider is highly necessary on account of the roads one encounters. I follow very keenly your articles and other readers' opinions on this subject, and await the day when rear springing will become universal.

There are several motor cycling clubs in the country, and excursions are held frequently, weather permitting, as after rain the roads outside the capital are impossible for cycles, sometimes for days, and sometimes for weeks in the winter. Now and again track races are held, and yearly a road race is held between the capital and the city of Rosario, a distance of 190 miles or so. As a rule the latter race is postponed several times on account of the rains, the roads simply being tracks running through the open camps.

KEEN TRIUMPH RIDER.

Quilmes, Prov. B. Ayres.

Mr. LIONEL S W. ROOK, of Erdington, writes:—

"Now a word about the gear. I am more than satisfied with it. Last week I and a passenger (about 20 stone in all) made a non-stop run from here to Ledbury, which means, as you know, some stiff pulling over the Malverns. Twice going up the Wyche I was baulked and nearly stopped, but the pulley answered perfectly, and you can guess how very pleased I was. In fact, to sum up, I have tested it in every conceivable way, and it has always acquitted itself wonderfully, and I must congratulate you on your ingenuity in producing such a novel gear. Rest assured I shall recommend it wherever possible."

Read what "The Motor Cycle" says:—

"We were afforded an excellent demonstration of the action of the gear on a 3½ h.p. Triumph. Not only was free engine obtainable, but on the very lowest gear, when the belt was quite slack, there was no sign of slip, and in this position it was impossible to prevent the motor cycle from moving off easily by any attempt to hold it back."

Mr. H. W. PHILLIPS, of Blackheath, London, writes:—

"I am pleased to inform you this is a very satisfactory gear and works splendidly."

Mr. H. THOMPSON, of Hurley, Artherstone, writes:—

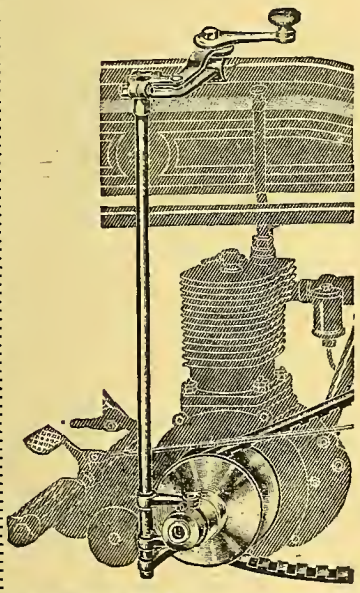
"The Grado Multi-Pulley that was fitted to my bike a little while ago is very good, and I am satisfied with it. It certainly does all that one requires. I am 15 stone, and I often take a 10-stone passenger, and can get up all hills although my machine is only a 3½ Blumfield. In traffic one can travel as slow as desired. For starting it is quite all right, and one can guess I feel the benefit, being a heavy man. The old method of pushing was hard work. I shall have pleasure in recommending your pulley at any time."

Read these letters from riders who have proved the value of

The GRADO

The Simple Variable Pulley arrangement for Belt-driven Machines.

Multi-Gear.



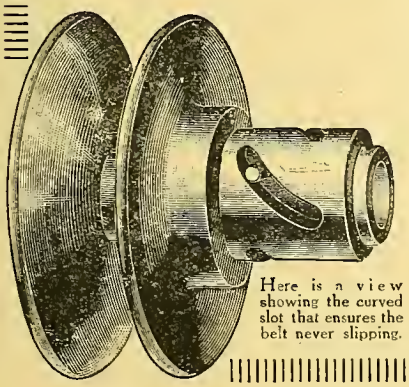
The GRADO GEAR as fitted to machine.

The Grado Gear is most simple in construction—there is nothing to get out of order, and it can be fitted to a standard belt-driven machine in 2 to 3 hours. Why not write for our Catalogue TO-DAY?

PRICES.

Pulley complete (as illustrated), bored to suit engine shaft up to 4½ h.p.	**£3 3 0**
Up to 6 h.p.	**£3 10 0**
Lightweights	**£2 10 0**

We can supply a Special Pulley for engine with Extending Crank Bosses, like the J.A.P., Old Rex, Minerva, etc., for 10/- extra. Recess up to 1⅜in. diameter; up to 2¼in. diameter, if necessary, 12/- extra.



Here is a view showing the curved slot that ensures the belt never slipping.

The GRADO Manufacturing Co.,

64, Pershore Street, BIRMINGHAM.

Telephone - 1187 Mid.

HARLEY-DAVIDSON

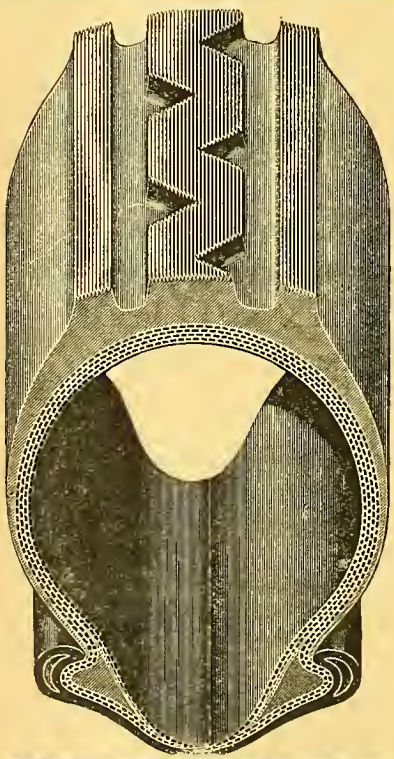
7-9 h.p. Twin Sidecar Combinations in Stock Ready for Immediate Delivery

The Sidecars are manufactured exclusively for us by the makers of the "GLORIA" and "CANEOLET" Sidecars—perfectly finished, with exceptionally strong chassis, high-class bodywork, enamelled throughout HARLEY-DAVIDSON Grey, and fitted with 28 × 3 inch Dunlop heavy Rubber-studded Tyre—they complete a perfect combination. Prices from £14 to £27. We can supply from Stock fitted to the following HARLEY-DAVIDSON Models:

Model H J. 7-9 h.p. Twin, three-speed, with complete Dynamo Electric Lighting and Warming System, **£76-13-0**
Model H F. 7-9 h.p. Twin, three-speed, **£68- 5-0**
Model H E. 7-9 h.p. Twin, Free Engine, **£59-17-0**

SOLE DISTRIBUTORS
for the Counties of Warwicks, Worcs, Staffs, Salop, and Hereford:

The Premier Motor Co.,
ASTON ROAD, BIRMINGHAM.



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— the TYRE for VALUE!

¶ Compare the mileage afforded by the HERMETIC "PEERLESS" with that of any other tyre and you will find that the HERMETIC "PEERLESS" is the greatest tyre value on the market.

It is designed and built to ensure maximum strength and durability with the utmost protection against slide-slip and puncture troubles.

PRICES:
26in. × 2¼in. Standard size .. .. **39/6** each.
26in. × 2½in. or 26in. × 2⅝in. × 2¼in. **42/6** „
650 × 65 mm. Cycle Car .. .. .. **44/6** „

Remember, the HERMETIC "PEERLESS" is the tyre that gives "more miles for money"—hence, it's the most economical to buy. Please ask for our Illustrated List of Tyres and Specialities—it will aid you in buying "*best value*" goods.

THE SELF-SEALING RUBBER CO., Ltd.,
Hermetic Works ..... Birmingham.

F.W.W

Electric Lighting on Motor Cycles.

Sir,—I am rather interested in electric lighting on motor cycles from primary and secondary batteries, and I therefore found the article on "The Simplest Form of Electric Lighting," by "H.W.H.," in your issue of the 22nd inst., of interest. Your contributor, however, has made one or two errors which I would like to point out for the benefit of those who intend adopting either primary or secondary batteries for lighting purposes.

Under the heading, "Dry Batteries," he says, with other things, "Here it should be pointed out that, with the same current consumption, the greater the number of cells and higher electro-motive force, the stronger will be the current and greater the light, but the smaller will be the actual capacity. It is, therefore, desirable to use a battery with the least number of cells consistent with a sufficiency of light."

This sentence is extraordinarily wrong, and is misleading, insomuch that it is entirely contrary to facts. Raising the electro-motive force of a battery does *not* raise the current; in fact, the higher the electro-motive force the *lower* the current. Therefore, it is wise to carry the maximum number of cells possible, for high electro-motive force means lower current, and, consequently, longer battery life.

Further in the article, "H.W.H.," referring to the "Volex" rear light, makes another mistake. He says that a four-volt battery of the same size as the two and a half-volt battery has *less* capacity, though it is capable of generating a *stronger* current. How any four-volt battery of the same size as a two and a half-volt battery can have less capacity and yet be capable of generating a higher current I really cannot imagine. In fact, the four-volt battery supplying lamps of the same candle-power and make would last infinitely longer, because, as is herewith shown, the current is lower.

Say a lamp takes one watt per candle-power and the total candle-power is four, the total watts are, therefore, four. To find the discharge current of a two-volt battery, divide the watts by volts thus: $\frac{4}{2} = 2$, which is ampmeters, the discharge current.

Now, say the battery is a four-volt one, divide watts by volts as previously, and we get $\frac{4}{4} = 1$ ampmeter, which shows that the higher the voltage the lower the discharge current, and, consequently, longer battery life.

I am a great believer in electric light, and I think that if motor cyclists just knew how to choose a battery to get the best results this form of lighting would compare very favourably with other forms regarding cost, and in other respects, in my opinion, it is in advance of most of them.

W. R. MONTGOMERY.

[We submitted this letter to the writer of the article, and his reply is appended.—ED.]

Sir,—I should like to remind your correspondent of the following facts, to all of which he will find a reference made in the article.

First, he will notice that 2½ and 3½ volt bulbs described—and which were to be "considered closely in conjunction with the battery capacity"—consume approximately .25 to .3 amp. each, so that, supposing for a given purpose a 2½ volt .3 amp. bulb is found to give a sufficient light, then the substitution of a higher E.M.F. in battery and bulb will only result in a greater light, and not in a decrease of the discharge rate.

With reference to the discharge rate of a dry battery in use, I myself always understood it to be whatever the lamp itself consumes. The capacity of a dry cell, and therefore of a dry battery, increases in proportion to the increase of its volume. It therefore follows that increasing the number of cells in a battery of given dimensions must, whilst raising the E.M.F., lower the total ampèrage capacity. Bearing in mind the above-mentioned fact, that both bulbs consume the same quantity of current, it is clear that a three-cell battery will not light a 3½ volt lamp for the same length of time as a two-cell battery of the same volume would light a 2½ volt lamp.

A practical test—one upon which I based my statements—can easily be made. Obtain one each of the two batteries (two-cell and three-cell), and use with the lamps pointed out as suitable for each. The two-cell battery will be found to give 50-60 hours lighting, but the three-cell battery will become exhausted after about 25-30 hours use. Manufacturers themselves frequently draw attention to this fact in price lists.

H.W.H.

The Motor Cycle in Australia.

Sir,—I am always pleased to see in your journal, of which I have been a reader for over two years, any reference to things motor cycling in Australia. I saw in the number for April 29th the three photographs of our good roads which are stated to be within 150 miles of Melbourne. Two of them are, if I am not mistaken, within ten miles of the city. The long straight hill shown is known as Spring Hill, an easy gradient on the main north-west highway, and is about eight miles from Melbourne. The arched bridge shown is about one and a half miles further on the same road, and is at the foot of Curly Hill, so-called from having four bends. As a contrast to the good road at the foot, this hill is decidedly stony and rough. If these are not the spots shown, the photographer will please correct me. Speaking of good roads, there are plenty of these in Victoria, also plenty of bad ones.

Our 100 miles road race (the most important of the year) was held on the King's Birthday at Mortlake, a small town 150 miles from Melbourne. In spite of the distance from the capital, hundreds of motorists and motor cyclists rode to see it, the road for practically the whole distance being beautifully smooth. The race was held over a triangular (three laps) course, 33½ miles round, which except for the corners, was safe for full throttle all the way. Unfortunately, rain fell the day before the race, and also while it was in progress, this, of course, lowering the speed considerably. The winner proved to be R. Finlay, on a 7 h.p. American Excelsior, whose time was 112 minutes. Second man was E. Mayman, 3½ h.p. twin J.A.P., with E. Tyler, Triumph, third, and fastest under 600 c.c. The machine ridden by Mr. Tyler was one of the 1914 countershaft models used in the T.T.

Motor cycles are selling at the rate of seventy a week and more in the State of Victoria alone; this in spite of the war and high prices. The single is very popular, and great numbers of locally built machines are seen, Precision and J.A.P. engines seeming to divide the popularity. The Big Four, as the big single Precision is called here, is being built up in very large numbers, whilst the 5-6 h.p. J.A.P. twin is seen everywhere. T.T. or semi-T.T. bars are the most popular, and are undoubtedly the best for comfort.

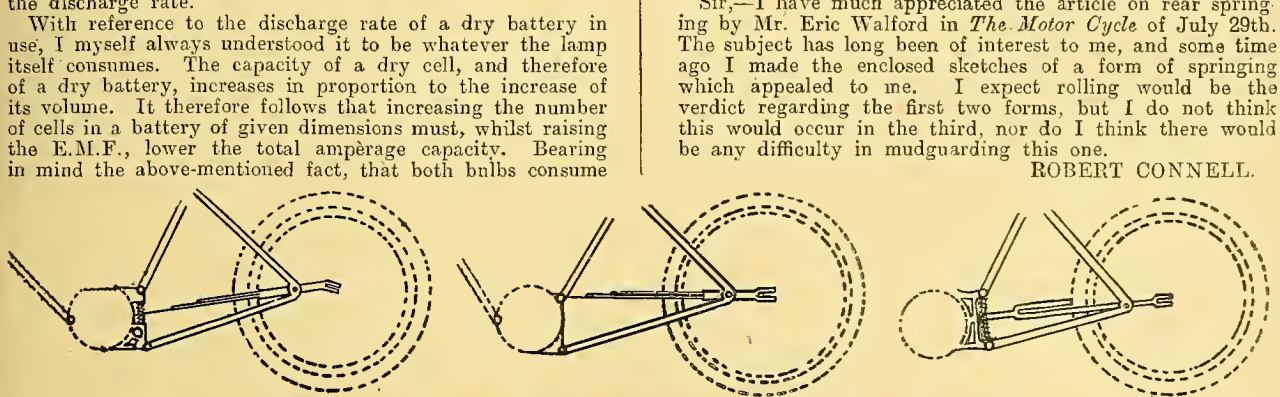
The *tout ensemble* of the Australian assembled machines is very pleasing, often more so than British machines, while the makers know, by experience, that enormously strong frames are required, and their work is second to none.

Melbourne. 85×88 PRECISION.

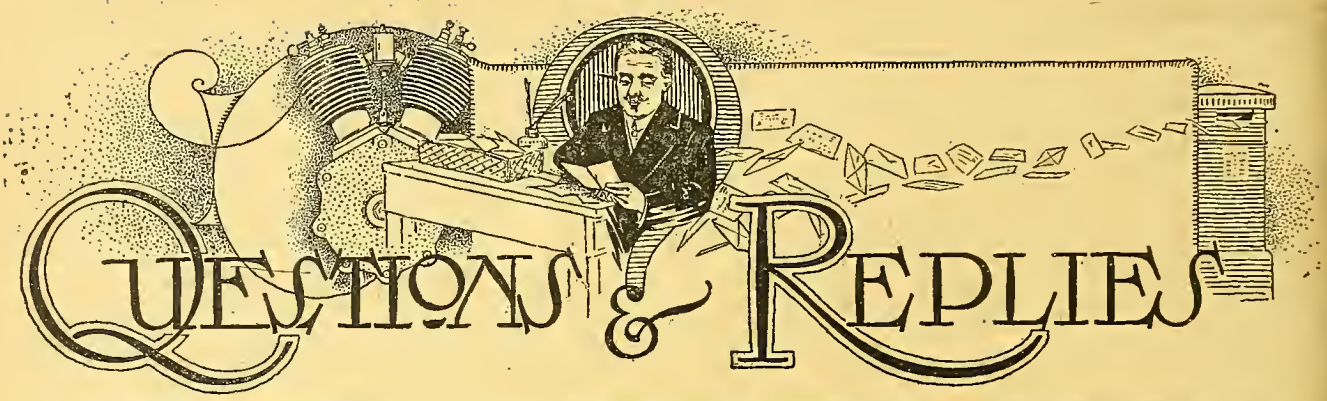
Rear Springing.

Sir,—I have much appreciated the article on rear springing by Mr. Eric Walford in *The Motor Cycle* of July 29th. The subject has long been of interest to me, and some time ago I made the enclosed sketches of a form of springing which appealed to me. I expect rolling would be the verdict regarding the first two forms, but I do not think this would occur in the third, nor do I think there would be any difficulty in mudguarding this one.

ROBERT CONNELL.



Three alternative designs of rear sprung frame suggested by Mr. Robert Connell.



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

The Advantage of Large Tyres.

I have a 2½ h.p. motor cycle, and I find the back tyre (26in. × 2in.) wears very much more rapidly than the front tyre. As I very rarely use either of the lower gears the excessive wear is, in my opinion, due to the extra weight of the hub gear, extra tool bag, and sundry articles carried on the carrier. As there is ample space between the back stays, could I fit a larger and stronger tyre than 26in. × 2in. on the 26in. × 2in. rim? If so, what size could I safely fit? Would the existing inner tube (26in. × 2in.) do for a slightly larger tyre, or should I have to fit a larger tube as well?—H.S.

You could fit a 2¼in. or 2⅜in. cover on a 2in. rim. The existing tube will serve, but it is better to fit one of the correct size. It is only natural that there is more wear on the back tyre than on the front, as it has to do all the work of driving.

Benzole as a Fuel.

I have been informed that benzole is injurious to metal, and will in time eat away the metal of the tank. As I am very sceptical regarding this statement, I shall be glad if you will kindly inform me if there is any truth in it at all. Also please inform me exactly what alteration would be necessary to a B. and B. carburetter if I decide to try benzole. I am quite a novice at present, and shall be glad of your kind assistance.—A.M.M.

Benzole, if reasonably pure, is not injurious to metal. It will not eat away the metal of the tank, but will rapidly remove the varnish from the outside if spilt over. Of course, if the benzole contains impurities, such as acids, the metal is likely to be damaged. If you use a mixture of one-third benzole and two-thirds petrol you will get all the advantages of benzole and none of its disadvantages. For instance, it will not foul your engine, it will give better running at slow speeds with total absence of knocking. The only alteration which might be necessary is that you might have to weight the float a trifle or use a smaller jet, but you will probably find, even when using pure benzole, that you will not have to alter the carburetter at all.

Overheating.

I have a 1915 two-speed, two-stroke, 2¼ h.p. It gets fiercely hot on hills, slows down gradually, and stops altogether. After waiting five to ten minutes it will start off again, but if the hill is a long one it fails a second time. I have done 600 miles altogether, the machine being new when purchased. The compression is very good. The first 300 miles it took hills on top gear. Can you advise me what to do to increase the power on hills and to avoid overheating? I think I have over-oiled.—J.F.P.

You may try fitting a smaller jet. This might cure the trouble. Also use a plug the points of which do not project too far into the cylinder and are fairly substantial. Such symptoms are often caused by pre-ignition, due to an unsuitable plug being used. It would perhaps be as well to replace the top piston ring if this is at all discoloured, and at the same time remove all traces of carbon deposit from the cylinder and piston. Clean the inside of the piston as well as the top.

Belt Adjustments.

(1.) What is the usual cause of a belt twisting in the pulleys? I have suffered considerably from this trouble of late. The belt is 1in. Dunlop on a 3½ h.p. twin J.A.P. with Sturmey-Archer three-speed hub. The alignment and tension have been checked and found correct. When the twisting occurs, the pulley is found to be rather hot, but I have not enough experience to know the temperature to be expected there after about twenty miles running, which is when the trouble begins. Is the depth of the belt insufficient? (2.) Is it usual to make no provision for adjusting alignment with an adjustable pulley? (3.) Has any arrangement ever been tried for varying the ignition while riding by partially revolving one of the gear wheels on its shaft, so obtaining invariably a spark of equal strength? What is the objection to such an arrangement?—E.V.W.

(1.) The trouble is caused by the belt being too large for the pulley. If the belt is hot, it is a sure indication that it is slipping. It is probably the back pulley which is too small. (2.) No, an adjustable pulley throws the belt out of line so little that no correction is worth while. (3.) Yes, this has been tried on several occasions, but the idea has apparently never become popular. It was done in the case of the Eisemann car magneto and on the Enfield 2¼ h.p. twin machine made in 1910 and 1911. The advantages gained have not, so far, justified the extra complications entailed.

Licences.

I should be glad if you would let me know if I can ride a motor cycle with a car licence, as I have a licence to drive a motor car, and am going in for a motor cycle.—F.Y.

A licence to drive a car also entitles you to drive a motor cycle.

Carrying an Extra Passenger.

Although very well over fifty, I this spring became enamoured of motor cycling, bought your paper and studied the subject, and presently took courage in both hands, bought a 6 h.p. Enfield combination of last year's make, and, thanks to your book and the Enfield handbook, I speedily learned to drive and understand the machine. I find it excellent; but I have a wife and daughter, and so long as one only wants to go we are quite all right, but the difficulty comes in with the third party. We have tried a pillion seat with rather disastrous results, the passenger having a fall, so both go in the sidecar. It is rather rough on the one sat upon. I have noticed a machine with a double Millford sidecar, and I would much appreciate your opinion on this mode of carrying two adults as passengers. Is a 6 h.p. Enfield capable of propelling such a load without straining the engine, and would it surmount all ordinary hills? What is your opinion of the desirability of the use of such a combination?—J.F.K.

The double-seated sidecar should be quite satisfactory, but it is a little rough on your engine. Doubtless, however, it would surmount ordinary hills with this load. If, however, you use a machine designed for two to take three people about, you must not blame the machine should anything happen.

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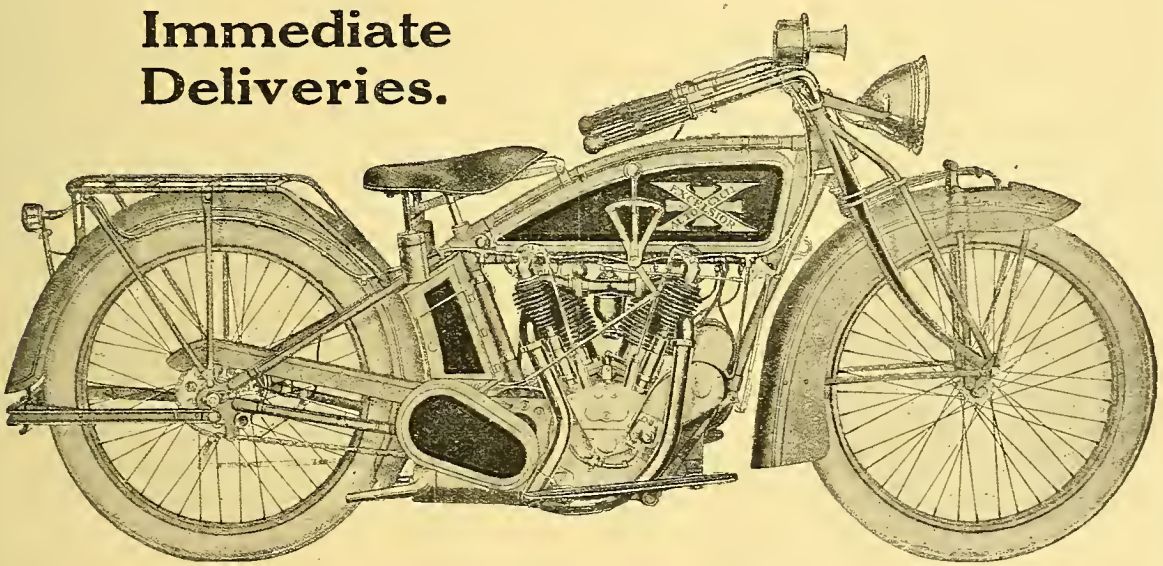

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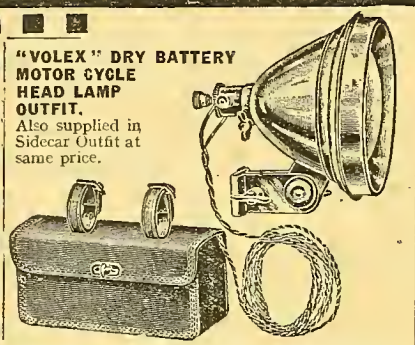

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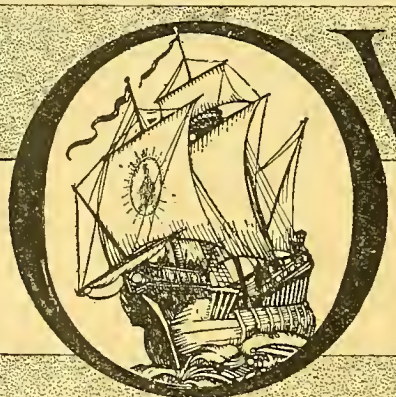

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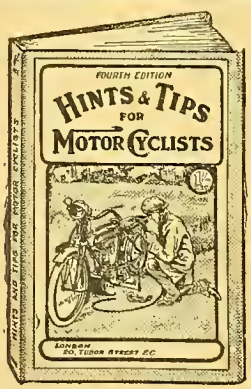

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Dressing a Belt.

I shall be glad if you will tell me how to keep a Whittle leather belt in good condition. I have one that has not been in use for some time and has become dry. What shall I dress it with?—G.E.S.

Scrape the links at intervals, and then dress them with collan oil. The thing to do is to keep the leather soft and pliable.

A Choked Jet.

When returning from a ride the engine of my machine suddenly developed the following: It would slow down, nearly stop, and then go on again. Having reached home, I took the engine down, removed all carbon deposit, thoroughly cleaned everything, and ground in the valves. I now find that I can drive on the throttle only, and the least attempt to open the air lever stops the engine. The carburetter is an early type B. and B.—W.H.F.

The tronble is clearly a partial stoppage of the petrol pipe or jet. This would preclude the engine from taking any air. It is just possible, also, that there may be an air-leak in the carburetter or induction pipe unions.

Adjusting the Magneto.

I shall be extremely obliged if you will let me know how to clean the contact breaker, etc., of the Dixie fixed ignition magneto on my 2¾ h.p. Calthorpe-Jap.—F.K.

The adjustment and cleaning of the contact breaker on the fixed ignition Dixie magneto are extremely simple. You have only to pull the contact breaker cover straight off, when the platinum points are exposed. If you wish to expose the contact breaker mechanism further you undo the condenser connection, which you find inside the cover, and the three screws holding on the condenser. This magneto was described in our issue of September 17th, 1914.

READERS REPLIES.

Faulty Lubrication.

If "Greaser" finds the oil pipes are quite clear (which he can test by taking off the crank case cover on the defective side and setting the crank pin vertical and opening the drip feed; the pump will then force oil into crank case if pipes and connections are free), he might try giving the end of the crank a smart blow, as it may be that the packing gland has stuck up. I had a similar trouble with a new machine, and found that a piece of the lip of the piston had been broken out by the head of the screwed bush, which receives the transfer port holding-down screw, having broken off and jammed under the piston. It was found, on returning the engine to the works, that the faces of the packing glands had roughened up through lack of oil, and on these being replaced the supply became equalised again.—Y 1867.

Increasing the Gear Ratio.

With regard to "J.G.'s" query in a recent issue of *The Motor Cycle* as to increasing the gear ratio of his two-stroke James, having had a little experience of this machine, and being the owner of a more powerful two-stroke than his, and having experimented with various gear ratios, I can safely say that "J.G." will be greatly disappointed should he raise his gear higher than 5¼ to 1. The machine will be very little faster on the level, except when there is a strong following wind and running down hill; the engine will get very much hotter when running up long slopes, and will require more oil, and will be very much slower on steep hills, and altogether less flexible. Another disadvantage is that the chains would chatter when starting off and running slowly.—C. S. Roscoe.

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ROUTES.

MANCHESTER TO SALTBURN.—R.M.W.

Manchester, Bury, Accrington, Whalley, Clitheroe, Gisburn, Skipton, Blubberhouses, Harrogate, Knaresborough, Boroughbridge, Thirsk, Tontine Inn, Stokesley, Guisborough, Saltburn. Approximately 129 miles.

TAUNTON TO NORWICH.—R.M.

Taunton, Dunston, Glastonbury, Wells, Radstock, Bath, Chippenham, Wootton Bassett, Swindon, Faringdon, Fyfield, Oxford, Bletchington, Bicester, Buckingham, Stony Stratford, Newport Pagnell, Bedford, St. Neots, Eaton Socon, Cambridge, Newmarket, Thetford, Attleborough, Wymondham, Norwich.

LEICESTER TO MIDHURST.—J.T.

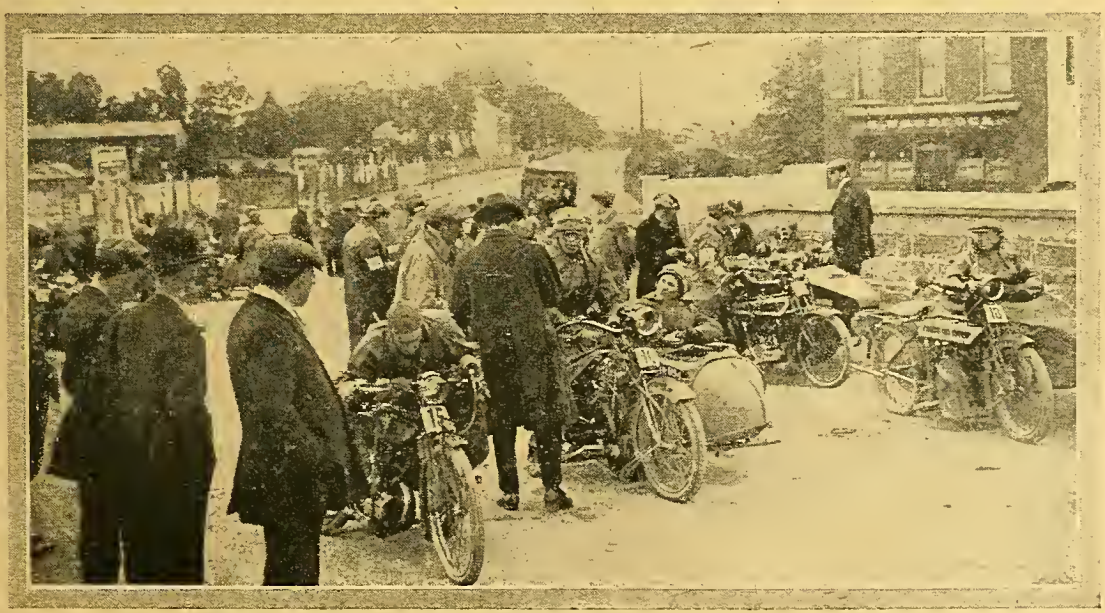
Leicester, Husbands Bosworth, Fenny Stratford, Dunstable, Tring, Chesham, Amersham, Beaconsfield, Slough, Windsor, Ascot, Bagshot, Guildford, Godalming, Milford, Haslemere, Fernhurst, Midhurst. Approximately 179 miles. The road between Godalming and Milford is bad, but it is of fairly short duration.

ASHBY-DE-LA-ZOUCH TO BLACKPOOL.—J.E.

Ashby, Derby, Ashbourne, Leek, Macclesfield, Knutsford, Warrington, Wigan, Preston, Kirkham, Blackpool. Approximately 125 miles.

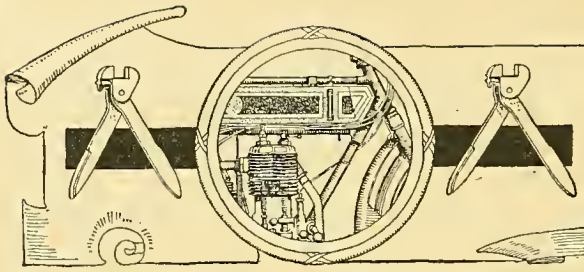
HULL TO CHATHAM.—A.C.

Hull, ferry to New Holland, Brigg, Lincoln, Grantham, Stamford, Stilton, Huntingdon, Cambridge, Bishop's Stortford, Harlow, Chipping Ongar, Brentwood, Ingrave, Tilbury, ferry to Gravesend, Chatham.



SCENE AT THE START OF THE DUBLIN AND DISTRICT M.C.C. TRIAL (reported on page 131 of our last issue).

J. F. A. Day (2¼ h.p. Sun-Vitesse) is just starting, to be followed by C. S. Kettle (4¼ h.p. B.S.A and sidecar).

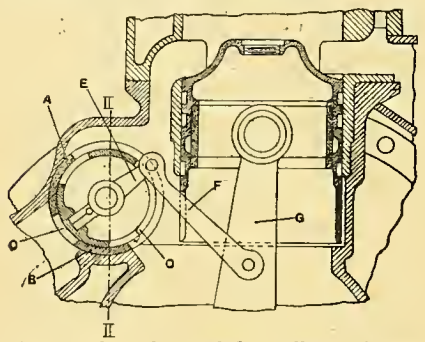


PATENTS.

By ERIC W. WALFORD

An Oscillating Admission Valve.

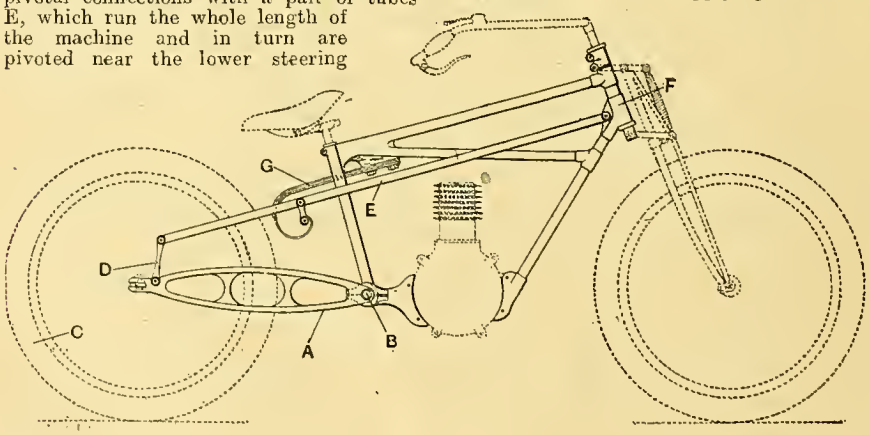
The valve illustrated, which is the invention of the designer of the Scott motor bicycles, is mainly intended for controlling the passage from the carburetter to the crank case of a two-stroke engine. It somewhat resembles the Corliss type used in steam engines, and comprises a sleeve A, within which fits a liner B, ports C and D being formed



which, when in register, allow of the passage of gas into the valve on one side, and out on the other. The liner B is oscillated by a lever E connected by a link F with the connecting rod G, and the link system is so arranged as to give a quick opening and closing of the ports, with a long dwell. Further, this dwell will be longer on the outward stroke than on the inward stroke of the piston, affording a longer pause on the compression than on the suction stroke, so that a high compression ratio is afforded.—A. A. Scott, No. 9,880, 1914.

Rear Spring Suspension.

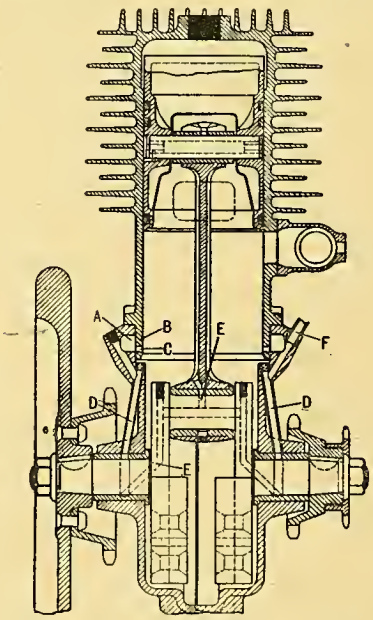
A pair of girder stays A are pivoted at B, and carry the rear wheel C. Projecting upwardly from the rear ends of the stays A are links D, and these have pivotal connections with a pair of tubes E, which run the whole length of the machine and in turn are pivoted near the lower steering



bead ing F. Between the tubes E and the rigid main frames are arranged laminated springs G (or coil springs if preferred), so that a resilient support is provided for the back of the frame. It is not quite clear where the tanks will be located, and the number of pivots is considerable.—W. C. Winterton, No. 2,948, 1915.

Two-stroke Lubrication.

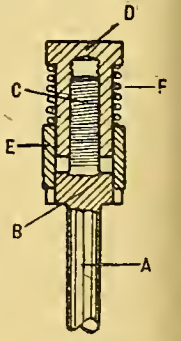
Cast in a suitably enlarged upper part of the crank chamber is an oil groove A, the inner wall of which is formed by the



spigot B of the cylinder. Through the spigot are ports C for supplying oil to the piston walls. To the oil groove A oil is fed by a hand pump through the pipe F. Pipes D lead to the crankshaft bearings and hollow shaft, from which, by centrifugal action, the oil is fed under pressure to the big end bearing through the ducts E. Presumably, it will be necessary, in addition, to maintain a small supply of oil in the crank case in order that the gudgeon pin bearing may be lubricated by splash, but the quantity would be less than usual.—F. A. Kimberley and the James Cycle Co., Ltd., No. 14,896, 1914.

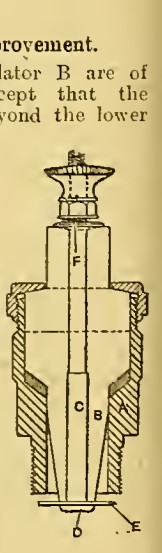
A Simple Adjustable Tappet.

No tools are required to adjust this valve tappet. The tappet stem A is formed with a collar B and a screwed part C on which the tappet head D fits. The collar B is formed with recesses, which are engaged by projections on a sleeve E slidably, but not rotatively, mounted on the head D and impelled downwards by a spring F. Thus, when the sleeve E engages the projections on the collar B the head D is held against rotation, whilst, by raising the sleeve E against the spring, the head can be rotated to adjust its position on the screwed part, thus varying the effective length of the tappet.—C. T. B. Sangster, No. 20,605, 1914.



A Sparking Plug Improvement.

The body A and insulator B are of ordinary construction, except that the latter projects slightly beyond the lower end of the body. The central conductor C passes right through the insulator, and is formed with a head D, between which and the insulator is a plate E forming the inner electrode. The conductor C is held in place by a nut and spring washer F, which allows of expansion and contraction, and adjustment of the spark gap may be effected either by bending the plate E outwards or by inserting packing washers between it and the insulator B.—S. R. Jackaman, No. 14,558. 1914.



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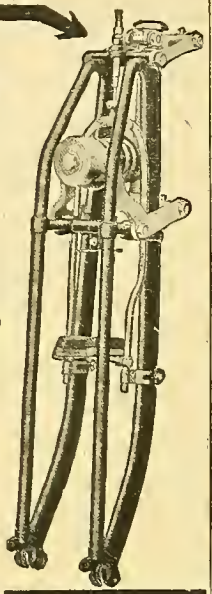

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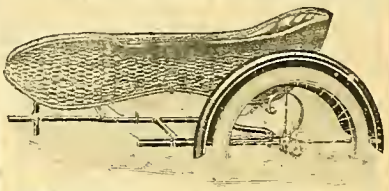

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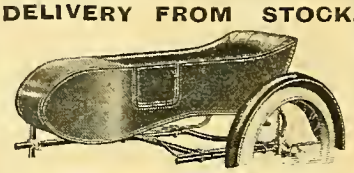

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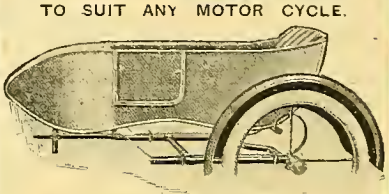

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"Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post."

At the present time readers are particularly requested to bear this note in mind.

¶ Owing to the restricted output of new machines, due to the war, there is an exceptionally keen demand for "second-hands," and immediately they are advertised in "The Motor Cycle" there is a rush of purchasers.

¶ Numerous letters are reaching the office of "The Motor Cycle" from advertisers in these columns who state that they are inundated with replies, and easily effect a sale within a few hours of the advertisement appearing.

THIS is, of course, easy to understand when it is remembered that "The Motor Cycle" has an exceptionally large circulation — far greater than any similar journal — and is read by all motor cyclists and new comers to the pastime.

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XCELSIOR (American), 7-9h.p., and special Empire sidecar; £76.—Colmore Depot, 31, Colmore Row, rmingham. [X3027

Ariel.

RIEL, 3½h.p., 1915, 3-speed countershaft model —Christie Bros., Garage, St. Andrews. [9660

RIEL, 3½ and 5-6h.p., counter-shaft models in stock.—Jones, Broadway, Muswell Hill. [7635

RIEL, 1912, 3½h.p., cane sidecar, new engine and tyres, overhauled, variable gear, decompressor, ars; £23.—223, High Rd., Kilburn. [9763

RIEL, 3½h.p., mag., controllable pulley, free engine, all good and sound, standard machine; bargain, 4.—Letters, Ariel, Post Office, Radstock, Bath. [X3393

RIEL, 1914, 6h.p., 3-speed countershaft, kick starter, Lucas accessories, speedometer; £65; deferred pay-nts entertained.—Lamb's, 151, High St., Waltham-w. [9603

RIEL 1914½, 5 6h.p. Coachbuilt Combination, 3-speed countershaft, electric lamps, new condition; st £90, sacrifice £60; buying car.—37, Atherton Rd., rest Gate. [9826

Auto-Wheels.

UTO-WHEEL, perfect condition, several spares; £8. —7, Vale Terrace, King's Rd., Chelsea. [9802

UTO-WHEEL, Model de Luxe, not done 200 miles; £9, perfect.—Bishop, Kingsbury, Martock. [9580

UTO-WHEEL, late 1914, first-rate order; £9/9.— 75, Mare St., Hackney. 'Phone: Dalston 1373. [9740

UTO-WHEEL, nice order, complete, to clear £5/15/6. —Purcells, 78, Charlotte St., Tottenham Court Rd., ndon. [9887

UTO-WHEEL, excellent condition; can be tried here; £8, or with bicycle £11.—Payne, Crich, Matlock, Derbyshire [X3646

UTO-WHEEL, 1914, de luxe, and Humber cycle, complete; cost £27/10, accept £14/10.—Rogers, Church Rd., Hendon. [9731

VALL Auto-Wheel, second-hand, perfect order, overhauled by makers; £10.—Seen at 248, shopsgate, London, E.C. [9128

UTO-WHEEL, 1914, with 3-speed Ruver bicycle; £12; owner going to Front.—Apply, Lieut. Flem-g, 94 Camp, Fleet Pond, Fleet, Hants. [X3213

UTO-WHEEL and Lady's James Tricycle, with Hucklebridge's patent attachment, in splendid nning order; £20.—Hucklebridge, 133, Sloane St., ndon. [X3158

UTO-WHEEL, 1914, B.S.A. 3-speed gear bicycle, both in new condition; sell nearest £16; Auto parately, £10/10.—18, Belle Vue Gardens, Clapham ., Stockwell, S.W. [9668

Bat.

AT-J.A.P., 8h.p., Millford sidecar; cost £105; clutch, kick starter, perfect order; £52/10.—17, Vale Rd., nbridge Wells. [X3355

-6h.p. Twin Bat-Jap, Bosch, B. and B., thoroughly overhauled, £25; wicker sidecar, £2/10.—Smith, Harrow Rd., Leytonstone. [9517

912 Bat-Jap, 4h.p., free engine, spring frame, splendid condition, and wicker sidecar; owner enlisted; 1.—296, Lower Addiscombe Rd., Croydon. [9529

AT-J.A.P., 1913, 6h.p., 3-speed, French grey, sporting model, with Bramble 1914 14 gn. sidecar, ens lamps; good tyres; any trial; £42.—Styles, Blox-ch, Walsall. [X3540

AT-J.A.P., 8h.p., 1914, 3-speed, free engine, done 2,500 miles, with £20 Mills-Fulford coachbuilt ecar, F.R.S. lamps, tools; £58.—Steer, 42, Station , Sittingbourne. [9627

9 14½ 8h.p. T.T. Bat, 90×77½, all black finish, F.R.S. Major, Amac and by-pass, 3in. tyres, splendid condition, very fast, consumption 75 m.p.g.; £45.— llwey, 24th Middlesex, Woldingham, Surrey. [9623

AT-J.A.P., 1913, 8h.p., 2-speed countershaft, kick starter, with 17 gn. Swan sidecar, a smart lot, in rfect conditinn; £48/10; take 3½h.p. solo part exnge.—Lester, 13, Alexandra Rd., Bedford. [9846

AT-J.A.P., 1912, 4h.p. De Luxe, spring frame, 2-speed, free engine, countershaft gear, brand new, on back tyre, Phœnix sidecar, speedometer, all accsories; £38.—Lawrence, 7, Carlton Bank, Harpenden. 87 L. Wall. [9649

AT-J.A.P., 4h.p., late 1913, sidecar, Druid forks, spring frame, 2-speed P. and M. gear, countershaft, sch mag., speedometer, watch, horn, toolbags, carrier d luggage box, 2 powerful P. and H. head lights, ller rear light, generator, storm cover, tools, spare rts, re-bushed and overhauled, fitted with 1915 Dun-extra heavy tyres, Michelin butted tube July, inance policy to December covering third party, per-t condition; £45 spot cash; bargain; owner buying —Saturday any time, 107, Truro Rd., Wood Green, [9588

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19 11 Bradbury 2-speed Combination; £29 —63, Brownhill Rd., Catford. [9781

£20.—Tourist Trophy Bradbury, with Sturmey-Archer gear, fine condition.—Colby, Batley. [X3577

BRADBURY, 1910, just thoroughly overhauled, new tyre and belt; £20.—31a, Broomfield Rd., Chelmsford. [X3444

BRADBURY, 1915 models; lists free.—Agents, Bright and Hayles, Church St., Camberwell. [9746

19 13 4h.p. Bradbury, free engine; £25, with spares —Thomas Knibbs, Gaulingay, Post Office, Sandy, Beds. [X3404

BRADBURY and Sidecar, 1912, F.E., just overhauled, mirror, speedometer; £35.—Paragreen, Bicester. [X3449

BRADBURY, 1910, thoroughly overhauled, new tyre and belt, guaranteed sound; £18.—31a, Broomfield Rd., Chelmsford. [9817

BRADBURY, 1915, 4h.p., 3-speed countershaft model; £60; cash or exchange.—Motories, 68, Horton St., Halifax. [0388

19 13 Bradbury, 2 speeds, and Mills-Fulford sidecar, lamps, etc., excellent order; £34.—Newnham, 223, Hammersmith Rd., W. [9675

BARGAIN.—4h.p. Bradbury, 1912, and sidecar, all in splendid order; any trial; T.T. bars and tyres. —45, Bow Common Lane, E. [9815

BRADBURY, 1913, 3-speed, F.E., lamp, horn, accessories, very fast machine; £40.—Underdown Bros. 64, Bellamy St., Balham Hill. [9544

19 13 Bradbury, 4h.p., 2-speed gear box, clutch, Bramble sidecar; best offer over £30.—80, Shakespeare Crescent, Manor Park, E. [X3209

19 13 4h.p. Bradbury and sidecar, 2-speed, kick start, countershaft, chain drive, guaranteed; £35.— Adams, 8, High St., Witney, Oxon. [X3454

BRADBURY 4h.p. Motor Cycle and Coachbuilt Sidecar, 2-speed, kick-start, just overhauled, perfect condition, lamps, horn, tools, spares; £40. — Write, Bideford, Old Bilton, Rugby. [X3570

4 h.p. Bradbury, new coachbuilt sidecar, N.S.U. 2-speed gear, 2 new Dunlops, new Michelin tyres, new belt, perfect running order, tools, spares, lamps; £35, or nearest cash offer.—111, Thorold Rd., Ilford. [9809

BRADBURY, sidecar, 4h.p., new March, 1914, 3 speeds, new belt, spare, good tyres, spare, lamps, horn, mirror, speedometer, complete valve, tools, splendid condition; £55, offers.—Lansley, Tilstock, Whitchurch, Salop. [X3585

BRADBURY, 1912 (late), 4h.p., T.T. model, B. and B., variable jet, Bosch mag., adjustable pulley, new Dunlop and Michelin tyres, lamp set, horn, spares, and tools, ready to ride away; £23.—83, Iverson Rd., Brondesbury, N.W. [9858

19 14 Bradbury Oombination, 6h.p. twin, 3-speed countershaft, all accessories, including F.R.S. lamp (Major), only run 1,100 miles; owner been on active service since outbreak of war; £75.—J. W. Rason, 61, High St., Houghton Regis, Dunstable. [X3488

Brough.

BROUGH, 3½h.p. T.T., 1915 engine, just been repainted, belt and tyres in excellent condition, very fast, £45.—K. R. A. Bennett, Woodbury Hill, Tunbridge Wells, Kent. [X3411

Brown.

3½h.p. Semi T.T. Brown, splendid tyres, tubes, belt, 3½ U.H. mag., exhaust whistle, sporty bike; bargain, £19; exchange 2-stroke.—69, Ridge St., Watford. [9821

8 h.p. Brown, re-enamelled in khaki, lined red and gold, 4-speed Jardine gear (1915, not used), Endrick compressors, cane sidecar, with door; £50; owner bought car.—Capt. Hardy, 1, Barrington Villas, Shooters Hill, Kent. [9648

B.S.A.

BSA., £28.—45, High St., Fulham, S.W. [9587

BSA., 3½h.p., 1912, accessories, very little used, perfect; £26.—Auto Mart, 133, Hammersmith Rd., W. [9692

BSA. 1914 3½h.p. Standard Model, in excellent order, lamp set, horn, and speedometer; £36.— Below.

BSA., 1913, 3½h.p., 2-speed gear, clutch, and kick starter; £36.—Below.

BSA., 1915, 4½h.p., 3-speed and clutch, model H, Montgomery coach sidecar, complete; £62.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0492

19 14½ B.S.A., 4½h.p., 3 speeds, chain drive, B.S.A. sidecar, screen, apron, 3 Lucas lamps, horn.— Rich, Garage, Shifnal. [9791

BSA., 1912, 3½h.p., 2-speed, free engine, cane sidecar, 1in. belt, 2½in. tyres all wheels; £35.—Springbank, Wilmot Rd., Leyton. [9717

19 12 B.S.A., Armstrong Mark VI. 3 speeds, new Bates tyres; any trial; £32, or nearest cash offer.—Perry, Foston, Derby. [X3489

BSA., 1914, 4½h.p., 3 speeds, Gloria £25 coach-built sidecar, excellent condition: £58.—P. J. Evans, John Bright St., Birmingham. [9864

MOTOR CYCLES FOR SALE.

B.S.A.

B.S.A., late 1913, 3½h.p., F.E., 2-speed, spares, grand condition, carefully used week-ends only; £38.—Stowe, 57, Clare Rd., Maidenhead. [X3547

B.S.A., late 1914, all chain drive, 3-speed countershaft, Palmer tyres, and 22 gn. Gloria sidecar, with hood, screen, and all accessories, hardly used; best offer over £58 secures.—After 2, Sweetland, 57, Jamaica Rd., Bermondsey. [9671

4¼h.p. 1914 B.S.A., 3-speed countershaft, all chain drive, and coachbuilt sidecar, with Cape hood, screen, and side curtains, new condition, just overhauled, with lamps, horn, speedometer, spare cover and tube; £65, no offers.—Kinnear, 43, Lothair Rd., Finsbury Park, N. [9662

Calcott.

1913 Calcott, 2½h.p., thorough condition, just overhauled by makers; bargain, £14.—North Bar Dairy, Banbury. [X3406

1914 2¾h.p. Calcott, variable pulley, B. and B., Bosch, Dunlops back and front, all accessories, tools, all in excellent condition; £21/10.—24, Brynheulog, Port Talbot. [X3324

Calthorpe.

CALTHORPE-J.A.P., new 1915 2¾h.p. single and 2-speed models in stock.—Moss, Wem. [9906

CALTHORPE, 2h.p., 2-speed, 1914, perfect order; £18/10.—Phillips, 8, Grand Parade, Harringay. [9794

CALTHORPE-J.A.P., Enfield gear, 1915, done 20 miles; £33/10.—Walton Lodge, Surbiton Rd., Kingston. [9696

CALTHORPE-J.A.P., with Enfield 2-speed and free engine, nearly new; £31.—J. C. Pickering, Shrewsbury. [X3166

CALTHORPE, 2¾h.p., 4-stroke, late 1914 model, just as new.—H. Hirst, 18, Clayton Lane, Openshaw, Manchester. [X3596

CALTHORPE.—1915 latest 2-speed lightweight models in stock; cash or extended terms.—Eagles and Co., High St., Acton. [X3497

CALTHORPE, 1914, 2h.p., 2-speed, lamp, horn, etc., done about 800, perfect; £17/10.—Broadway and Co., Bridge St., Worksop. [X3142

CALTHORPE, 2h.p., 2 speeds, 1914, not run 500 miles, condition as new, faultless; £20.—Keen, 2, Germain St., Chesham, Bucks. [9340

CALTHORPE Motor Cycles, J.A.P.'s and 2-strokes, from £27/14; send for list and easy payment terms.—Storey's, 118, Gt. Portland St., W [0647

CALTHORPES.—Any of this famous trio delivered from stock; extraordinary value.—Agents, Colmore Depot, 31, Colmore Row, Birmingham. [X3026

4h.p. Calthorpe-Precision, delivered 1915, 3-speed, clutch, handle starter, as new, complete; £35.—Box L1,080, *The Motor Cycle* Offices, 20, Tudor St., E.C. [9574

CALTHORPE-J.A.P., 2¾h.p., 1915, 2-speed, Druid forks, large Xl'all saddle, tools, lamp, horn, not done 500 miles, as new; £30.—Bright, Owleshayes, Aylesbeare. [9568

CALTHORPE, 1915, J.A.P., 2¾h.p., Enfield 2-speed, just arrived from works; immediate delivery; £34/13.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9614

CALTHORPE, 1915, 2-stroke, 2-speed, just arrived from works; immediate delivery, fitted with special magneto; £31/18.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9615

1915 Calthorpe-J.A.P., 2-speed and clutch, £34/15; also 2½h.p. 2-stroke, 2-speed, £31/8/6; delivery from stock; exchanges; easy terms.—Julian, Bro d St., Reading. 'Phone: 1024. [X6409

Campion.

1914 Campion-Jap, 4h.p., 3-speed, excellent condition; £30.—Hawkes, 43, Blondford Rd., Chiswick. [9681

CAMPION, 5-6h.p., with coachbuilt sidecar, late 1914, 3-speed countershaft, chain drive.—Bowskill, 121, Grimsby Rd., Grimsby. [9567

Centaur.

CENTAUR, 3½h.p., m.o.v., good tyres and belt, lamp, horn, etc.; £6/10.—Butterworths' Garage, Mill Lane, Brixton Hill. [X3478

Chater-Jap.

4h.p. Chater-Jap Combination, Mabon, Whittle, lamp, spares; £14.—29, Thornhill Rd., Leyton. [9684

8h.p. Chater-Jap Combination, 2 speeds, free, clutch, coachbuilt sidecar, wind screen, tyres good; £37, or exchange lower power.—Ideal, Cavendish Rd., Merton, Surrey. [9800

Chater-Lea.

CHATER-LEA, 8h.p., 3-speed, large sidecar, fully equipped; cost £105, perfect; trial; £65.—4, Walton Rd., Thorpe Bay, Southend. [X3156

CHATER-LEA No. 7 Combination, late 1914, Canocelet coachbuilt sidecar, all in first-class condition, only used week-ends; £65.—119, Newington Butts. [9855

CHATER-LEA No. 7 Combination, 3-speed, electric light, rear seat, every luxury, like a car, a perfect machine; lowest price £75.—Morton, 11, Green Ter., Rosebery Av., London. [9586

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CHATER-LEA, 1913, 8h.p. twin, and coachbuilt sidecar, splendid condition, only run 7,000 miles, new chains, speedometer, 2 head lamps and generators, full tool kit; £60.—Tuke, Claremont, Baker St., Enfield. [98

CHATER-LEA No. 7 and Sidecar, 1915 wo demonstration machine, 8h.p. twin engine, 3-spe gear box, metal disc clutch, chain drive, etc., good co dition; sell £65.—Chater-Lea, Ltd., 74-84, Banner S E.C. [95

Chater-Lea-Antoine.

CHATER-LEA-ANTOINE and Sidecar, 4h.p., 2-spe free engine; £12.—Delaval Hotel, Old Hart Northumberland. [X33

Chater-Roc.

4h.p. Chater-Roc, 2-speed, handle-starter; £22/10 92, Mildmay Grove, Dalston. [95

Clement.

CLEMENT Lightweight, Bosch, B. and B., engin enamel, plating, and tyres in good condition, cessories; £7/10.—Adelaide Motor Co., 84, Chalk Fa Rd., N.W. [98

Clyno.

1912 6h.p. Clyno 2-speed Combination; £39.— Brownhill Rd., Catford. [97

CLYNO and Sidecar, 1913, lamps, horn, speedomet extra covers and tubes; 46 gns.—50, Clapham R S.W. [97

CLYNO Combination, late 1913, 3-speed countersh gear, perfect condition; £55.—15, Warwick S Holborn. [97

CLYNO Combination, nearly new, elaborately equipp 6h.p., 3-speed; cost £130, accept £65.—11, Ln Rd., Thornton Heath, S.E. [96

CLYNO 1912 6h.p., 2-speed combination, fine con tion, little used, lamps, speedometer, etc.; £45 G. G. Williams, Crowland, Peterborough. [X31

CLYNO 1913-14 Combination, 6h.p., 3 speeds, ki starter, luggage and petrol carrier, spare whe lamps; trial runs given; £60.—31, Effra Rd., Brixto [96

CLYNO, 1913, and coach sidecar, 6h.p., 3 speeds, a starter, detachable wheels, thoroughly sonn £55.—P. J. Evans, John Bright St., Birmingham. [98

CLYNO, 1913-4, 6h.p., with No. 6 sidecar, ki starter, 3-speed countershaft, 60 gns.; deferr payments if desired.—Lamb's, 151, High St., Waltha stow. [96

CLYNO Combination, late 1913, 3 speeds, ki starter, 6h.p., 4 detachable wheels, guarante faultless; £50.—Percy and Co., 337, Euston Ro London. [98

1913¾ Clyno 6h.p. Combination, 2-speed count shaft, speedometer, watch, wind screen, spa cover, tube, valve, perfect condition; £50.—Osbor 177, New Park Rd., Brixton. [97

CLYNO, 1915, 6h.p., coachbuilt sidecar, speed meter, Lucas lamps, all accessories, travell 987 miles, demonstration, approval willingly; £70 Communicate, Davies, Llwyneos, Llandyssul. [98

1914 Clyno, special combiuation: cost £130, new c dition, guaranteed perfect, speedometer, spa wheel, spare tyres, wind screen, 2 lamps, 2 horns, ma other spares; £72.—Eden, Marston Green, Birmingha [X34

LATE 1914 Clyno Combination, No. 6 sidecar, spa wheel (never been used), 4 original tyres (Hutch son Passenger), 3 lamps, horn, and other accessori mileage 900; cost £106; one of the smartest combin tions on the road, everything as new; £75.—Ardro 287, Cleethorpe Rd., Grimsby. [95

CLYNO Combination, 5-6h.p., 1912, 2 speeds, kic starter, tyres unpunctured, engine perfect, ext new Dreadnought Clincher 4/- tyre, 2 inner tubes, chains, F.R.S. plated head lamp as new, also side a rear, horn, Jones £4/4 speedometer, £35; withe extras accept £30.—H., 34, Clothorn Rd., Didsbu Manchester. [X35

Connaught.

1914 2¾h.p. 2-stroke Connaught, and all accessori in new condition; cost £36, will sell for £22 Hancock, 9, Victoria St., Rugby. [97

Corah.

3½h.p. Corah-Jap, new condition, fitted with Mab gears; £39.—Apply, 60, Snnoy Hill E Streatham. [95

Dayton.

NEW 2¼h.p. Dayton; £19; owner at Front.—Jerou Station, Andover Junction. [96

DAYTON, 2h.p., 2-stroke, little used; genuine bargai owner joining army; £14 10.—A.E.L., 65, Kell Rd., Brixton, S.W. [96

De Dion.

DE DION, 2¾h.p., 2 speeds, clutch, Bosch mag., lo £12.—40, Compton Rd., Wimbledon. [96

Douglas.

DOUGLAS, 1911, 2 speeds, free engine; £25.—Pa 3, Week St., Maidstone. [95

1915 Douglas, 2¾hp., W, in stock, new; £54 Moffat, Douglas Agent, Yeovil. Tel.: 50. [92

DOUGLAS, 1914, T.T., tyres and everything new, accessories; £40.—Scholte, Melrose, Felixsto [X33

MOTOR CYCLES FOR SALE.

Humber.

HUMBER, 1912½, 3½h.p., handle starter, with coach sidecar, accessories; £41/10; deferred payments desired.—Lamb's, 151, High St., Walthamstow. [9604

3h.p. Twin Humber, Sturmey-Archer 3-speed, clutch, 4 tyres, belt good, hot little machine; £35, near er; cash wanted.—Dean, 32, Douglas Rd., Tonbridge. [X3154

HUMBER, 3½h.p., 3-speed, 1913, coachbuilt sidecar, best equipment, and spares, perfect condition, ady for tour; £40.—6, Grassfield Av., Cliff, Manester. [X3491

HUMBER, 3½h.p., and sidecar, July, 1913, 3-speed Sturney, kick starter, free engine, speedometer, w spare belt, 2 new covers; £36/10.—29, Church rescent, South Hackney. [9757

Indian.

INDIANS, the Premier Yankee; all models in stock. —Lucas, Garage, Mansfield. [X3397

INDIAN, new 1915 5 and 7h.p. models in stock; exchanges arranged.—Moss, Wem. [9907

1915 5h.p. Twin-cyl. Indian; immediate delivery.—Parker and Son, St. Ives, Hunts. [9884

1913 Indian, 7h.p., 2-speed, red, sidecar, speedometer, spares; £45.—36, Balaclava Rd., Surbiton. [X3438

INDIANS.—Model IB and C from stock; deferred payments.—Lamb's, 151, High St., Walthamstow. [9598

INDIAN, 1913, 7h.p., road racer, perfect running order; £36.—Alexander's, 115, Lothian Rd., Edinburgh. [9400

INDIAN, 1915, 3½h.p., 3-speed, model A, T.T. bars, used for 200 miles, guaranteed as new; £52.—elow.

INDIAN 1915 Models in Stock.—7-9h.p. 3-speed model C £73/10, 5h.p. 3-speed model B £63/10 sidecars fit; exchanges or extended terms.—Elce and Co., 15, ishopsgate Av., Camomile St., E.C. [0552

INDIAN.—Sole agent; immediate delivery; repairs, and spare parts.—Brook, Motor Cycle Specialist, urnham, Som. [9027

INDIAN, 1915, 5h.p., 3 speeds, all accessories, not done 300 miles; £55.—P. J. Evans, John Bright ., Birmingham. [9859

INDIAN, 1914, 7-9h.p., 2-speed, free engine, kick starter, absolutely in perfect order; £50.—Batchelor, larence St., Kingston. [X3214

INDIANS.—Get the best, the well-proved machines. Immediate delivery of all models.—Alexander's, 15, Lothian Rd., Edinburgh. [9398

INDIAN, 7-9h.p., 2-speed, and Gloria sidecar, speedometer, new Lucas lamp, complete; £39.—Smallwood, 41, Witton St., Northwich. [9698

1914 7-9h.p. Indian, very little used; £50, no offers; seen any time by appointment.—H. Logan Turner, he Watches, Aston Clinton, Tring. [9725

INDIAN, 1914, Hendee Special, ridden 1,500 miles, Kempshall tyres, perfect order; £50.—Northern upply Co., Deansgate, Manchester. [X3524

1915 3½h.p. 3-speed Indian, lamp, horn, not done 50 miles, unable to ride; cost £63, sell £57.—owley, Eastfield Lodge, Guildford. [9652

INDIAN 7h.p. 1914 Coachbuilt Combination, 2 speeds, all accessories, excellent condition; £63.—. J. Evans, John Bright St., Birmingham. [9862

INDIAN, 1915, 5h.p., model B., 3-speed, only used about 100 miles, and practically new; owner at rout; £55.—Alexander's, 115, Lothian Rd., Edinburgh. [9397

INDIAN, 1913, 7h.p., 2-speed, free engine, kick starter, good tyres, spare chains, and in very good ondition; £39.—Dr. Nowell, Handforth, Cheshire. [X3462

INDIAN, 1915, 7-9h.p. combination, 3-speed, electrical equipment, £17/17 sidecar, new July 10th; earest £85.—Robinson, White Gables, Colwyn Bay. [9699

INDIANS.—Don't wait for delivery. We have them in stock, all models, also sidecars. We specialise n Indians. Special tuning.—C. McAdams, Ltd., Middlesrough. [X2447

INDIAN, 1914, 7h.p., 2-speed, with Gloria coachbuilt sidecar, luggage grid, etc., complete electric equipment; special bargain, £56.—Alexander's, 115, Lothian d., Edinburgh. [9396

INDIAN 7h.p. De Luxe 1914 Sidecar Outfit, electric lighting, and horn, 2-speed, etc., as new, only one 3,000 miles; bargain, £59.—Motor Cycle Depot, figh St., Purley. [9593

INDIAN, 1915, 5h.p., 3-speed model; £63; delivery from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock td., Plymouth. 0717

1914¾ Hendee Special and Gloria No. 3 sidecar, hood, screen, luggage carrier, Pillion seat, beautiful combination, perfect; cost £115, best cash offer.—owe, Stanley St., Fairfield, Manchester. [X3463

1914 Indian, spring frame, 7-9h.p., 2 speeds, clutch, kick starter, new Dunlops, Millford underslung oach sidecar, hood, wind screen, perfect running order; argain, nearest £55.—77, Hammersmith Rd., W. [9633

INDIAN, 1914, late, 7-9h.p., electrical equipment, electric starter, with Millford coachbuilt sidecar, ith hood and screens, only done 3,000 miles, almost ew condition; bargain, £67.—604, Mile End Rd., E. [9579

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Indian.

INDIAN, late 1913, 7-9h.p., with Cowey speedometer and Mills-Fulford Radio spring wheel sidecar, whole outfit in perfect order; £55.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0569

INDIAN, red, T.T., 7-9h.p., 1913¾, kick start, clutch model, with new 18 gn. Canoelet coachbuilt sidecar to match, new 3 gn. Lucas lamp set, and all accessories, in splendid condition; £49/10, bargain.—A. Powers, 47, Mossford St., Bardett Rd., Bow, E. [9657

INDIAN, 7-9h.p., late 1913, T.T. clutch model, engine completely overhauled, frame re-enamelled Indian red, and bright parts plated week ago, new Lucas guinea horn; price £35; any trial allowed; owner bought car.—Apply, G. Berwyn Hughes, Deatist, Wolverhampton. [X3405

1914¾ Indian, Hendee Special, 2-speed, electric starter, electric lamps and horn, speedometer, bright, warranted as new, mileage solo only 820, Kempshall tyres not scratched, with spares; a real bargain, 60 gns.—F. Devereux, Belle Vue, Shillington, Hitchin, Herts. [9780

INDIANS in Stock for immediate delivery, all models, 5h.p. and 7h.p., both solo and with sidecars; prices from £57 solo and £74 combination.—P. J. Evans, sole Midland distributing agent, trade supplied, district agents appointed, John Bright St., Birmingham. 'Phone: 662 Mid. T.A.: Lytcar, Birmingham. [9865

1913-14 7h.p. Indian, 2-speed, clutch, spring frame, electric light, horn, kick-starter, new chain, mudguards, etc., engine in excellent condition, fast, and wonderful puller, luggage grid, spare handle-bars; £50.—Congreve, Pridgeon Vicarage, Steyning. Also Mills-Fulford sidecar, just re-varnished; complete with cycle, £60. [9912

LATE 1914 2-speed 7-9h.p. Indian, electric equipment, in first-class condition throughout, £50; buyer can have the option of new Mills-Fulford cane sidecar, £13/13 (black chassis), or new latest 1915 Mills-Fulford £19/19 Red Empress; also 1915 model C, 3 weeks old, 3-speed, electric equipment, absolutely perfect, with extra fine flexible coach Indian sidecar, £85, or best offer.—Indian Agent for Chester, Horswill, 103, Brook St. 'Phone: 943. [9624

INDIAN, Hendee Special, new July, 1914, mileage only 3,600, Millford Indian coachbuilt sidecar, luxurious combination, spring frame, large saddle, tyres excellent, new batteries and leads, 2 electric head lamps, rear light, and horn, new 2-speed gear and kick starter, speedometer, clutch, full spares, including new chains and 4 lamp bulbs, tools, whole in brand new condition, and guaranteed perfect, overhauled by makers July; cost £105; owner enlisting, and will sacrifice for £75; seen any time.—Bradley, School House, Tadworth, Surrey. [X3455

Ivy.

IVY, 1913, 4¼h.p., Sturmey 3-speed, sidecar; £32.—Stares, 8, St. Loyes, Bedford. [9797

Ixion.

1915 Ixion, Villiers 2-stroke, new April, little used, perfect; £22.—60, Kingscourt Rd., Streatham, London. [9741

James.

JAMES, 1913, 4¼h.p., 3-speed, clutch, lamps; £36.—A.C., Ranneymeade, Shepperton. [9610

JAMES, 4¼h.p. T.T., condition like new, perfect; £27.—67, Wantage Rd., Reading. [X3464

1915 James Turnout, 300 miles, full equipment, Lucas lighting; £80.—Golby, Batley. [X3579

JAMES Combination, like new, and Lucas accessories, speedometer; £60.—Leighton's, opposite Wood Green Station. [9770

JAMES, 1915, 2-stroke, 2-speed, only 3 weeks old, running better than new, lamp, speedometer; £30.—Lieut. Storey, R.F.C. Mess, Dover. [9734

1915 James, 4¼h.p., 3-speed countershaft, clutch, kick starter, fitted with James canoelet sidecar, complete; 73 gns.—Parker and Son, St. Ives, Hunts. [9883

JAMES, 4¼h.p., Canoelet sidecar, wind screen, lamps, etc., complete; £60; quick sale desired; owner going abroad.—Dixon, Belle Vue, Beeston Rd., Sheringham. [X3137

JAMES 3½h.p. Twin, late 1914, 3-speed, only done 900 miles, lamp, horn, tools, etc., perfect condition throughout, unpunctured; £53.—Unsworth, Grimsargh, near Preston. [X3460

JAMES, 1915, 4¼h.p., 3-speed counter-shaft gear, clutch and kick starter, chain drive, Canoelet sidecar, with Lucas electric lighting outfit, Lucas electric horn; £90/15.—Colmore Depot, 261, Deansgate, Manchester. [0674

J.A.P.

6h.p. Combination, 1915, J.A.P. engine, all accessories; £60.—Leighton's, opposite Wood Green Station. [9771

1913 4h.p. J.A.P. Motor Cycle, too powerful; exchange for lightweight, or sell cheap. — 101, Clonmell Rd., Downhills Park, Tottenham. [9513

J.E.S

J.E.S., Engine, in splendid condition; £11.—Nobbs, Beech Villa, Priory Rd., Hornsey, London. [9645

MOTOR CYCLES FOR SALE.

Kerry.

KERRY-ABINGDON, 3½h.p., 2 speeds, clutch, side-car; £24.—Ellercamp, Cornbrook, Baring Rd., Grove Park, Lee, S.E. [9856

Lea-Francis.

1914 Lea and Francis, excellent order; 50 gns.—12, Cheltenham St., Barrow-in-Furness. [X3484

LEA-FRANCIS, 1914, 3½h.p., perfect; any trial given; £45.—31a, Broomfield Rd., Chelmsford. [9818

LEA-FRANCIS 3½h.p. Twin, 2-speed, clutch, chain transmission, in absolute perfect condition; £46. —Hucklebridge, 133, Sloane St., London. [X3159

Levis.

LEVIS Populars from stock.—Lamb's, 151, High St., Walthamstow. [9600

LEVIS, 2½h.p., 1913, just overhauled, fast; £18.—Wilson, Mess 8, Flying School, Eastchurch, Sheppey. [X3206

1915 Levis, almost new; cost with accessories £30, accept £24; buying car.—Birchbank, Queen St., Heywood. [X3622

LEVIS Popular; £28/1 cash, or fifth down, 2½% on balance.—Referee Cycle Co., 332, High Holborn, W.C. [2773

LEVIS, 2¼h.p., 1913, 2-speed countershaft model, drip feed lubrication, heavy Dunlop tyres; £22. —Moss, Wem. [9909

1915 Levis, 2¾h.p., done 300 miles, brand new, all accessories, complete; £28.—17, Upton Rd., Angel Rd., Edmonton, London. [9592

1915 Levis Popular, perfect condition; £26, cost June £31; owner joining transport.—Lawnswood, Huguenot Place, Wandsworth. [9552

1914¾ 2¾h.p. Levis, 2-speed Model de Luxe, new condition, 500 miles; £30.—Dodd, 11, Tannere Lane, Pendleton, Manchester. [9885

1915 Levis, 2½h.p., Popular model, absolutely in stock; £28/1; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6410

LEVIS 1915 Popular Model, 2¼h.p., just arrived from works; immediate delivery; £28/1.—Wilkins, Simpson and Co., 11, Hammersmith Rd., London. [9613

LEVIS Popular, 2½h.p. single, and 2-speed, and De Luxe models.—Sole Midland distributing agents, Colmore Depot, 31, Colmore Row, Birmingham. [X3034

1914 Levis, 2¾h.p., 2-speed, lamp, generator, horn, mirror, speedometer, cost £50, splendid, no trouble bike, grand condition; £32.—Nevitt, 210, St. Albans Rd., Watford. [X3523

LEVIS 2-stroke Motor Cycles, latest 1915 models.—Sole London and district agents, Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent. [0711

Lincoln-Elk.

1913½ 4¼h.p. Lincoln-Elk, 2-speed, kick starter, with sidecar, just completely overhauled; price £28.—White Hart Garage, Brentwood, Essex. [9823

Martin.

MARTIN-J.A.P., T.T., 4h.p., F.E., little used, Stewart, all accessories; £35.—Box 9,069, *The Motor Cycle* Offices, Coventry. [X3610

Matchless.

1915 Special 3½h.p. Twin M.A.G.-Matchless, De Lissa valves, 2 speeds; £57.—53, Brownhill Rd., Catford. [9787

1914 Twin Matchless, Swan sidecar, excellent combination; £52; will separate.—Midland Garage, Oxford. [X3493

MATCHLESS 1915 8B. Combination, as new, done 450 miles; £88.—Buttle, 15, Basinghall St., London. [9847

MATCHLESS, 1913, 2-speed, kick-starter, 8h.p., speedometer; £38.—Percy and Co., 337, Euston Rd., London. [9868

MATCHLESS Combination, 1913¾, 6h.p., 2-speed, kick-starter, all accessories, first-class condition; owner wounded; £60, or near offer.—P.G. Garage, High St., Hampstead (next Tube Station). [9508

MATCHLESS-J.A.P., 1911-12, 7h.p., 2-speed, kick-starter, double belt drive, tyres unscratched, 26in.×3in. combination back, 26in.×2½in. heavy front, 2 spare tubes, good condition, £31; coachbuilt sidecar, £3; exchange cycle car.—24, Wearside Rd., Lewisham, S.E. [X3603

Minerva.

2¾h.p. Minerva, Bosch; £11/10.—53, Brownhill Rd., Catford. [9789

2¾h.p. Minerva, re-bushed, new piston, £5/15; 3½ h.p. Minerva, £5/10.—Robinson, Sandy, Bedfordshire. [9665

MINERVA, 3½h.p., free, 2 speeds, mag., B.B., Druids, low, perfect; £18.—Chauffeur, Haddon Garage, Weybridge. [9632

£6.—2¼h.p. Minerva, low-built, Senspray, good order, good condition, Hellesen ignition.—2, Gloucester Rd., Peckham. [9638

MINERVA, 2¾h.p., 2-speed, chain drive, mag., spring forks, new tyres, climb anything; £15; exchange higher power.—Bowker, Oakworth, Keighley. [X3519

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Moto-Reve.

2¼h.p. Moto-Reve Twin, mag., tyres, tubes as new, perfect running order; £10.—Ford, Southampton House, Winchester. [9534

Motosacoche

£6.—Motosacoche, spring forks, tyres good, running order.—26, Alexandra Rd., Hornsey. [9844

MOTOSACOCHE, 1908, 1¼h.p., accumulator, first-class order, accumulator; £5/10.—44, Mafeking Av., East Ham. [9556

MOTOSACOCHE, 2h.p., Bosch, B. and B., Whittle Druid spring forks, good condition; £11.—476a, Harrow Rd., W. [9758

MOTOSACOCHE, 1914, 3½h.p. twin, 3 speeds, thoroughly sound; £35.—P. J. Evans, John Bright St., Birmingham. [9863

2¼h.p. Lightweight Motosacoche, Bosch, Druids, overhauled, perfect; trial; £16.—L., The Stables, New Lodge, Windsor Forest. [9547

MOTOSACOCHE 1¾h.p. Lightweight, perfect running condition, 1 speed, new tyres, new 4 volt accumulator; £6/10.—Electricity Works, Caterham. [X3153

New Hudson.

NEW Hudson, 1913, 4h.p., 3-speed, good tyres, perfect; trial; £30.—Stocks, Thurlstone, Penistone (D) [X3635

NEW Hudson Combination, 4h.p., 3-speed, good condition, little used, Canoelet sidecar, many spares; £45.—Gale, 17, Ashburnham Grove, Greenwich. [9578

NEW Hudson, 3h.p., 1913-14, 3 speeds, kick starter, accessories, and spares, little used, unscratched; £33.—Seen at 33, Deanhill Rd., E. Sheen. After 7. [9619

NEW Hudson, 2-stroke, from £36; all models from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0603

NEW Hudson, 4h.p., 3-speed, coachbuilt sidecar, not done 1,000 miles, brand new condition, unscratched, perfect order, valuable accessories; £40.—47, Mosford St., Burdett Rd., Bow, E. [X3601

NEW Hudson, 3½h.p., countershaft 3-speed gear; £63; delivery from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0570

2¼h.p. New Hudson, 1912, 3-speed gear, outward condition and tyres guaranteed excellent, engine just overhauled, lamp and horn; £25.—Robinson's Garage, Green St., Cambridge. [6867

NEW Hudson 4h.p. 1913 Combination, coachbuilt Armstrong 3-speed combined drive, Cowey, P.R.S. lamp, excellent order; £42 cash, or entertain Scott exchange.—Butler, Ryegate, Helmsley. [X3150

New Imperial.

1915 New Imperial, 2½h.p. J.A.P., 2-speed, hardly ridden, gear raised 5¼—1; £29/10.—Railway Garage, Staines. [9842

NEW Imperial J.A.P. Light Tourist, 2½h.p.; £34/3/6 cash, or on easy terms.—Referee Cycle Co., 332, High Holborn, W.C. [2774

NEW Imperial Lightweights, 2 speeds, actually in stock; £34/3/6; exchanges considered.—City Motor Co., 125, London Rd., Manchester. [0716

1915 2¾h.p. New Imperial-J.A.P., 2-speed, actually in stock; price £34/3/6; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6406

1915 (July) New Imperial-Jap, 2 speeds, accessories; £29/10; exchange free engine, hand clutch preferred.—Wilkinson, Shoemaker, Blyton, Gainsborough. [X3414

NEW Imperial-Jap, 2½h.p., recently overhauled, new belt, new back tyre, very little used, property of a doctor who is buying light car; may be tried any time.—Apply, Richards' Bros., Axminster, Devon. [X3172

NEW Imperial, the best all-round lightweight made, fitted with 2½h.p. J.A.P. engine and countershaft 2-speed gear, will take you anywhere; price £34/3/6; delivery from stock.—The Colmore Depot, 31, Renshaw St., Liverpool. [9444

Norton.

NORTON, 1915, 3½h.p., Sturmey-Archer countershaft; actually in stock, delivery immediately; £62.—Lucas, Garage, Mansfield. [X3398

NORTON, T.T. bars, 3-speed gear, only used few weeks; £52; similar machine with touring bars and footboards, £52.—Parker and Son, St. Ives, Hunts. [9882

NORTON, 1915, 3½h.p., Brooklands road racer, with Philipson pulley, certificate guaranteeing over 60 m.p.h.; cost £64 few weeks ago, and only used 200 miles, like new; great bargain, £48.—Alexander's, 115 Lothian Rd., Edinburgh. [9392

N.S.U.

N.S.U., 3½h.p., 2 speeds, free engine, very low; £16 or near offer.—95, King's Rd., Kingston-on-Thames. [9611

N.S.U., 2h.p., cost £31 last year, excellent condition seen by appointment.—Grove, 8, Portman Mansions, W. [9631

N.S.U., 1914, 2¾h.p., 2 speeds, kick-starter; £22, bargain.—Percy and Co., 337, Euston Rd., London. [9867

MOTOR CYCLES FOR SALE.

Triumph.

TRIUMPH, 1914, 4h.p., perfect as new, accessories; £44.—Holloway, 35, Lynton Rd., Acton. [9640

T.T. Triumph, 1914½, absolutely perfect; particulars, trial; first offer over £39—35, Ford St., Coventry. [X3559

1909 3½h.p. Triumph, in fine order, £20; 1910 Triumph, £20.—Cross, Jeweller, Rotherham. [X3529

TRIUMPH, 3½h.p., 1906, completely overhauled; £14.—Auto Mart, 133, Hammersmith Rd., W. [9693

1913 T.T. Triumph, in excellent condition; a bargain, £29.—Newnham, 223, Hammersmith Rd., [9674

1h.p. Triumph, 1911, new Senspray, just overhauled; £19.—23, Little Ealing Lane, Ealing. [9713

TRIUMPH, 1908, 3½h.p., splendid condition, as reliable as new; £17.—Plaot, 77, High St., Newport, [X3533

1913¾ Triumph, clutch, speedometer, lamps, new condition; £38.—Smith, Baker, Wateringbury, [9528

TRIUMPH, 1911, in good condition, lamp, horn, and tools; bargain, £23.—Bacon, Wellington, [X3178

TRIUMPH, 1914 model, 4h.p., 3 speeds, property of officer on active service; £45.—Sutton, Station Rd., [9737

FIRST-CLASS Late 1914 Triumph, and best Millford sidecar, 3 speeds; £61; will separate.—Midland [X3492

1h.p. Triumph for quick sale, 3-speed, and clutch, in first-class order; £28.—Apply, 60, Sunny Hill [9585

1912 Triumph, 3½h.p., free engine, new tyres and tubes, all accessories; £30.—Rowe, 82, East St., [9651

TRIUMPH, 1913½, 3-speed, 3½h.p., in excellent condition; £38.—W. Nevison, 45, Thornville Rd., [X3599

TRIUMPH Junior, 1914½, 2-speed, lamp, horn, watch, spares, excellent condition; £35.—Gibb, [X3537

1912 3½h.p. Triumph perfect condition, lamp, horn, and speedometer, tyres as new; £30.—47, Skelton [9655

TRIUMPH, late 1911, clutch, speedometer, lamp, horn, wicker sidecar; £26.—Grisby, 134, London [9715

TRIUMPH 3½h.p. 1912 Combination, 2 speeds, speedometer, complete; £25.—Percy and Co., [9876

1914½ Triumph, 4h.p., 3 speeds, Gloria £23 sidecar, accessories, equal new, only ridden 600 miles; [9792

TRIUMPH, 1910, 3½h.p., free engine, 3-speed, good condition, new coachbuilt sidecar; £35.—Layton, [X3602

TRIUMPH, 1913, 3½h.p., 3 speeds, Cowey, all accessories, perfect condition; £35 cash.—Write, Richard- [X3141

LATE 1912 Triumph and Sidecar, clutch model, cylinder, piston, and belt new, in perfect condition.—Cann, Builder, Bude, Cornwall. [9583

1914 Triumph, 4h.p., 3-speed, coachbuilt sidecar, equal to new; £58.—F. G. Halsey, 199, Uxbridge [9571

TRIUMPH, late 1911, clutch, lamp, horn, spares, engine recently overhauled, splendid condition; [X3566

TRIUMPH, late 1914, with coachbuilt sidecar, 3-speed, speedometer, and accessories, splendid condition; £55.—110, Southcroft Rd., Tooting, S.W. [9778

TRIUMPH, late 1911, Dunlop belt, adjustable pulley, condition splendid; £22; appointment only.—Edwards, 11, Spring Garden Place, Stepney, London. [X3155

TRIUMPH, 1914¾, 4h.p., Millford wicker sidecar, Palmer cords, all accessories, scarcely soiled; bargain, 50 gns., cost £70.—Percy, Goxhill, Lincs. [X3145

TRIUMPH, 1914, 3-speed, T.T. roadster, little used, excellent condition, Gloria cane sidecar; £54, or separate.—4, Tenby Av., Withington, Manchester. [X3136

1913¾ T.T. Triumph, clutch model, Dunlops, fast machine, perfect condition; owner at Front; £35, or near offer.—24, Lake House Rd., Wanstead. [X3432

TRIUMPH, 1909, N.S.U. 2-speed, cane sidecar, lamps, horn, speedometer, spares, new tyres and belt; £25.—Chase Bros., 12a, Station Rd., West Croydon. [X3490

TRIUMPH, 1914 (July), 4h.p., 3-speed, semi T.T., with Fitsu £14 cane sidecar, excellent condition; £53.—Luker, 19, Freer Rd., Handsworth, Birmingham. [X3500

TRIUMPH T.T. Roadster, late 1913, bought May, 1914, decompressor; open to expert examination; everything like new.—Wallworth, Antrobus St., Congleton. [X3176

TRIUMPH, T.T., 1913¾, tyres and belt new, speedometer, F.R.S. lamp, spare pulleys, belt, valve, perfect condition; £33.—Jakins, 18, Rolt St., Deptford. [9630

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Triumph.

TRIUMPH, 1912, clutch, N.S.U. 2-speed, Montgomery sidecar, lamp, speedometer, horn, all on; any trial; £35, or near offer.—24, Hearnville Rd., Balham. [X3515

1912 Free Engine Triumph, with light wicker sidecar, Lucas lighting set, horn, spares, tools; any expert examination; offers.—Butcher, 12, Holmedale Rd., Coventry. [X3482

TRIUMPH, 1914, 4h.p., 3-speed, clutch, Millford coach sidecar, lamp, car horn, speedometer, spares, tools, splendid condition; £55.—Payne, 96, Basingstoke Rd., Reading. [X3403

1914 Triumph, 3-speed, and 1915 Mills-Fulford coachbuilt Skiff sidecar, 3 Lucas lamps, and horn, only used 3 months; £55; any trial.—Deane, Matlock Bath, Derbyshire. [X3583

1912 Triumph, new semi-T.T. bars and mudguards 1915 cylinder, piston, valves, Lucas lamp, horn Jones speedometer; £30, offers.—E. Roberts, 41, Langdale Rd., Liverpool. [X3528

TRIUMPHS.—Late 1913 track Triumph, fully equipped, exceptionally fast, £35; 1913½ 3-speed and Corvette sidecar, £40; both excellent condition.—Lucas, Garage, Mansfield. [X3400

TRIUMPH, 3½h.p., 1911, free engine, clutch, nearly new tyres, all accessories, etc., just been thoroughly overhauled; £28, or near offer.—Rivers, 286, Wightman Rd., Hornsey. [9680

1910 3½h.p. Triumph, new heavy Dunlops, lamps, all accessories, splendid condition throughout, plating and enamelling as new, carefully used; £20.—436, Whitehorse Rd., Thornton Heath. [9705

TRIUMPH, 4h.p. (July, 1914), 3-speed, mechanical condition, and tyres perfect, with £18 Gloria spring wheel cane sidecar; cash 50 gns.; any trial; no offers.—Houlding, Balfour Rd., Preston, Lancs. [X3551

3½h.p. Triumph, just overhauled by makers, 1915 new cylinder and piston, semi T.T. bars, ball bearing mag., new Triumph carburetter, in excellent order; £28/10.—5, The Parade, Belmont, Surrey. [X3548

TRIUMPH, 1911, clutch model, just overhauled, splendid appearance, tyres and belt as new, P. and H. lamp set, horn, belt, pump, etc., guaranteed; £25, or nearest.—136, Dalmally Rd., Croydon. [9728

TRIUMPH, 1913-14, 3½h.p., clutch model, new tyres, new belt, all accessories, very fast, in perfect condition; take £32; owner gone to the Front.—Hargreaves, Milton Mount, Chorley, Lancashire. [9843

TRIUMPH, 3½h.p., new Kempshall heavy non-skid tyres, Pedley belt, splendid condition, fast; £18, or with speedometer, overalls, and spare belt, ready for road; £20.—James, 63, Lansdowne Rd., E. Croydon. [X3431

1913¾ 3½h.p. 3-speed Triumph (new Feb., 1914), J.S. 1914 hub, Triumph decompressor, P. and H. lamp, Lucas rear, horn, spare valve, plug, splendid condition; £44.—Williams, 7, Emanuel Av., Acton, W. [X3597

LATE 1912 Free Engine Triumph, Bramble coachbuilt sidecar, 2-speed, 2 lamps, horn, speedometer, mirror, good tyres and belt, 2 spare tubes and belt, splendid condition; £39 cash for quick sale.—94, Kingswood Rd., Gillingham, Kent. [9694

1913 Triumph, 3-speed, large J.S. hub, extra heavy tyres, excellent condition, ridden under 2,000 miles, enamel and plate as new, condition guaranteed, £39; with art cane sporting sidecar, underslung chassis, £47.—Robinson's Garage, Green St., Cambridge. [6866

Vindec.

VINDEC 1913, 2-cyl., 3½h.p., free engine, Sturmey-Archer 3-speed gear, Brampton Biflex forks, with Mills torpedo sidecar, engine just overhauled; £32, or close offer.—24, Lake House Rd., Wanstead. [X3433

V.S.

5-6h.p. V.S. Twin Bosch, B.B., £15; with Herald sidecar, £17; trial.—Marks, College Ship, Bromley, Kent. [9524

V.S., 7h.p., 3 speeds, free engine, sidecar, good tyres, excellent condition; £32, or nearest offer.—Pierson, 134, Bath St., Rugby. [X3567

White and Poppe.

3½h.p. White and Poppe and Sidecar, Bosch, recently thoroughly overhauled, Millennium 2-speed, and free engine, grand puller; £18.—Clark, Garage, Long Melford. [9506

Williamson.

WILLIAMSON New 1914 Water-cooled Combination; £99/5, or close cash offer.—Motories, 68, Horton St., Halifax. [0706

WILLIAMSON Combination, 8h.p., all accessories, tyres, new Palmer, Dunlop; £50, or nearest.—44, James St., Blackley, Manchester. [X3386

WILLIAMSON Combination, 8h.p., w.c., 1914½ hood, screen, speedometer, lighting set, done 2,000; 65 gns.—7, Surbiton Rd., Kingston. [9695

Wolf.

2½h.p. 2-speed 1914 Wolf, new condition; £18.—Hall's Engineers, Matlock. [X3139

WOLF, 1915, 2-stroke, only run about 100 miles; £21/10.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [9833

MOTOR CYCLES FOR SALE.

Wolf.

WOLF, 2¼h.p., 3-speed, kick starter, clutch model, Stelastic back tyre, in new condition, done 1,000 miles: £24.—F. Keen, Whielden St., Amersham, Bucks. [9805

2¼h.p. 1911 Wolf, outside flywheel, T.T. bars, low, powerful, Bosch, B. and B., engine re-bushed, everything splendid order; great bargain, £13.—Micky, 69, Ridge St., Watford. [X3592

Yale.

YALE, 1914, 2-speed, with Swan coachbuilt sidecar; £55.—Martin, 33, Gillingham St., S.W. [9804

YALE Motor Cycle in stock, 8h.p., 2-speed, kick start; 60 gns.—Jones, The Broadway, Muswell Hill. Sole agent for N. London, trade and retail. 'Phone: Hornsey 2562. [7636

Zenith.

3½h.p. Zenith-Gradua, as new, plating, enamel perfect; bargain, £40.—Timmons, Mansfield. [X3573a

ZENITH, 1915, and sidecar, countershaft, demonstration model; £75.—Lucas, Garage, Mansfield. [X3401

8h.p. Zenith, red, countershaft, £21 Montgomery sidecar, accessories; £65.—7, Pembridge Villas, London. [9719

1912 3½h.p. Zenith-Gradua and Coach Sidecar, good condition; £28.—Westwood, St. Paul's Schools, Mill Hill, N.W. [X3636

ZENITH-GRADUA, 3,000 miles, excellent condition; nearest £35.—Holte, 21, Old Deer Park Gardens, Richmond, S.W. (9539

1913 Zenith, 6h.p., and cane sidecar, in excellent condition, and all accessories; £38.—Seen 223, High Rd., Kilburn, N.W. [9670

RACING 1914¾ 8-10h.p. m.o.o.v. Zenith and Scott-Westall sidecar, very fast, green finish, heaps of spares; £72.—Gilbert Hall, Matlock. [X3138

ZENITH-GRADUA, late 1912, J.A.P. engine, variable gear, with nice cane sidecar and lamps, lovely condition; £38.—Moss, Wem. [X3607

1912 6h.p. Zenith-Gradua, in splendid condition, tyres and belt as new, fine goer; great bargain, 35 gns.—Julian, Broad St., Reading. 'Phone: 1024. [X3558

ZENITH, 6h.p., 1913, Gradua gear, C.B. sidecar, speedometer, 3 lamps, new tyres, spare tyre; £38; perfect condition.—F.G.B., c/o 86, Bouodary Rd., East Ham. [9779

1913 Zenith, 3½h.p. J.A.P., F.R.S., Stuart, splendid going order, done 1,327 miles, new Dunlop belt, good tyres, sidecar; £25.—Stovell, Ironmonger, Hall St., Stockport. [X3450

ZENITH-GRADUA, 6h.p., clutch, with Bramble sidecar, hood, screen, as new, 1915; £63; owner buying car.—Box LI,105, *The Motor Cycle* Offices, 20, Tudor St., E.C. [9890

3½h.p. Zenith, 1910, and Millford wicker sidecar, splendid running order, well tyred; accept £25, or near offer; real bargain.—7, Stanhope Rd., Sidcup. Seen after 7 p.m. [X3322

6h.p. Zenith Combination, late 1914, almost new, countershaft, kick starter, speedometer, fully equipped, guaranteed; £70.—Percy and Co., 337, Euston Rd., London. [9874

ZENITH, 4h.p., Gradua gear, 1913 engine, running perfectly, new belt and tyres throughout, all parts in good order, accessories; £35.—Richardson, Post Office, Union Rd., Rotherhithe. [9911

ZENITH Gradua 1915 Models in Stock.—3½h.p. twin model B 59 gns., 4-5h.p. model D 62 gns., 8h.p. model H 73 gns, plus 5% increase; sidecars in stock; exchanges, extended terms.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0491

Ladies' Machines.

LADY'S Humber, 2h.p., free engine, pedal starting, in absolutely new condition; £22.—Alexander's, 115, Lothian Rd., Edinburgh. [9399

1915 Royal Ruby, ladies' model, head light, generator, horn, etc., as new; £23/10.—Write, Rex Mundy, 19, Grafton Mews, Warren St., W. [9838

LADY'S Connaught, 1915, 2½h.p., 3-speed, kick start, lamp, horn, accessories, insurance, run 300 miles.—Motorist, White Stone Farm, Nuneaton. [X3441

Miscellaneous.

3½h.p. 1911 B.S.A., in perfect condition, and tyres nearly new; £20.

3½h.p. 1908 Triumph, recently overhauled, condition good; £14/10.—Pytchley Garage, Banbury. [9605

4h.p. Campion-Jap, £22; 4¼h.p. Precision, £23; both 1913.—Corpl. French, Fenny Stratford. [X3214

150 Motor Cycles and light cars for sale; low cash prices.—Motories, 68, Horton St., Halifax. [0708

FOR a good, cheap motor cycle, see Morgan and Maxwell, The London Motor Mart, 80, High Rd., Streatham, and branches. [X3512

IF You Want Bargains in second-hand motor cycles you can get them at Wauchope's (cash or easy terms), 9, Shoe Lane, Fleet St., London. [2000

SECOND-HAND Motor Cycles.—We have a large stock of machines in excellent condition at very low prices to clear; send us your requirements and we will guarantee to satisfy you.—The Morris Garages, Oxford. [0314

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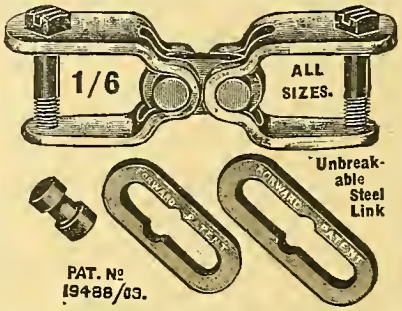

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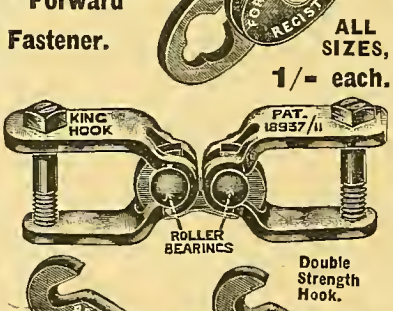

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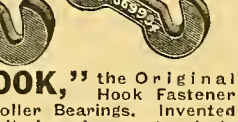

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MOTOR CYCLES FOR SALE.

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1915 James, 4¼h.p. 3-speed combinations and 2¼ h.p. 2-stroke 2-speed.

1915 Wolf-Peco, 2¼h.p., 2-stroke, 2-speed; £33.

1915 Wolf, 2½-3h.p., 2-stroke, 2-speed; £31.

1915 New Imperial-Jap, 2½h.p., 2-speed; £34.

1915 Wolf, 2½-3h.p., 2-speed, 2-stroke, not run 300 miles, as new; £27, complete.

1915 Enfield 8h.p. Motor and Sidecar, fit with hood, screen, Lucas head lamp, 70/- set Lucas rear light, horn, sidecar lamp, guaranteed as new, not run 300 miles; cost £98, accept £90.

2¼h.p. Motosacoche, fit with new Senspray, mag., perfect; £12, a gift.

1914 Enfield 6h.p. Motor and Sidecar, complete as new; offers.

1912 Humber, 3½h.p., 2-speed, 1914 engine, new Canuelet sidecar; £38.

1912 5-6h.p. Clyno and Sidecar, 2-speed; a bargain, £39.

1912 Enfield, 2¾h.p., 2-speed, complete; a bargain, £23.

1912 5h.p. F.N., 4-cyl., 2-speed, and sidecar, perfect; £19.

1915 New 10h.p. Singer Car, dynamo lighting set dickey seat.

1915 New Humberette 2-seat. Car, 8-10h.p., 3-speed and reverse, non-skid tyres on back; best offer accepted.

1915 New Williamson Cycle Car, 2-seat., 8h.p., 3-speed, water-cooled; £120.

HEBDEN'S Motor Mart, St. James St., Burnley Tel.: 488. [9854

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PALMER'S Garage, Tooting.—2¾h.p. N.S.U. twin lightweight, 2 speeds, F.E.; £17/10.

PALMER'S Garage, Tooting.—2½h.p. Minerva, £4 4½h.p. F.N., 4 cyls, £10.

PALMER'S Garage, Tooting.—3¾h.p. Scott, 2-stroke 2 speeds, 2 cyls., 1913 late model, as new; £37/10

PALMER'S Garage, Tooting.—2¾h.p. nearly new Levis lightweight de luxe, 2 speeds, 2-stroke; £35.

PALMER'S Garage, Tooting.—3½h.p. Humber, 2-speed £18; 3½h.p. Premier, 2-speed, £25.

PALMER'S Garage, Tooting.—7-9h.p. Bat-Jap, 2 speed, £20; 3½h.p. Centaur, £10; 3½h.p. Fafnir £12/10.

PALMER'S Garage, Tooting.—Write at once for illustrated dual catalogue of auction sale containing also over 50 photographic illustrations of automobiles in stock. [9483

EAGLES.—James, 3½h.p. 1914 twin, 2-speed, counter shaft gear, kick starter, enclosed chain drive, T.T handle-bars, all accessories, new condition; £47/10.

EAGLES.—N.S.U. 3h.p. twin, 1914, loop frame, rear springing, 2 speeds, free engine, kick-starter, foot boards, Dunlop heavy tyres; £35.

EAGLES.—Rover, 3½h.p., 1914, 3-speed model, with footboards, front and rear lamps, accessories; £42

EAGLES.—Bat-Jap, 8h.p. twin, 1911-12 model, 2 speed gear, free engine, spring frame; £29/10.

EAGLES.—N.S.U., 6h.p. twin, 2 speeds, free engine Kempshall tyres, footboards, coachbuilt sidecar any trial; £28/10.

EAGLES.—Precision, 4¼h.p., 1913, 2-speed, countershaft gear, kick-starter, chain and belt drive coachbuilt sidecar; £39.

EAGLES.—N.S.U., 3½h.p., 1912, model de luxe (85×88), Amac latest carburetter, N.S.U. 3 speeds, adjustable pulley; £25.

EAGLES.—Douglas, 1912 2-speed model, semi T.T handle-bars, excellent condition; £28.

EAGLES.—Any of the above can be had on approval, "The Motor Cycle" deposit system.—Eagles and Co., High St., Acton. Tel.: 556 Chiswick [X349

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Our Oversea Trade.

SOME few months ago we hinted that if it were found impossible to obtain a sufficient supply of munitions for the British and Allied armies without encroaching further upon home motor manufacturers, a valuable trade would be lost to this country. Subsequent developments are still fresh in everyone's mind. It was found that the whole engineering trade must be mobilised in order to maintain the necessary supply of munitions, notwithstanding the serious and permanent damage which might be caused to the Overseas motor trade of this country, at a time, too, when exports of costly articles is most desired in order to counterbalance to some extent the immense value of our imports, and thus maintain the country's financial equilibrium. How unfortunate this state of affairs is can best be gauged by a comparison of the values of imports and exports, and especially during the first six months of this year. In this period we have bought £429,000,000 of goods from other countries and only sold them £235,000,000 worth; that means to say that each day we have been buying from them just over £1,000,000 worth of goods more than they have bought from us.

The July returns show that British exports of motor cycles and parts just succeeded in surpassing the value of our imports, but we fear it may be for the last time until there is some real change in the need for munitions. This is disturbing to any patriotic Britisher who has watched our motor cycle exports quadruple themselves slowly but surely in the course of a few years.

But as a set off to this, a letter such as we print in our correspondence columns this week is, in its turn, most refreshing. A Pretorian reader tells us that a group of acquaintances of his draw lots as to who shall take the few precious British-made mounts arriving in that quarter, and we have no doubt that in other Overseas dominions where British material and care and attention to detail are appreciated, the same longing for the home product is manifest.

This enthusiasm for British mounts should, after peace is declared, very quickly help to regain for our products the pre-eminence they have obtained throughout the world, and it will be some consolation to those manufacturers who, having placed their country's call in the forefront, have to stand by helplessly and see our American cousins profit. In this connection it must not be overlooked that there are thousands of agents who make their livelihood from the sale of motor cycles, and, consequently, if no British products are forthcoming, it can hardly be expected that they shall eschew any connection with foreign-built machines, or rashly be deemed unpatriotic for not so doing. The same sentiment must after all apply to users. Truly, the most effective form of economy in the present crisis is to prevent money going out of this country; on the other hand, a free circulation of money in this country is generally considered to be "good for trade."

All things considered, however, it is a remarkable achievement for the home manufacturers to have exported 11,506 motor cycles during the seven months ended July 31st as against 12,998 in the corresponding period of last year and 15,107 during 1913, the values with tyres and parts representing £185,285, £284,422, and £309,806 respectively.

Nothing apparently has come of the suggestion which was ventilated in these columns some time ago to release a certain proportion of the motor cycles produced in this country for the use of the Army and replace them with machines of American manufacture. Such a scheme, it will be obvious, would enable our firms to keep up their business connections and so more easily pick up the threads of trade when they are in the happy position of being able to cope with all demands.

An index to the advertisements in this issue will be found on the page facing the back cover.

DETAIL ALTERATIONS THAT HAVE IMPROVED AN ALWAYS SATISFACTORY MACHINE.

AN enthusiastic private owner of a Morgan runabout, who hails from Liverpool, has sent us the following account of the alterations and improvements which he has had carried out, and which we feel sure will be of interest to all owners of these handy little vehicles. He writes: "I consider that there is no car made which is beyond criticism, and that the Morgan, although it is not perfect, is, I should imagine, perfectly fool proof. The following ideas which I have had carried out on my Grand Prix type Morgan at a very small outlay in money have well repaid me for the time and trouble expended.

Difficult Starting.

"In the first place I found that starting up the engine either in summer or winter was none too easy, for at times, especially in the cold weather, the starting handle grip is apt to make one's hands sore, as the wooden handle grip is stationary on the starting handle instead of being made to revolve, as is the usual practice on all cars. A remedy for this drawback is a loose wooden handle fitted over the existing grip. When the engine is hard to start in cold weather I have found it due to condensation and freezing taking place in the induction pipe. Also owing to the length of this pipe, it is very seldom that good results are obtained with benzole in the winter months. A big improvement in this direction will be noticed, if the induction pipe is well wrapped up with flannel secured with insulating tape.

A Clutch Improvement.

"It is a well-known fact that a leather-lined clutch is apt to become harsh in a comparatively short mileage unless entirely enclosed as on cars, and no matter how liberally it is dressed with oil the drive is never taken up smoothly. With a Morgan clutch, which is leather-lined, it certainly is a great advantage to substitute for the existing lining either a Raybestos or Ferodo lining, either of which will give as sweet a pick up as can be obtained with a first-class plate clutch, and, moreover, either lining will certainly outlast the car, whilst the saving in wear and tear in the transmission system and on the back tyre is most marked.

"With either of these clutch linings fitted the only attention needed is a dose of paraffin approximately every two months to clear away any road dust which may have been picked up, after which it is advisable to spread a little oil over the surfaces.

"Whilst on the clutch question, it is a good tip to procure a stick long enough to reach from the clutch pedal to the seats, then to cut a groove in one end, and after pushing out the clutch hold it out with the stick as a wedge. The clutch surfaces can then be very conveniently and readily inspected when an occasion arises.

"It is not infrequently necessary to check the track of the front wheels, for in the event of the track being out, increased wear is taking place in the front tyres, not to mention an annoying pull on the steering wheel, which needs constantly correcting.

"Personally, I have been very immune from the puncture fiend, and this good-luck I attribute largely to the use of oversize tyres on all three wheels. When the car was delivered new I noticed that 650 × 65 mm. tyres were fitted as standard, and these I replaced with 700 × 85 mm. tyres, which, although larger in size, fitted the existing rims quite accurately. Now, after covering a season's mileage of 5,000 miles on these tyres, I do not regret my decision in any way, for I have not had any necessity to worry over tyre troubles in any way.

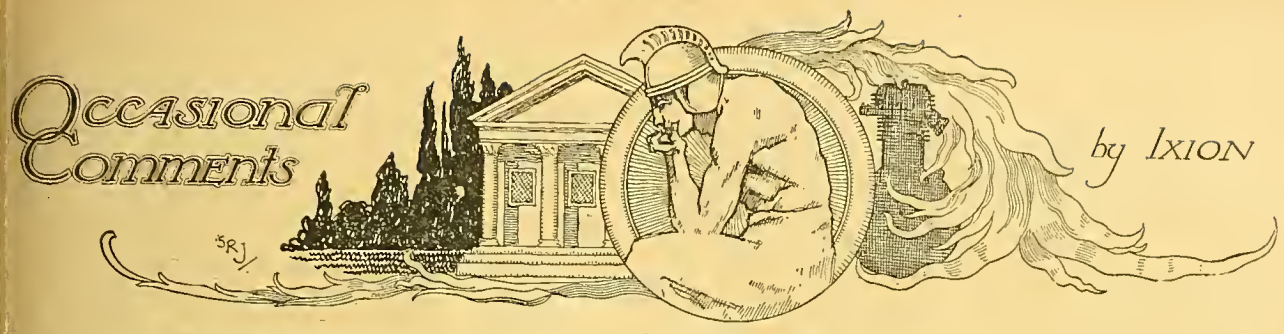
A Tank Tip.

"The petrol tank on my Grand Prix Morgan gave me some trouble with petrol leakage after covering the first 1,000 miles. This I attributed to the excessive vibration set up in the whole car when travelling at speed over vile road surfaces, and also to the shape of the tank, which is unusually long and minus any central supports under the bottom.

"This trouble, I found, can be completely overcome by fitting angle irons under the tank attached to the dashboard, thus effectively eliminating any tendency for the tank to vibrate or chatter.

"Another point which is well worth attention is the fitting of leather flaps to the mudguards to save the sides of the body and the passengers' arms from being covered with mud. Also I have found that with constantly getting in and out of the car the steering wheel is apt to become badly scratched by one's feet. This I have remedied by wrapping the wheel tighter with thin picture cord, which not only is of pleasing appearance, but enables the driver to obtain a good grip.

"In addition to the speedometer and watch fitted, I have added a useful refinement to the dashboard in the shape of a small electric light over the oil drip feed lubricator, which I find is a great convenience when driving at night, for, of course, varying temperatures affect the flow of oil considerably." F. REES.



Well-fitted Tool-kits.

Several correspondents write in praise of various makers' tool-kits, notably the Sunbeam, Victoria, Douglas, and Motosacoche. One reader informs me that similar variations exist in respect of cycle car and light car kits, and that in a lengthy and representative experience he has found that French makers cater for the user's needs more adequately than our home firms. British manufacturers please read, mark, learn, and inwardly digest.

Where the Battery should be.

Readers may remember that I am busily "trying out" a couple of dynamo lighting sets, designed for solo use. Each designer tackles the problem of battery storage in a different way, the F.R.S. putting it within a tin cylinder in prongs projecting rearwards from the lamp bracket, while the Motosacoche mounts it in a rectangular tin box on the near side footboard. Neither position is ideal. The Motosacoche notion will obviously add to the repair bill if the machine sustains a left-handed tumble, and it necessitates the presence of four lengthy wires in rather an exposed position. The F.R.S. idea is probably the best that can be devised so long as motor cycle makers make no provision whatever for the storage of accumulators; the only sound alternative is a platform above a countershaft gear box, where it would be in the way of chain adjustments. But eventually, one would imagine, the proper place will be identified as a platform brazed to the top tube of the frame, in the position where Norton and one or two other machines have their toolbags. Here the accumulator would be quite out of harm's way. It could not interfere with any other part; my F.R.S. accumulator leaves no room for mounting a speedometer near the centre of the bar, nor can the prongs be lengthened rearwards without obstructing access to the gear lever. Further, the wiring could be run very neatly along the top tube. This improvement is obviously outside the range of the electricians. It must be carried out by the motor cycle makers, and will only materialise when the majority of buyers specify electric lighting. Then the trade will tardily recognise the problem of battery storage and make allowances for it.

Valve Breakages and the Use of the Clutch.

A reader sends me his confession, to the effect that he is in the habit of running his engine declutched, *e.g.*, at level crossings, and enquires whether the practice is to blame for the fact that during the last three months he has broken two inlet valves (at the cotter hole) and one exhaust valve (at the junction of head and stem), the valve guide being simultaneously broken in each case. I cannot answer his question dogmatically, seeing that I have no personal experience of the latest model engine of the make to which my correspondent's remarks refer; but as I have had no complaints whatever of the valves on this engine, I suspect that he has been using his free engine to excess, and that he must ascribe his troubles mainly to this cause. His letter astonishes me, because I have never yet broken a mechanical inlet valve. It looks to me as if the valve stem had seized in the guide by reason of overheating in each case, and that when the tappet next ascended after the seizure, the valve snapped at the weakest point; in the case of the inlet valve (the stem of which normally keeps fairly cool), the cotter hole would be the weak point; in the exhaust valve, an overheated and scaled neck might well be weaker than the cotter hole. The engine in question is an admirable slow runner, a feature which almost invariably implies close fitting valve necks and a consequent absence of air leaks past the guide. But I cannot be certain, because it is possible that the firm in question has not got its latest valves dead right, and my correspondent gives no exact information about the amount of declutched running to which he subjects his engine. Generally speaking, a machine should not be run on free engine for a single avoidable second, and if this rule is followed subsequent trouble will be avoided.

Petrol Economy.

A Leeds reader speaks enthusiastically of a tip given him by a colliery engineer a few weeks ago. He was complaining that his 3¾ h.p. sidecar outfit could do no better than 50 m.p.g. under the most favourable conditions. His auditor went into the pit stores, and produced three small copper washers, of various weights, for putting on top of the float. The lightest washer was first tried, and resulted in an immediate stoppage of petrol spraying from the air intake, improved power, and lower consumption. Then the middleweight washer went in, and the fuel economy was raised to 70 m.p.g. With either washer, starting was as easy as usual. This is an interesting experience, though it by no means follows that the remedy will prove efficacious in all cases. It is obvious that the petrol level was badly out prior to the employment of washers; and the real interest of the suggestion lies in the claim that alteration of the petrol level stops petrol spraying from the air intake, a nuisance for which I have never found a radical cure, though an air extension pipe is good. I shall verify this point very carefully as soon as I strike a machine which sins in this direction; but at present I see no technical explanation of the claim, and suspend my judgment.

A.

The Sporting Side of Motor Cycling.

By ROAD RIDER.

THE essence of sport is difficulty, and the pleasure of all sport consists of triumphing over difficulties—difficulties which, in many cases, include personal risk. So the sporting side of motor cycling is not necessarily limited to racing on specially built trade machines; it may be enjoyed by any rider who sets himself tasks which cannot easily be performed, and it may range from winning a T.T. or a Brooklands event on the one hand to successful touring on a single-geared machine picked up for a ten pound note from a garage scrap heap and adapted at home by a clever but impecunious owner. Under my definition, I am bound to include in the sporting aspects—(1) competition work of all kinds, where the difficulty lies in surpassing rivals, (2) grease riding, (3) night riding, (4) crock driving, (5) driving single-geared machines in bad country, and (6) freak hill work.

It is impossible to deal with the delights of all these sub-aspects of sporting riding in a single article, and I propose to confine myself especially to the joys of touring on a single-geared machine, which, even if modern in design, must be in absolute "nick" to get the rider round a well-planned tour, especially if the weather breaks and grease adds terror to the hairpin bends of the bad hills, which must in any case be taken at speed. I must have covered a distance approaching 250,000 miles since I took my first ride with a petrol engine, and, of all the jaunts stored in my memory, there were none I enjoyed better than those in Devon or Scotland on a low-powered single-geared roadster or on a high-geared direct driven twin, minus a variable gear. A visit to all the beauty spots of North Devon on a 5-6 h.p. single-geared Bat is full of thrills for the driver who is sporting at heart; and quite the most interesting moments of the 1914 Scottish Trials were those when sundry dauntless men, mounted on grossly over-geared single-cylinders, attempted to round the V bends of the test hills at speed with their inside shoulder almost in contact with the bank or wall on the crook of the corner.

Weight must be Reduced.

For all such jobs, of course, you must ride light. You are content with ordinary walking kit, plus a suit of featherweight oilskins, serving the combined purpose of dust and rain kit, and with a tooth brush and razor in your pocket. Other men may carry two panniers, and a Brooks case and spare cover on the pannier. For you stern necessity confines the repair kit to the tyre outfit, a 4in. King Dick, a pocket screwdriver, a belt fastener, a sparking plug, and a valve cap spanner. What doesn't go in your pocket will go in a military hairbrush case, lashed where the front fork joins the front mudguard. 1,000 feet beam head lamps are an outrage for such as you; your lamp and generator cost 8s. 6d., and weigh 2 lb. or so; a "pip-squeak," taped to the steering bar, replaces the usual enormous bulb hooter; it is astonishing how much more life a mount has when you keep its load down.

Secondly, you must pick your road from a contour map, or, better still, from a half-inch ordnance, coloured to show where the high spots come. A little practice and an eagle eye will soon detect the places where the country rises sheer for 500 feet in less than a mile; the half-inch map will show the by-roads, and if the main highways are cunningly graded over shoulders, and round wide sweeping corners, you will soon spot a scarcely marked cart track, that will ask for three or four shots before you burble up to the summit. On jaunts like these it does not particularly matter whether your machine be a single-geared 6 h.p. or a standard 2¾ h.p. variably geared roadster; in either case freak climbing will cause you trouble of an equal order, but the faster mount offers more thrills per square mile or per hairpin.

The Joys of Tuning.

Then comes the tuning. A week at an inn like the small hostelry at the top of Countisbury with a machine which either has a single gear or a single figure bottom gear will teach the sporting aspirant more about tuning than five years of pottering in an ordinary district. If he takes a solemn vow to master each hill which worsts him at the first attempt, he will go home an infinitely wiser man. His grease-riding will improve till he loses all sense of fear—that is, if rain falls, and you can count on it within a week in all hilly corners of the British Isles. His corner work will be absolutely transformed; on the first day he will slide up towards the abrupt reverse bend with his valve lifted, his heart a-flutter, and his eyes staring. Three days later he will storm up to it all out, jam on his brakes, haul the machine violently round, correct its skid, lean over nearly flat, let his engine in with a bang, make a couple of lightning dabs at his air and throttle, and shoot up to the summit in a cloud of dust and a rosy halo of glory and envious admiration.

Let the novice try the hills in and out of Parracombe, on a wet day, with one gear; or even better, perhaps, let him take the road from Barnstaple to Lynmouth, *viâ* Loxhore, and see what he can make of the little-known, but quite trying one-gear climb up Loxhore,

The Sporting Side of Motor Cycling.—

which many of the veterans had to ascend somehow on 2¾ h.p. machines geared 4¼ to 1 ten or twelve years ago.

A few failures will set him virulently experimenting with his engine compression—he will grow a hawk-eye for leaks; he will come to know the difference which a 10 lb. stronger spring on the inlet valve can make with some engines; he will realise the kind of carburetter

A mill of somewhat unusual and pleasing design at Chesterton, Warwickshire.

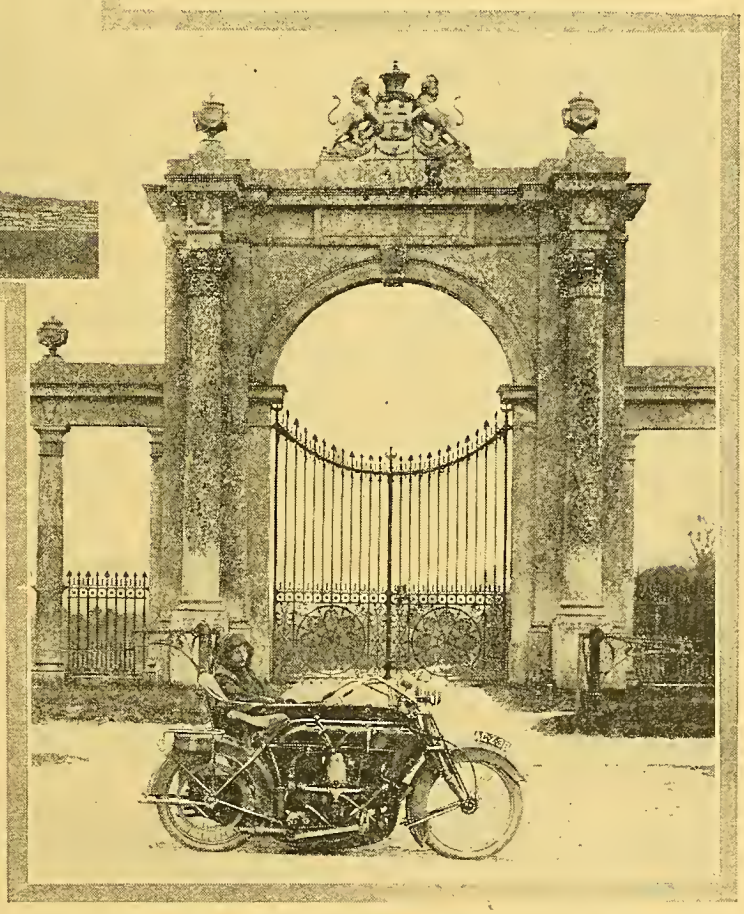
adjustment which gives a strong puff of gas when the engine is barely turning over at all; he will understand the unique vim which the maximum position of a magneto armature can afford provided that maximum is timed at the correct moment of the piston stroke.

The Final Touches.

When these elementary points have been mastered, he will sigh, if his pocket and tools permit, for a genuine semi-racing engine. We shall hear of him drilling holes in his piston and connecting rod, or fitting a light steel piston—a Zephyr or a Simplex, maybe, with a steel filigree connecting rod to match. Then delving into the mysteries of engine balance—swinging his crankshaft on a couple of knife edges, and carving weight out of its rim; studying dial diagrams of valve timing, and sending an order for a special cam or two to be machined up; then dropping his gear a trifle to get the benefit of the extra r.p.m. after rounding a hair-pin, until at last nobody in his district can make a similar machine keep in sight of his.

Anon, an Expert Competition Rider.

The next year we shall see him in the Six Day Trials taking the bad hills like a master, and at a speed which even the factory-nursed trade riders view with real envy. He was in the last trial, too, perhaps; but then he rode a standard agency-bought mount, with its bottom gear dropped 25% by dint of a special sprocket, or the like; and even at that he was nervous and clumsy on the test hills; this year he has standard gears, and he very seldom engages bottom, for he has learnt how to make a machine go. While other riders talk excitedly in hotels at night of the morrow's timed climb, or scan the skies anxiously for fear of rain along a soft bit, he is calm and collected; he is master of his job, and the only thing he is up against is his luck. He knows he can get over the course if the machine treats him decently, and even if a tyre goes or a valve snaps at an awkward moment when he has none too much time to spare and a tricky bit of road to scrap over, the odds are that he will get in somehow; for he is a sportsman, and welcomes difficulties, believing that they were only made to surmount, and determines to surmount them at all costs.



A 6 h.p. Humber sidecar outside the imposing entrance to Sir W. Escott's residence near Towcester.

Reliability, Simplicity, and Accessibility.

THEIR RELATIONSHIP AND A FEW SUGGESTIONS.

PART II.—Concluded from page 149 of last week's issue.

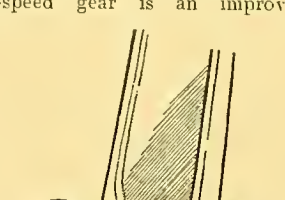
LAST week we dealt with the relationship of reliability, simplicity, and accessibility, and included a few suggestions as to where engine construction might possibly be improved in these respects. This week further ideas are put forward relating to other, though almost equally important, parts of the machine.

Gears.

Gears are a much vexed subject. Provided a countershaft gear is well designed and made, has short shafts, ample bearing surfaces, a large filling orifice, oil-retaining glands, and a minimum of projections, the actual details are not of the first importance.

The writer prefers fine pitch teeth with a wide surface to narrow coarse pitch gears, and prefers also that the engine and gear box be made in one unit on the lines of the late 2¾ h.p. Villiers or the two-stroke Clyno and some Singer models. This form of construction is, however, unusual, and has certain disadvantages unless it is very well carried out.

For ordinary solo touring work two speeds will suffice, provided the top gear is reasonably low, and there is not too big a jump between the high and low ratios. A flexible 3½ h.p. single should be capable of any reasonable tour with gears of about 4¾ to 1 and 7½ to 1. A three-speed gear is an improvement;



An adjustable big end bearing. The thick black line represents a brass packing strip. Note the method of fixing the nut with bent sheet metal.

even for solo work it is very pleasant to have a high top gear of about 5¾ or 4 to 1, a middle of about 6 or 6½, and an emergency low gear of 9 or 10 to 1. For sidecar work three speeds are almost essential if heavy touring is to be undertaken, and, in any case, a good clutch should be fitted. The dry plate type of clutch is so simple and effective that it would be hard to beat, though the multi-plate type is very satisfactory and has many staunch adherents. The chief defects of the latter type are a tendency to "drag" when disengaged, and the fact that a certain amount of cleaning out is necessary every now and then.

Transmission.

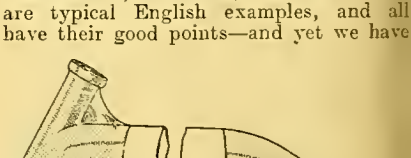
If the unit engine and gear box system be employed, or if the gear box be located very close to the engine, a silent chain front drive is ideal, as this type of chain is more suitable to the high speed at which it has to run. In any case, the front drive should be totally enclosed in an oil bath, and sheet metal is not the best material for use in this place. Firstly, sheet metal is apt to be bent and to rattle; and, secondly, it is hard to fix a sheet metal case so that it is rigid when in position and yet quickly detachable. A light aluminium casting split horizontally is hard to beat, but it is essential that provision for fixing this case is made in the original design of both crank case and gear box. Nothing could be more unsightly or more unmechanical than the strips of metal and odd bits of tin by which the majority of chain cases are attached. Some machines are a disgrace to their builders and designers in this respect.

The rear drive, if by belt, should be longer than is usually the case; and if it be impossible for certain reasons to carry the gear box well forward, the final drive should be by roller chain, a good shock absorber being incorporated somewhere in the drive. The rear chain need not be enclosed, but should be protected from mud dripping from above.

Frame Design.

So much has been written on this subject that the writer is somewhat chary of raising the question again, especially as his views are somewhat unorthodox. However, we all hold our own peculiar opinions, and this one may be of interest. The loop frame is specified because it relieves the crank case of much strain, and generally stiffens the construction; and a top tube tank on the lines of the Premier two-stroke is chosen for several reasons. Firstly, the frame is easy to clean, there being no crevices between tube and tank and filler caps; secondly, the construction (in quantities) is cheap; and, thirdly, it is eminently strong and removes the objection of the dropped top tube, as the drop would take place in the powerful rear lug group. All tubes in the frame should be as straight as possible (the bend in the loop frame is unavoidable, and gives a stronger construction than no tube at all).

Spring frames are a necessity for Colonial work, and would be a boon even on our comparatively good roads. This is difficult ground, for where is the perfect spring frame? There are, indeed, several good spring frames (by which sprung rear wheels are meant), and the Indian is amongst the finest examples. The A.B.C., the P.V., and the Wooler are typical English examples, and all have their good points—and yet we have



Tubular tank construction, showing two lug groups.

some way to go to find perfection in this respect, for joints exposed to mud and grit, incorrect pivot centres and unequal sized driving sprockets all require attention. It is true that these spring frames are a great improvement over the rigid frame, for, apart from the extra comfort, they cure much more serious faults than they introduce, and from the point of view of reliability they are of the utmost value in saving the mechanism from sudden shocks. The Bat and Edmund type of spring frame, in which the rider is sprung from the machine, have much to recommend them from the comfort view point, but they hardly affect the title of these notes.

Wheels.

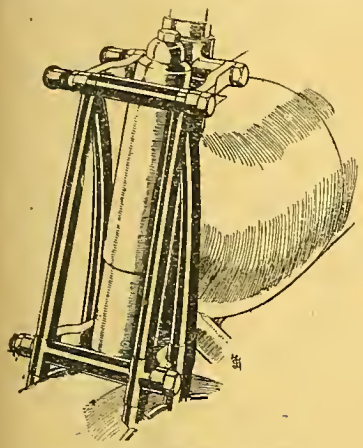
Rims, spokes and hubs are all important features, especially to those who live in districts where bad roads are the general rule. Rims, besides being of standard section, should be rustless and easy to clean. With regard to rustproof rims, the Roman aluminium alloy rim is absolutely rustproof and very strong in construction. These rims can be fitted to any machine, but it is advisable to use security bolts to fix the tyre, owing to the smooth rolled finish. Front wheel hubs are a constant source of unreliability on many modern machines, and their adjustments are often most inaccessible. The Timken roller bearing hub as used by the James has much to

eliability, Simplicity, and Accessibility.—

ecommend it, and it would appear that hub built up of Skefko ball bearings ould make a very satisfactory job, as ese bearings are capable of taking uite a heavy side thrust. Detachable id interchangeable wheels are a great nvenience; they will probably become andard on all passenger machines. A ell-designed hub with a knock-out indle is a first-class addition even to ght machines.

Spring Forks.

The chief points requiring attention n spring forks are the protection of nackle joints and springs. Everybody



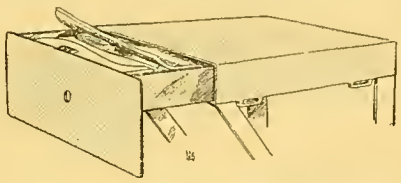
Rudge type of enclosed spring fork. The greasers are important.

nows how even the best spring forks evelop a certain amount of side play fter a long season under hard conditions, but everybody does not know that this side play is responsible for much skidding, tyre wear, and frame strain. Coil springs should always be enclosed, as in Rudge and Matchless forks, and the employment of an air (or even oil) dashpot would save much of the shock due to sudden reaction.

Fittings.

The subject of detail fittings, such as lamp and horn brackets, has already been touched upon, but the larger items also need attention. Without doubt, the wide domed mudguard with plenty of wheel clearance and a very narrow valance is the most satisfactory all-round device, both from the point of view of cleanliness and accessibility, and it is probably only due to the somewhat clumsy appearance of a light machine when so fitted that this type of guard is not more popular.

Toolbags form another important item, and the writer would suggest a somewhat unusual method of carrying the kit. The carrier might reasonably be made of sheet metal stamped in the form of a shallow box and having lugs for the permanent attachment of straps. The rear of this box would be open, and into it would slide a tray just deep enough to accommodate the deepest tool. The tray would be filled with paraffin wax (which sets quite hard), and the tools warmed and dropped into position so that they melt out the wax and form a close fitting bed. Wooden tool handles would, of course, need to have the bed carved out, and the tools most frequently used would lie in front of the drawer. A thick felt flap would complete the job, and the number plate would form a convenient end to the drawer. This method would be simple and accessible, would prevent rattle, and at the same time a missing tool would at once be obvious. There would be no room for spares in such a contrivance, and these should be carried in a case on the top tube as near the centre of the wheelbase as possible, as in that position they will be least subject to road shocks. While on the subject of tools, how is it that so many spanners are needed on the average motor cycle? With a little careful designing

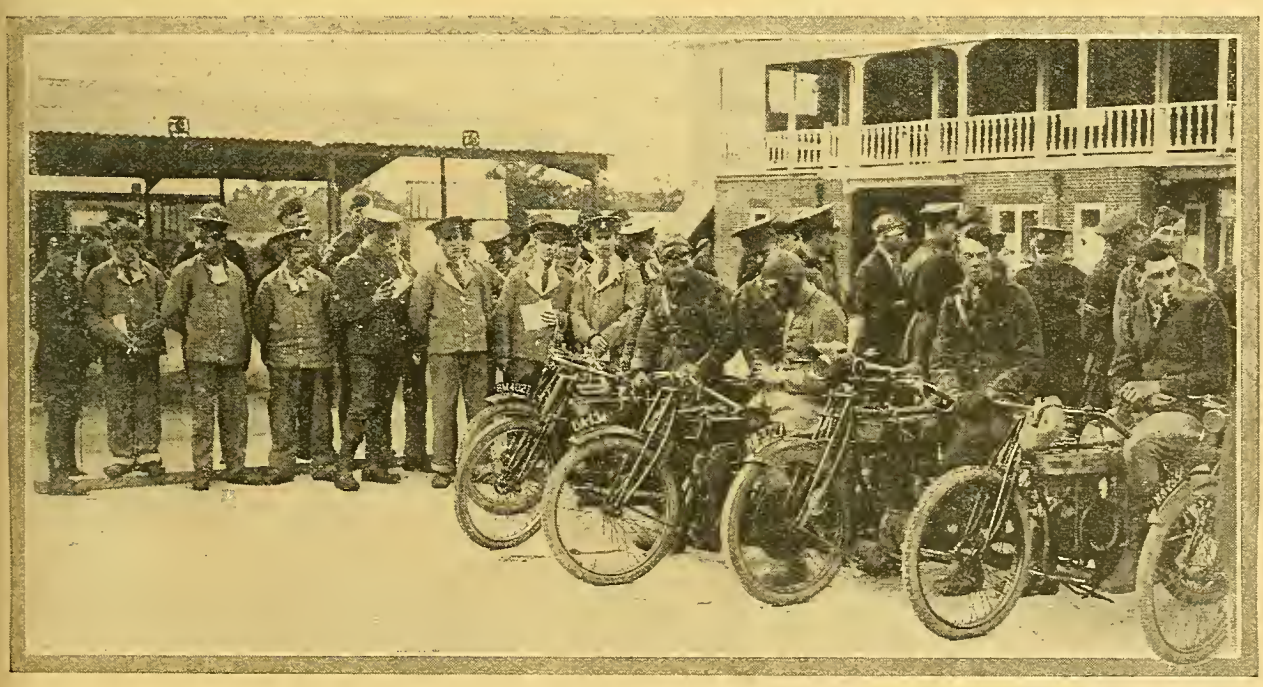


Suggested form of sheet metal tool-carrier. The drawer is filled with melted paraffin wax, into which the tools are dropped in such a manner as to form their own bed.

two sizes of nut only are needed on the engine (with the exception of the valve cap spanner, which can be combined with the steering head nut spanner) and two sizes of nut on the frame. It might even be possible to arrange that the sizes of frame and engine nuts were equal, in which case the tool kit would be greatly simplified.

Practical readers will think of many other details which would simplify the motor cycle or render it more accessible, but these remarks may possibly give a start to a subject which badly needs ventilation. The writer will look forward to seeing correspondence on the subject in the columns of *The Motor Cycle*.

UBIQUE



THE "ALL-KHAKI" MOTOR CYCLE RACE MEETING AT BROOKLANDS.

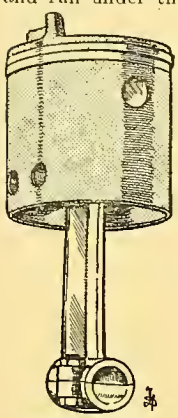
Competitors lined up for the start of the serpentine race. It was won by Second-Lieut. G. Barnard, R.E. (3½ h.p. Sunbeam), who won *The Motor Cycle* Cup for the best aggregate performance of the day. Note wounded soldiers, who were greatly interested in the racing. A fully illustrated report of this successful meeting appeared on pages 159-163 of our last issue.

A 21

A ROTARY TWO-STROKE ENGINE.

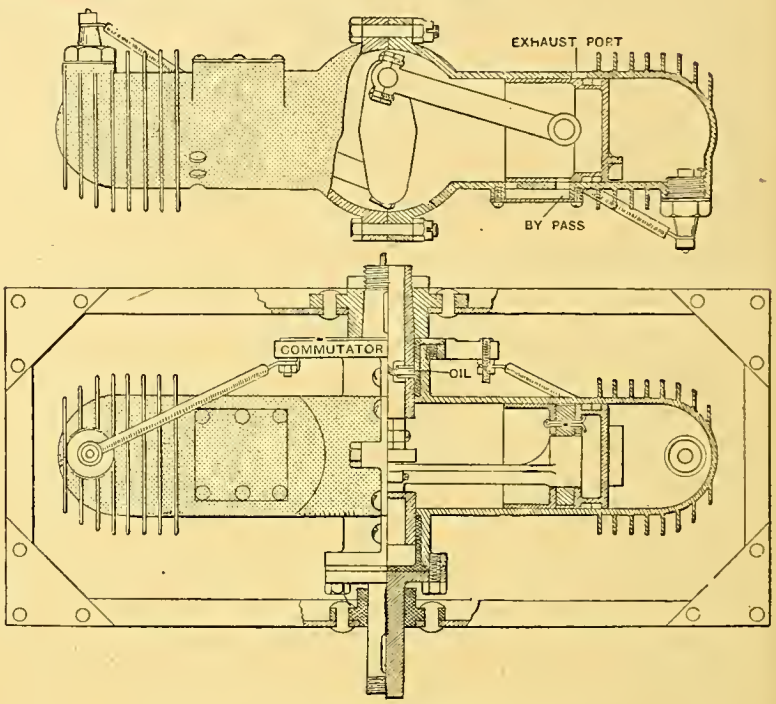
A Type which Combines Power with Light Weight.

IN these days of comparative standardisation it is a pleasure to come across an engine which embodies really unusual features, especially when they are of a practical nature. Such an engine is now undergoing tests at the works of Messrs. Wilfred and Co., Ltd., of Mount Street Mills, Nechells, Birmingham, and two experimental models have been built and run under their own power. At the present moment, though still in an experimental stage, these models have shown great promise, and the designers have considerable faith in the ultimate results. The engine which we examined had two horizontally opposed cylinders of 50×50 mm. bore and stroke, each cylinder being cast with one-half of the crank case, so that it is only necessary to bolt the two castings together, the split being on a vertical line passing through the centre of the crankshaft.



Piston and webbed connecting rod of Wilfred rotary two-stroke engine.

The connecting rods are formed of phosphor bronze castings, split and bolted together at the big end. Each piston carries two rings mounted in a single groove, and the gudgeon pin is placed rather high up. The piston head is flat and has a curved vertical baffle plate across the transfer ports. The crankshaft, which is rigidly fixed to the main frame, has opposed cranks, and serves as the inlet pipe, a light snifting valve being fitted to the carburetter to prevent blow back. The transfer passages are covered by detachable plates, and, as the cylinder castings are identical, a good balance is obtained. In the experimental model all ports are formed by drilling suitable holes through the cylinder and piston walls, and the port setting is somewhat unusual. As the whole engine, with the exception of the crankshaft, rotates, no flywheel is needed, and the little power plant weighs only 12½ lb. and measures 13in. in overall length.



A novel rotary two-stroke engine, described on this page.

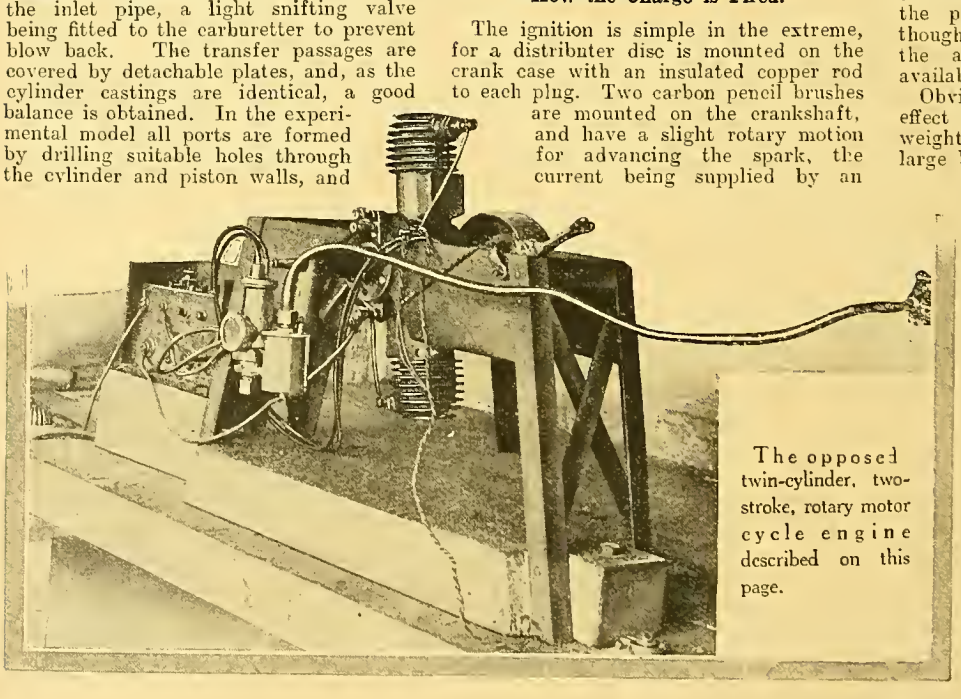
How the Charge is Fired.

The ignition is simple in the extreme, for a distributer disc is mounted on the crank case with an insulated copper rod to each plug. Two carbon pencil brushes are mounted on the crankshaft, and have a slight rotary motion for advancing the spark, the current being supplied by an accumulator through a coil. Lubrication is carried out on the petroil system, though arrangements have been made for a drip feed if it is found to be necessary.

It will be realised that both cylinders fire simultaneously, but that the double explosion occurs once in every revolution, so that very fair torque is obtained, and the power is by no means negligible, though at the present moment details of the actual brake-horse-power are not available.

Obviously, an engine of this type would effect a considerable reduction in the weight of a motor cycle, and may have a large bearing on the future of the lightweight movement.

The patentee of this engine is Mr. William E. Jennings, of Walsall. In the patent specification it is stated that the object of the invention is to produce a simplified construction of rotary engine, to avoid the use of valves and timing cams, and to enhance the efficiency.



The opposed twin-cylinder, two-stroke, rotary motor cycle engine described on this page.

The other day we were chatting with Second Lieut. S. Theo Newsome, of the 2nd Battalion Royal Warwicks, who was formerly with the Daimler Co., and a well-known motor cyclist. He told us that he has frequently received letters from people who have confused his name with that of Second Lieut. C. T. Newsome, the Rover rider, particularly while they were both away at the Front.

When it's a question of tyres

there's only one for your serious consideration, and that is the BATES-BUILT; mile for mile, and sovereign for sovereign, there is no other tyre that represents so much actual £ s. d. value.

The BATES possesses a thick, dome-shaped tread, durable and dependable, that whilst offering the sternest resistance to punctures is withal remarkably resilient and luxurious to ride upon.

You cannot obtain a safer tyre for use on greasy tramlines and slippery cambered roads. The BATES is designed scientifically to prevent skidding. A ridge on each side of the tread engages the road surface directly the machine heels over, arresting the slightest tendency to skid.

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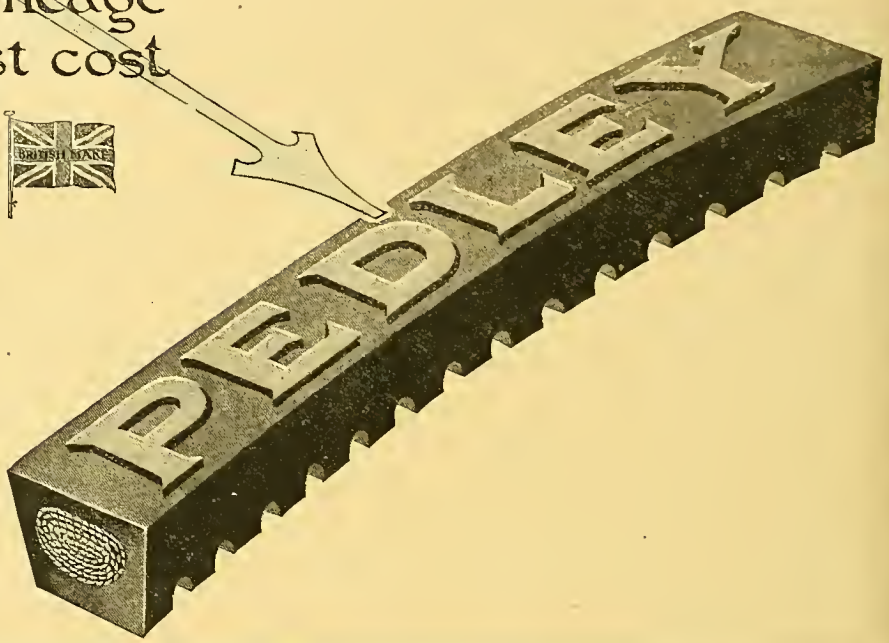

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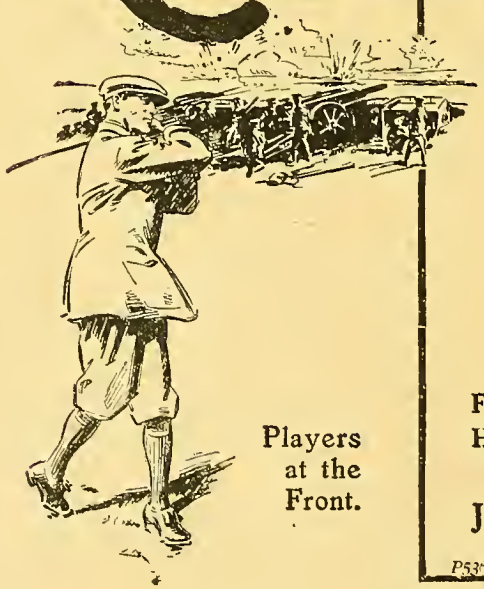

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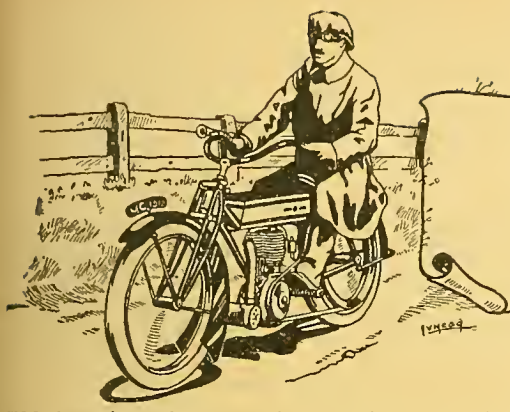


Safe Rules in Cornering.

How to Ride round Dangerous Corners Quickly and Safely.

IN learning the art of cornering, the feelings of the beginner are something akin to those of the peaceful old milch cow, who discovered that she had given birth to a steam-driven butter churn instead of a nice straddle-legged, goggle-eyed calf. At first he is filled with vague uncertainties and a sense that things are not as they should be, secondly he makes up his mind that something is quite wrong, and finally he proceeds to get used to it.

There is nothing that stamps the novice with such certainty as the manner in which he takes a difficult corner, while amateurs of long experience often mishandle their machines when negotiating sharp bends in a manner which leaves much to chance and the fortunate likelihood that there is no fast-moving vehicle approaching in the opposite direction. A little thought with regard to the way in which a corner should be taken reveals the fact that it is far easier to do the thing safely than by taking risks.

It is, of course, unfair to other road users to negotiate blind bends at speed, but accident is much less likely to occur when taking a corner, say, at twenty miles an hour, in the right way than when taking it dead slowly in the wrong way; in other words, the expert rider can maintain an average on a tortuous road without taking risks that the novice would be hard put to maintain, even though he risked his life at every bend.

General Rules.

It is, of course, impossible to lay down hard and fast rules with regard to cornering, but there are certain conditions which apply in every case, and which are obvious to anyone giving the matter a moment's thought.

The accompanying plans show an extremely dangerous village corner which the writer has had under observation for some time, and which may serve as a typical illustration. It will be observed that, owing to the buildings set at the roadside, it is impossible to obtain a view of the roadway ahead till one has actually reached the turning point. The dotted lines in fig. 1 may be taken as representing the wheel tracks of a number of motor cyclists who have passed during the week-end. Though the corner is visible from a considerable distance, the majority of riders are not prepared to take it till they reach the point A, from which the natural impulse is to cut in towards the wrong side of the road so as to avoid too sharp a bend. The result of this manœuvre is that the point B, which is the danger point, finds them on the wrong side of the road, and, not until they have reached this position, are they able to see round the corner.

Any amount of hooting does not excuse taking a corner in this manner. In negotiating a bend of any sort it is a wise plan to aim at obtaining the first possible view round the bend before the danger point is actually reached.

Contemplate the dotted line D E C, which shows how the corner can be taken in safety, and with more consideration for one's tyres and general comfort than in the first case.

By approaching the corner from the extreme left-hand side of the road one is able to obtain a view round the bend much sooner than if one were on the wrong side of the road; the turn, in fact, is not begun till one has reached the point E, from which position a clear view of the roadway ahead is obtained, and having convinced oneself that the way is open, one is still at liberty to make a wide sweep.

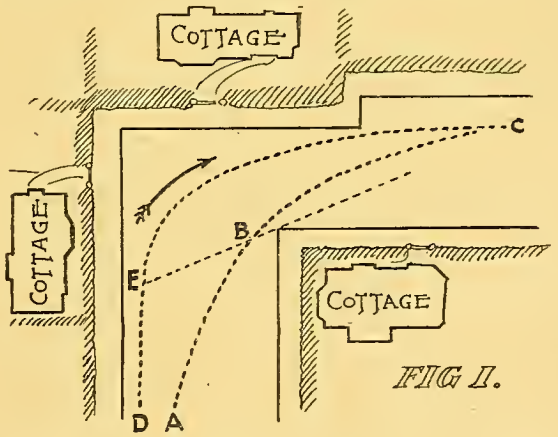


FIG 1.

In taking the corner from the opposite direction, however, that is, in taking a sharp left-hand bend, it is *not* wise to hold one's proper side of the road till the last moment. Again, we must attempt to obtain the first possible view round the corner, and this can only be done by keeping well out towards the centre of the road till almost at the danger point.

The novice, aware that he is approaching a difficult place, conscientiously hugs the left-hand side of the road from the point F till he reaches the danger point G. Nor until he has reached this point is he able to see round the corner, while he himself is hidden from view by the building. The result is that the driver of any vehicle approaching in the opposite direction will have begun to corner before he sees him, by which time they are almost end on. Further, on reaching the point G he is almost compelled to swing out into the centre

Safe Rules in Cornering.—

of the road in order to get round the corner at all, and collision is almost as likely to occur at the point H as at the point G.

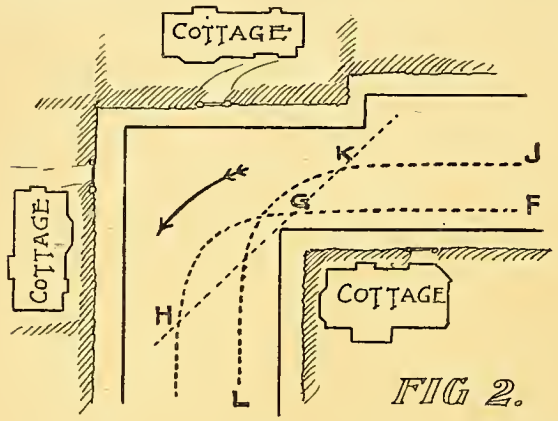


FIG 2.

Now it is obvious that by keeping to the centre of the road, and by following the line J K L, all these dangers are done away with. On reaching the point K a clean view of the roadway ahead is obtained, while any approaching vehicle has the same advantage. And having reached the point K, and made sure that all is well, one is able to open the throttle and dart ahead with much less loss of time than by labouring round the corner by the line F G H.

Practical experience will prove that by observing these commonsense rules one is able to spare one's machine and one's nerves, and to make much better time on the road than by practising the common but extremely unwise method of cutting in at every opportunity. The "cutting" can be done just as effectively, but without taking risks. In the ordinary course of events an experienced rider never attempts to cut a corner till he is convinced that the roadway ahead is clear; not only is it bad riding to do so, but it is not worth while. H. MORTIMER BATTEN.

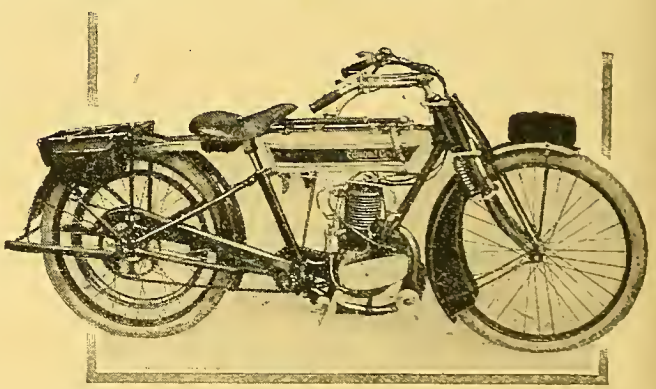
The Edmund Springing System.

Movement of Saddle and Footrests controlled by Long Leaf Springs.

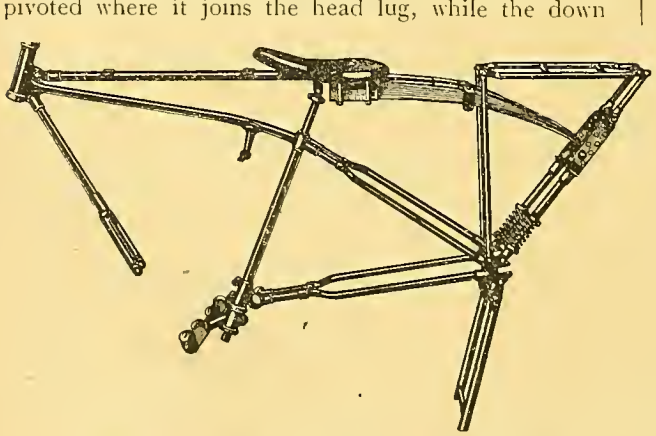
AN interesting type of spring frame which has stood the test of time, and which was not alluded to in the article urging the desirability of rear springing in our issue of July 29th, is the springing system as fitted to the Edmund motor cycle manufactured by Messrs. C. Edmund and Co., Chester. This frame has received the most thorough testing over the roughest road conditions for several years. A machine of this type competed in the Scottish Six Days Trial in 1913, and the frame gave excellent results over the extraordinarily rough road conditions encountered in that trial.

Design of the Frame.

As will be seen in the accompanying illustrations, the chief feature is the inclusion of a double top tube. The lower or main frame top tube is considerably dropped. Within this main frame the engine, gears, and wheels are carried in their normal position, while upon the top tube, which is parallel to the ground, the saddle is carried, and the tank, which is divided to allow for movement of the frame. The top tube is pivoted where it joins the head lug, while the down saddle tube passes right through the main frame down tube in which it is able to slide. To the bottom of this inside down tube are attached the footrests. The springing of these auxiliary top and down tubes is obtained by supporting them on two long leaf springs clamped to a lug beneath the saddle. The rear ends of these springs are fitted to two supports attached to the rear fork ends, and which also form the rear stays of the luggage carrier. At the lower ends of these stays, which are telescopic, are fitted two small spiral springs to take up the recoil in the same manner as shock-absorbers on a car. A good feature of the frame is the absence of whip or side play, owing to the portion carrying the rear wheel having no movable joints. In the near future we hope to record our opinion of the latest frame, the makers having kindly offered to place a machine at our disposal for trial. We have already had a short run on it fitted to a Levis two-stroke machine, and were favourably impressed with the comfort provided; we are therefore looking forward to a further test.



The Edmund lightweight, which is fitted with the Edmund patent system of rear springing. The engine is a Levis.

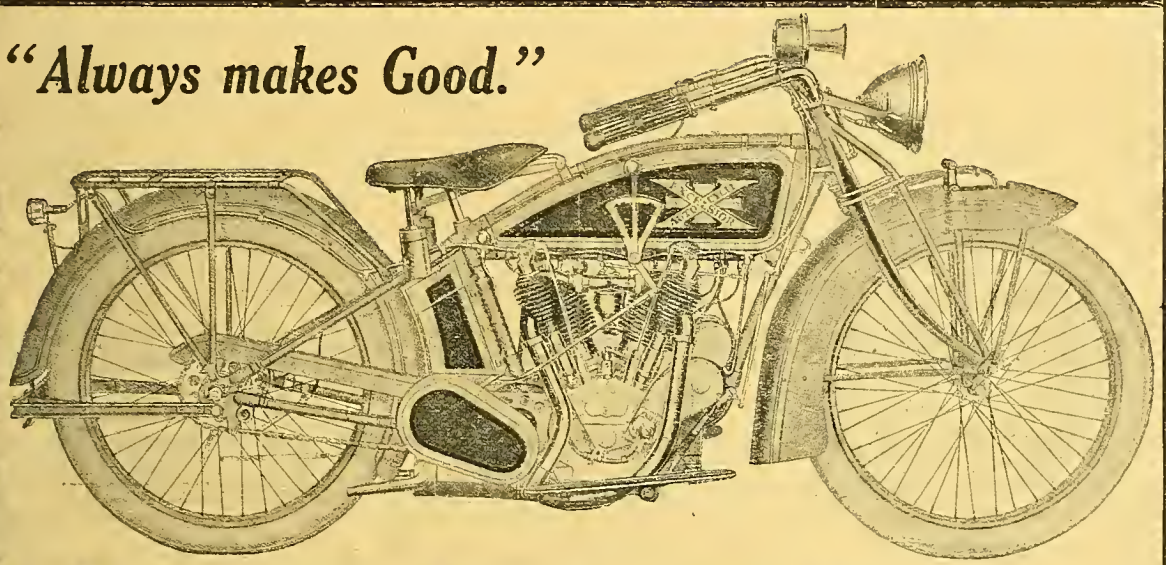


Showing the design of the Edmund springing system

The AMERICAN EXCELSIOR

America's Best Auto-Cycle

"Always makes Good."



You can have one to-day.

America's Greatest Motor Cycle—the American Excelsior—"The Good Old X" is here! You can buy to-day this highly-efficient product of the largest and best equipped motor cycle factory in the world — at an extremely low price. A high-powered machine designed for speed yet bristling with refinements, at a price which might reasonably be charged for a second-rate machine.

7 h.p., 3-speed countershaft gear, multiple disc clutch, chain drive, kick starter, mechanical lubrication,

£62 0.

EXCELSIOR MOTOR MFG. AUTO CYCLE SUPPLY COMPANY

ALWAYS MAKES GOOD

MODELE DE LUXE, as illustrated above, complete with Splitdorf combination lighting and ignition system, powerful head and tail lamps, electric horn, and speedometer,

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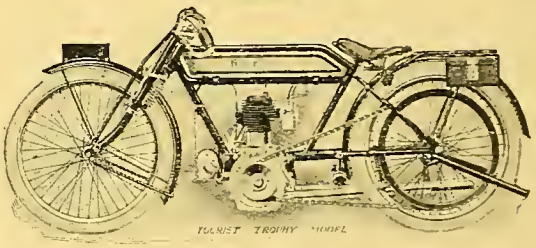
TWO SECONDS
ONE THIRD -

AT THE
'All Khaki'
Race Meeting at Brooklands, Aug. 7th



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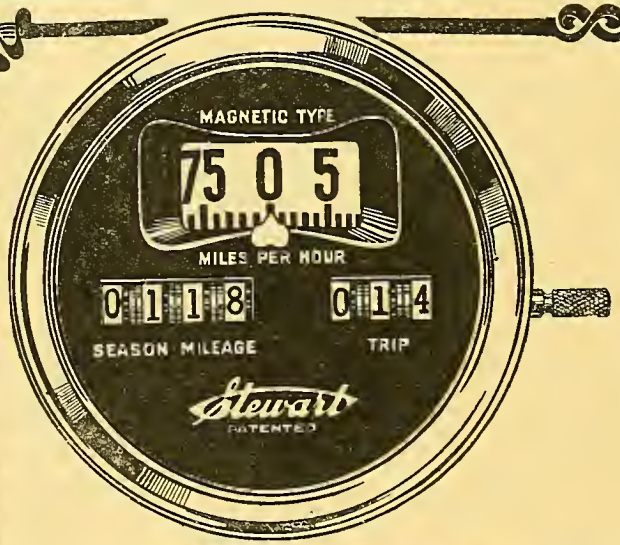

ADDS TO YOUR PLEASURE.

Quite apart from all considerations of safety—which alone warrant the purchase of a speedometer—a "Stewart" is a constant source of pleasure to the rider. He is kept informed of his speed, he can tell at a glance just how fast he is going—and when he arrives home he knows to a mile how far he has gone.

Model R. (illustrated) registers from Zero to 75 miles, season mileage to 10,000 and repeating, and 100 mile trip register. Heavily nickelled finish, and nickel flexible shaft complete, the most wonderful value in Motor Cycle Speedometers ever offered.

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The Cooper-Stewart Engineering Co, Ltd.
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Letters to the Editor

The Editor does not hold himself responsible for the opinions of his correspondents.
All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

The All-khaki Race Meeting.

Sir,—Will you kindly allow me a small space in your valuable paper to say how I appreciated the All-khaki meeting at Brooklands? It was one of the most enjoyable afternoons I have spent for a considerable time, and I sincerely hope another meeting will be got up on the same lines in the near future. I believe *The Motor Cycle* was mainly responsible for the success of the meeting. Wishing your paper every success,

FRANK COLLARD (Lance-Corporal).

The Sidecarrier for Understaffed Tradesmen.

Sir,—Seeing that you have published illustrations of tradesmen's sidecars, I am sending a photograph of the outfit we are now using. It is a 1914 4¼ h.p. chain-driven B.S.A., and is giving the greatest satisfaction. It can easily draw 2 cwt. The cost of running is much less than the cost of keeping a horse, although it runs many more miles than the latter could do. Its great advantage, however, is its speed, which is greatly appreciated by understaffed tradesmen. The box body, which was made by a local firm of coachbuilders, can quickly be removed, and a passenger sidecar fitted in its place.

B.S.A. sidecarrier employed by a butcher. See accompanying letter from S. J. Hawkins.

Hoping these few lines will be of some slight assistance to you in convincing the public of the utility of the motor cycle.

S. J. HAWKINS.

Oxford Roadways.

Sir,—Mr. Vulliamy speaks of Oxford thoroughfares apparently as a native. Speaking as a stranger, who has sometimes to travel from London to Gloucester by road, I should like to say that the really disgraceful state of the Oxford thoroughfares impresses such an one, if possible, almost more unfavourably. The public are indebted to Mr. Vulliamy for calling attention to this matter. Perhaps to some extent the state of affairs is due to the way the motor 'buses are driven rather than to the motor 'buses themselves. Some of the drivers seem to lack any consideration. I remember I was stopping for petrol somewhere to the west of Carfax when a motor 'bus came by at full tilt, splashing us plentifully with mud and absolutely ruining the white dress of a lady who was crossing the road. I have no sympathy with those who brand as a road hog every motorist that exceeds the speed limit, but this sort of behaviour is real thoroughfare "swinishness." L.M.M.J.

Automatic Carburetters.

Sir,—I read with great interest, in your issue of July 29th, Mr. J. Reed's experience with a Claudel-Hobson carburetter. I should like to know if Messrs. Claudel-Hobson are now supplying carburetters complete, and the price of same; also if Mr. Reed would be kind enough to give a description of the alterations to his engine and help another Triumph enthusiast to increase the m.p.h.

R. S. THOMSON, R.N.R.

Magneto Rear Lights.

Sir,—Seeing "Shazbazzik's" reply to "HE 118" *re* magneto rear lights, I thought I would have a go at making a coil according to instructions given. Having knocked the ends off a Kodak film spool, I bored a ⅜in. hole in each, and, having cut a number of lengths of soft iron wire 2¾in. long, pushed them through the holes, until the last few had to be driven in. The wire core and ends were insulated with tape, and then wound with 24 gauge enamelled wire, four layers ("Shazbazzik" does not say the size of wire, by the way), as directed. This was then connected up with the magneto and the engine started.

Alas! for the poor Osram lamp, which gave one or two brilliant flashes, and then was no more. Another layer of wire was put on, and another trial made with a new lamp, but, as the light given was still very brilliant, a further layer of wire was put on, and this seems sufficient. 3½ volt lamps, as used in the pocket lamps, were used.

I notice "Shazbazzik" says two 4 volt Osram lamps can be used in series. Does he think there is enough current given off to light what is really an 8 volt lamp without taking too much from the magneto and causing the engine to miss? H 1227.

Does an Engine Run Better at Dusk?

Sir,—In reference to the letter in your issue of July 22nd under the above heading from "G.P.G.K.," I have yet to be convinced that an engine does run better at night, but even if this is a fact, it cannot be due to either of the reasons advanced by your correspondent.

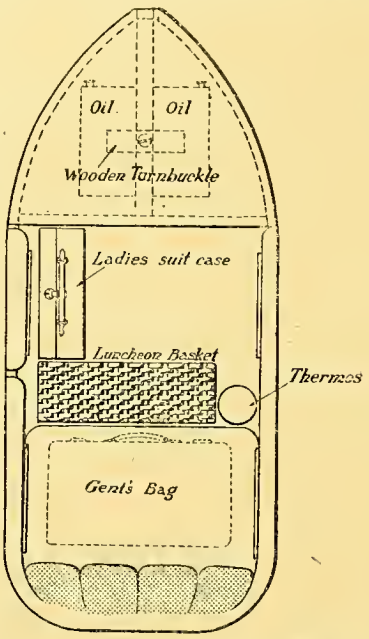
Carbonic acid gas (carbon dioxide) is neither inflammable, nor is it a supporter of combustion. It is one of the products of combustion, and its introduction into the cylinder of a motor cycle engine cannot be advantageous. It is further not a fact that plants, flowers, etc., at night give off a considerable quantity of this carbon dioxide. The green colouring matter of the leaves has the power in sunlight of decomposing this carbon dioxide, the carbon of which it assimilates releasing the oxygen into the atmosphere. If your correspondent is convinced his motor cycle *does* run better at night, he must look for other causes than those he mentions PERCY S. CLEWS.

Disposal of Luggage on a Sidecar.

Sir,—I thought perhaps a description of the way in which luggage for two sufficient for a ten days' tour is packed on my sidecar might be of interest.

The heavy luggage, comprising all things needed at the journey's end, is packed in a collapsible suitcase in a waterproof cover, and strapped firmly to the grid. It sometimes is undisturbed for several days. The things needed for a one night stop are disposed of thus: Gentleman's, in a soft leather bag, which fits in the rather shallow cupboard under the seat; lady's, in a soft canvas suitcase, which fits in edgewise after the passenger has taken her seat.

A sponge bag, with toilet articles and towel, is carried in the side-pocket in the door. Thus a refreshing wash can be indulged in by the side of any spring or stream (after a repair job, for instance) without disturbing the main packages. A canvas bag, with boots, shoes, and bathing suits, is packed in the toe of the sidecar under the mat, and over the locker for spare oil tins. I may say that I oil liberally, and prefer to stick to one well-known brand, not always procurable in remote parts, so I put two quart tins side by side, lying forward, with a partition between them to which a wooden turn buckle is screwed, holding both tins securely in position.



A luncheon basket lies on the mat under the passenger's knees, and a Thermos in a holster alongside completes the outfit.

Cigarettes, matches, etc., occupy the pockets opposite the door. The map pockets on either side the seat hold maps, a copy of the Michelin guide, eau de Cologne, electric flash lamp, newspapers, dusters, and a paint brush for cleaning the engine, etc.

On looking at the sketch one's reflection is bound to be, Where is the passenger going to be stowed away? But I can assure critics that, doubtless owing to the fact that the sidecar is large and the passenger small, there is a place for everything and comfortable room for the lady as well. Anyway 100 miles after lunch on a big twin outfit have no terrors and no after fatigue. When the bags are all out of the sidecar and the contents dispersed around a bedroom one would hardly credit in what a small compass they travel. The first time of packing needs some scheming, but after that it all comes easy enough. Y.T.O.

American Machines in South Africa.

Sir,—I noticed in *The Motor Cycle* of last mail a paragraph showing the falling off of motor imports into this country for 1915 compared with 1914. As you are aware, the European war is responsible for this. New British models are hardly obtainable here, and I know several motorists anxious to buy, but cannot get them even for spot cash. New models arriving are even "drawn for" by depositors who have been waiting months for them.

I have just returned from a holiday in Durban, where the agent of one of the leading English makes informed me that spares on order six months ago have never arrived, and that he could easily dispose of forty new models if he could only get them.

By the enclosed cutting from the leading daily paper here you will see what a big bid the Americans, especially the Indian, are making for this market. Their machines are well displayed in the shop windows with all sorts of spares and accessories, and are well advertised, too. Then again, compare the price of £50 for a 4 h.p. single-cylinder free engine model with that of the English equivalent at £72 10s., plus about 10% war charges.

Of course, we realise how busy the British factories are with war orders, but meanwhile our American competitors are not letting the grass grow under their feet.

Pretoria, S.A. C. H. DEIGHTON.

[The cutting referred to is of an advertisement of the Indian agents in the *Rand Daily Mail*. It states that 120 single-cylinder Indians were due to arrive on August 1st, and that they would be on show at all agents throughout the Transvaal, Orange Free State, Natal, and Bechuanaland simultaneously.—Ed.]

Electric Lighting on Motor Cycles.

Sir,—I have read with interest the article on the simplest form of electric lighting, by "H.W.H." (*The Motor Cycle*, July 22nd), and his kind appreciation of the Volex dry battery. As the producer of this battery, I have always claimed that, for the illumination of motor cycles, it is far preferable, more convenient and economical than accumulators or any other form of dry battery.

I should, however, like you to permit me to correct both Mr. Montgomery's statement and "H.W.H.'s" statement in your last issue with reference to the question of the current consumption increasing by adding the voltage. In the first place, if a bulb taking .3 ampère on two cells were connected to three cells, the current consumption of this bulb would be greater. "Ohm's Law," the basis of the theory of electricity, demonstrated that current equals voltage divided by the resistance, so that a little calculation will prove that the electromotive force increasing, and the resistance of bulb filament remaining the same, must result in an increased current consumption.

However, there is no occasion for controversy on this point, as the bulbs provided for use with a two-cell Volex battery would be 2½ to 3 volts at .25 ampère, and the bulbs provided for the three-cell Volex battery are 3½ to 4 volts at .25 ampère. The life of a two-cell battery and a three-cell battery, each cell of the same dimensions, under these conditions, would be exactly the same, but the light given with the three-cell Volex battery would be 50% greater.

There is one important conclusion in which Mr. Montgomery, "H.W.H.," and the writer are in agreement, and that is, if the right battery be used, this form of lighting compares favourably with other forms.

M. H. GOLDSTONE.

Exmoor Roads.

Sir,—Replying to the enquiry signed "EL 1969" in last week's issue, I have just returned from a tour which included Exmoor and North Devon, and am thus able to be of service to your correspondent.

The road from the main Porlock-to-Lynmouth Road to Oareford and Oare is quite impossible, and it is better to continue along the main road for somewhere about four miles from the top of Porlock Hill and take the direct road down to Oare from near County Gate. This is a steep descent, but the surface is all right.

For the Doone Valley it is much the best to leave the machine at Malmsmead (the "Lorna Doone Farm," there is excellent accommodation) and explore on foot—though there is little to see. Malmsmead is most picturesquely situated on the Bagworthy Water, which divides Somerset and Devon (hence the amusing difficulties of the party attacking the Doones referred to in the famous novel) about a mile from Oare, and midway between there and Brendon. On reaching Oare from Porlock the church should be visited, where Lorna Doone was married (and shot at by Carver Doone), and then a turn to the right down the valley taken to Malmsmead.

All the hills in these parts are fearfully steep, but with a low gear they are climbable. My mount was a Calthorpe-Jap 2½ h.p., gears 5½ to 1 and 10½ to 1. What is worse, the surfaces are often very rough and loose and stony, particularly up the new Porlock Hill near the top, and the main road, and from Malmsmead to Brendon. But the scenery is most gorgeous.

Wishing your correspondent good luck, and earnestly advising him to carry two spare covers,

H. CHALLEN SHARP.

[We have received other letters containing the same information, for which we thank our correspondents.—Ed.]

Motor Cyclist Volunteers.

Sir,—In your issue of July 29th, on page 117, there appears a very sensible and none too strongly worded criticism of the childishly futile Motor Cyclist Volunteer movement. On page 115 of the same issue half a page is devoted to a photograph and letterpress describing an outing by the Midland Branch of this organisation.

I have seen little of this movement myself—I only returned home from duty two weeks ago from the Front, where I have been since last September—but, if the report on page 115 is not written in jest, and may be taken as representative of the doings of this body as a whole, will you allow me to take my stand in your columns beside your correspondent "M.B.," and say to the hale healthy men who are playing at this childish travesty of war, "For God's sake give up this fooling now, and take a hand in the sterner game. If you can't or won't do that, at least give up your fooling just the same, for to those who have seen even a little of the great grim tragedy that is being enacted little over fifty miles from these shores, your doings seem like a child's burlesque of death."

A.G.M. (Captain A.S.C.)

Sir,—We note with surprise and disgust each week in your paper the publicity given to the events and outings of motor cycle volunteer corps, whose chief object is only for a national emergency.

Now the chances of an invasion are considered as comparatively remote, and one is struck when looking at the pictures of manœuvres, etc., with the fact that many of the members are young fellows who are of an eligible age for Active Service. It is a disgrace to the sport of motor cycling that these young fellows should be encouraged to join such organisations when they are so urgently needed at the Front. One can only conclude that, by joining these corps, they are silencing their consciences and ignoring their country's call by persuading themselves they are doing their duty.

If there is no room for them as military motor cyclists (and they have already had many chances of joining various motor sections for Active Service), let them do their duty, as so many other motor cyclists have chosen to do, by joining infantry regiments rather than stay at home waiting for an invasion.

This letter is not an attack on the principles of these motor cycle volunteer corps, but against those members who are eligible and fit for Active Service, and who are sheltering themselves under such organisations. The ranks ought only to be filled by those who are over age or have been rejected as medically unfit.

The writers would like it to be understood that, before leaving England, (1) they tried to enlist as military motor cyclists, but there were no vacancies; (2) ever since arrival here they have tried, unsuccessfully, to secure a transfer to some motor cycle corps for Active Service.

Pte. J. V. PARKER.
,, A. G. BUCK.
Burma. ,, R. DRINKALL.

British Magnetos.

Sir,—The question of the magneto supply is discussed very seriously by your readers, and as we all have some that are near and dear to us at the Front, we do not intend to buy any more German machines. "Ixion" is voicing the opinion of many readers when he suggests (page 99, issue of July 29th) that all the British magneto makers should combine. The Simms Co. are not novices at magnetos; why are they not more at the front nowadays? I have a Simms magneto, the parts of which are interchangeable with the Bosch machine.

Some few years ago you published figures showing that there were 13,000 magnetos needed for the motor cycle trade every year. I am sure there are more now.

ULSTER.

AT THE "ALL-KHAKI" MOTOR CYCLE RACE MEETING (Another meeting is to be held on Saturday, Sept 4th.)
Private W J. Reid, of the Royal Fusiliers, bringing his 7 h.p. Indian up the test hill in the unlimited hill-climb.

"THE MOTOR CYCLE" RECRUITING SECTION.

Latest recruits in the Motor Machine Gun Service.

UP to the end of last week 3,443 applications from motor cyclist recruits had been dealt with by the Editor.

We still receive a number of applications for transfers from men in the Territorials and new armies, though it has already been stated that transfers are now most difficult, if not impossible, to arrange.

The M.M.G.S. is the only branch of the service requiring motor cyclist recruits immediately.

Two Folkestone motor cyclists rode up to Coventry on their sidecar to attend last week's inspection, and, after being attested, at once proceeded home and reported at the training centre next day.

Among the car drivers attested last week was P. J. Cronie, who for three years had held the position of second chauffeur to H.I.H. the Grand Duke Michael of Russia.

A patriotic Britisher, Mr. A. E. Milson, of Geneva, Switzerland, wrote to us for particulars respecting joining the Army, and on receipt of them paid his own fare to Coventry, and was at once accepted for the Motor Machine Gun Service, having had eight years experience with motor cycles and light cars.

It is a remarkable thing that many youngsters under nineteen years of age are desperately anxious to join the M.M.G.S., and very often falsify their ages so that they may attend the inspection. As several have had to be rejected on account of misrepresentation of age and the fact that their measurements are not up to standard, we think it well to throw out a warning to other youths not to repeat this. The minimum age is 19.

The Excelsior School for training cyclists in the mechanism and handling of a sidecar machine promises to render most useful work. The instructors are Messrs. W. H. Carson and E. Milton, and every day the six recruits with which the scheme has started receive instruction in the works and are then taken on the road. The Editor of *The Motor Cycle* lectured to them last week, with sectional models kindly loaned by the Triumph Cycle Co., Bayliss, Thomas and Co., and C. H. Pugh, Ltd. Expert cyclists of good physique desiring to join the M.M.G.S. *via* the training school should apply at once to Mr. Geoffrey Smith, Inspecting Officer, R.E., 19, Hertford Street, Coventry.

About sixty candidates for the M.M.G.S. had notified their intention of attending the inspection at the Coventry Recruiting Office yesterday (Wednesday). Married men should always attend with their marriage lines and children's birth certificates.

More Motor Cyclists Wanted.

There are still immediate vacancies for experienced motor cyclists in the Motor Machine Gun Service. Pay 1s. 2½d. per day, all found, enlistment for duration of war. Ages 19 to 38. Candidates who fill up the form in our last issue and post it to Mr. Smith will, provided they state that they are ready to enlist at once, receive a free railway warrant to attend an inspection of recruits on Wednesday, the 25th inst., at the Recruiting Office, Masonic Hall, Coventry, 2.30 to 4.30 p.m.

Last Week's List of Recruits in the M.M.G.S.

Atkins, E. (Coventry).
Abbott, S. W. (Cardiff).
Adams, H. G. (Coventry).
Bailey, F. (Newport Pagnell).
Bedford, A. W. (Lee, S.E.)
Blashy, C. W. (Norwich).
Bonfield, J. (Newport Pagnell).
Boreham, A. P. (High Wycombe).
Brown, H. (Lancaster).
Connell, C. (Aberford).
Cronie, P. J. (Boxmoor).
Cross, S. R. P. (Wallington).
Curd, A. P. (West Dulwich).
Daniels, S. H.
Elms, F. (Dorking).
Evans, P. J. (Blackheath, S.E.)
Fox, J. E. (Leeds).
Gardiner, A. C. (Palmer's Green).
Griffith, G. S. (Oundle).
Hamilton, C. A. (Liverpool).
Higgins, E. (Coventry).
Hillhouse, R. (Denny, N.B.)
Howarth, L. (Bamford).
Hughes, J. (Dudley).
Jones, D. T. A. (Ebbw Vale).
Johnson, F. S. (Long Buckby).
Lewis, A. A.
Lodge, H. (Lancaster).
Mackintosh, R. (East Dulwich).
Mills, H. H. (Therston).
Milson, A. E. (Geneva).
Monks, H. (Wigan).
Nichols, H. H. (Knighton).
Nicholls, P. G. (Brockley).
Norrington, W. (Folkestone).
Norrington, E. (Folkestone).
Orchard, I. B. (Kettering).
Pattinson, G. E. (Durham).
Palmer, A. (Crook).
Piper, G. L. (London).
Rait, C. B. (London).
Richards, W.
Scott, E. R. (Newland).
Stevenson, H. (Dorking).
Tanner, T. B. (Tirphil).
Went, T. C. (London).
Williams, E. P. (Llanishen).
Williams, V. (Llanwrtyd Wells).

Vacancies for Car Drivers and Mechanics.

A limited number of vacancies exists for car drivers of at least three years' experience, and fully qualified mechanics who have held similar positions in motor cycle factories or leading garages. The pay is 6s. per day. Applications in each case should be made to Mr. Geoffrey Smith, Editor of *The Motor Cycle*, enclosing two references from employers.

Despatch Riders, R.E.

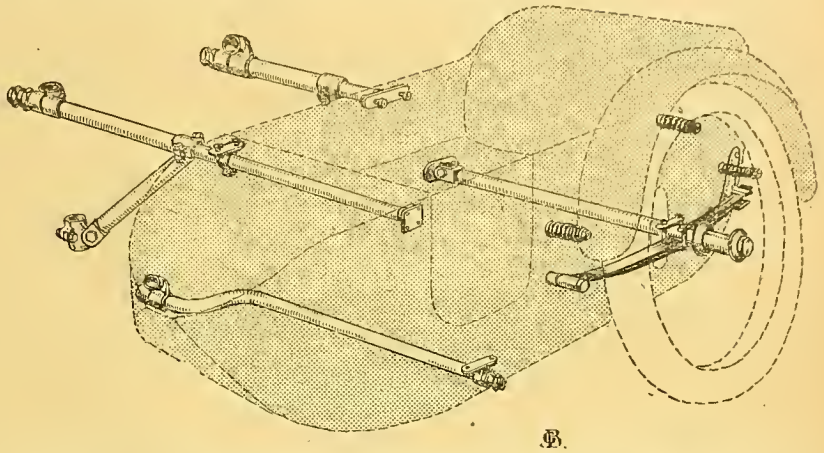
A number of motor cyclists were passed for the waiting list of despatch riders in the Royal Engineers last week. It is, however, impossible to state when the men will be called up, in view of the number of names on the list.

The Latest Bramble Sidecar for Spring Frames.

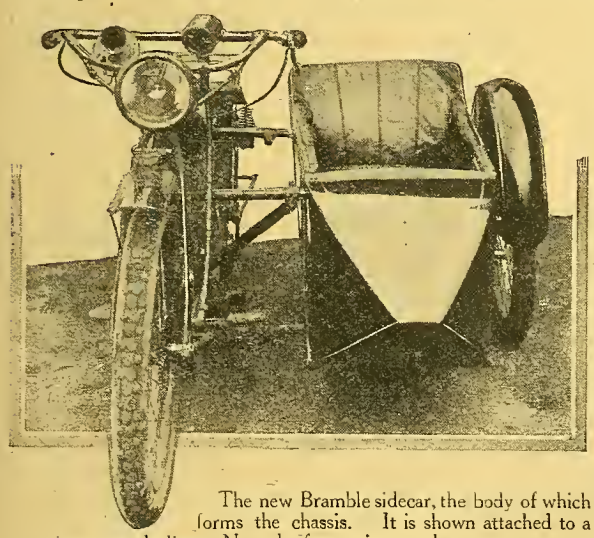
An Ingenious Departure in Sidecar Design.

READERS who own motor cycles fitted with spring frames will no doubt be interested in the latest Bramble sidecar, which is specially designed in order to obtain to the maximum degree the advantages of a spring frame. In general appearance it resembles the ordinary Bramble model with the enclosed chassis, but in this particular model the body actually takes the place of the chassis. This has several advantages, the chief being the gaining of a very low riding position and the saving of a certain amount of weight.

In the sidecars that have been used with spring frames up to the present, although they have allowed for the springing of the bicycle frame, the benefits have been considerably minimised by the fact that the sidecar chassis has been rigid, thus imparting road shocks. In the case of the Bramble the body is attached to the bicycle frame in such a manner that it forms one unit with it. The axle passes through a recess in the body under the seat, and is hinged at the far end where it is attached to the body. The body is supported on the axle by a half elliptic spring. It will be seen that the only unsprung parts of the whole combination are the three wheels and the sidecar axle, which should reduce the strain on the bicycle to a minimum. Further, the least possible amount of unsprung weight is always an advantage.



Skeleton view of new Bramble sidecar specially designed for machines with spring frames. The sketch shows how the connections are attached to the body itself, which is specially strengthened, there being no frame.



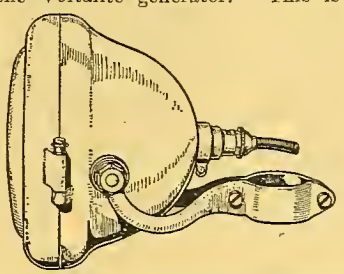
The new Bramble sidecar, the body of which forms the chassis. It is shown attached to a spring-frame Indian. Note the four-point attachment.

The body, of course, is specially strengthened in order to withstand the extra strain thrown upon it. The two main connections pass right through the body, and are attached by means of plates bolted to it, while the fitting attached under the saddle is simply bolted to the strengthened side. The attachment to the bicycle is at four points—two on the down tube, one under the engine cradle, and one under the saddle. The clips are quickly detachable, and it should only be a matter of a few minutes to attach or detach the sidecar.

The whole outfit has a very pleasing appearance. It would seem as though the mudguard problem has been solved in this design, as, instead of being supported on an unsprung chassis at the end of long stays, it is securely bolted to the body, where it is, of course, sprung as in car practice. We have not yet had an opportunity of trying this sidecar, but we are inclined to the opinion that, although the driver's comfort must be greatly increased by the extra springing, the passenger may miss the luxury of the springing afforded by the usual long C springs—of which there is no equal in comfort even in the car world.

ELECTRIC LIGHTING BY MAGNETO GENERATOR.

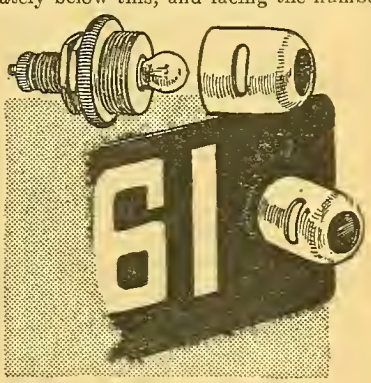
AMONG the many interesting electrical accessories sold by Messrs. Ward and Goldstone, of Springfield Lane, Salford, Manchester, is the Voltalite generator. This is an electric lighting installation which consists of a small magneto generator attached to the forks of the motor cycle. The drive is obtained from the front, or, if preferred, the rear wheels, by means of a small rubber-tyred wheel pressing on the rim. This, combined with the Superba head lamp, should make an ideal lighting set for the man who uses his machine much at night.



The Superba lamp supplied with Voltalite outfit.

THE UNIQUE REAR LAMP.

THE small sketch here reproduced is that of the Unique rear lamp, which is a neat, well-made little device for attaching to the existing number plate. The lamp consists mainly of a cone-shaped cap or cover, at the end of which there is a tiny red glass. Immediately below this, and facing the number, is a narrow slot, allowing the white light from the miniature screw bulb inside to be reflected on to the number plate. To fix it it is only necessary to drill a half-inch round hole in the top right-hand corner of the number-plate, and fix on the lamp with the nuts provided. The retail price is 3s. without the bulb, and it is sold by Brown Bros., of Great Eastern Street, E.C.

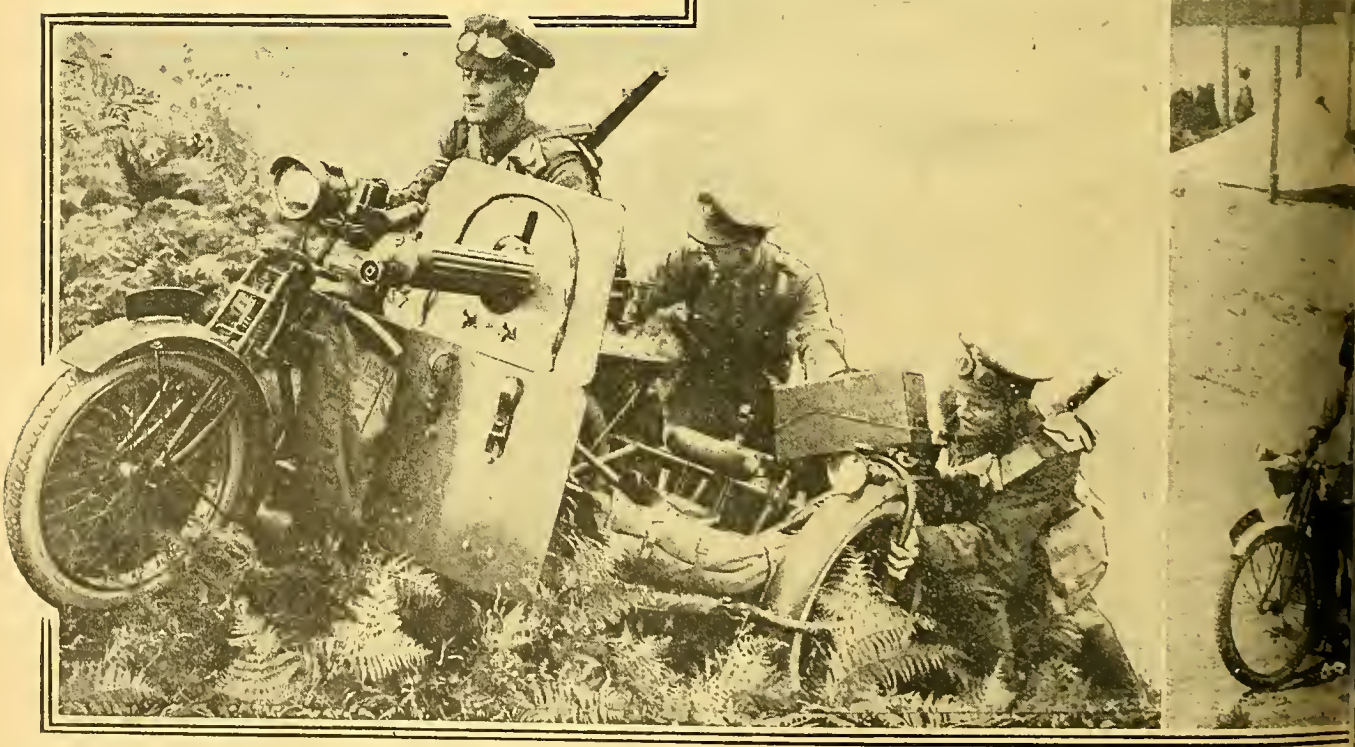


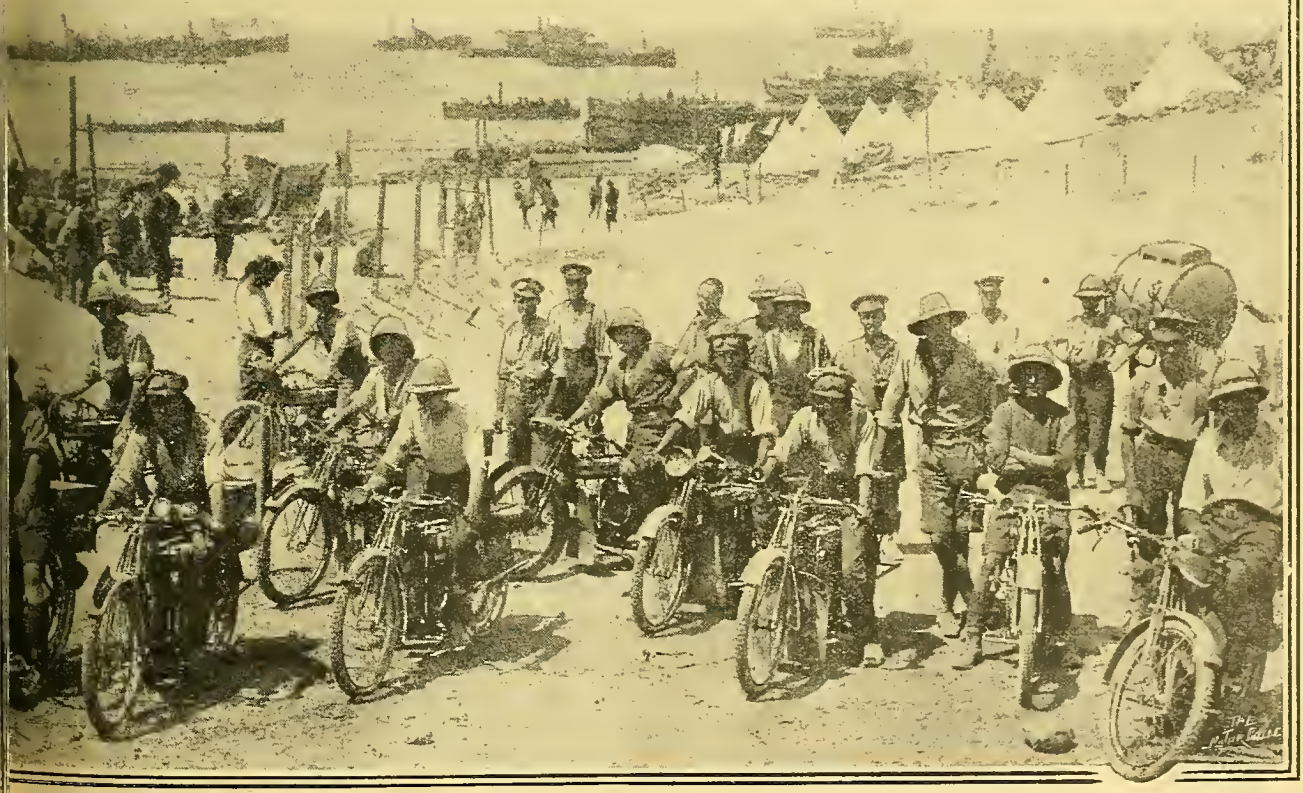
The Unique tail lamp.

With Gun and Despatch.

THE military motor cyclist again looms largely in the present issue, the important part he is playing in the great European conflict demanding such attention. The upper illustration shows the latest Motor Machine Gun Battery to leave for the Front—The No. 16, commanded by Major Thackwell, the section commanders being Lieut. Carew, Lieut. Conduit, and Lieut. Joske, who are mounted on 4 h.p. Triumphs. It may be observed that the number of cars in each battery has lately been reduced, the C.O. now having the use of a standard pleasure type sidecar outfit. Inset is a Clyno machine gun outfit traversing a rough track.

The lower picture is an official illustration of the Dardanelles operations, showing despatch riders attached to the Royal Engineers after landing on the sandy shores of the Gallipoli Peninsula. It will be noticed that "shorts" and shirt sleeves are the standard equipment in those sunny parts!





CURRENT CHAT

TIMES TO LIGHT LAMPS.

Aug. 19th	... ...	8.16 p.m.
,, 21st	... ...	8.11 ,,
,, 23rd	... ...	8.7 ,,
,, 25th	... ...	8.3 ,,

Munitions First.

Practically all the largest motor cycle and car manufactories have already been or will be taken over this week by the Government. The manufacturers do not resent the Government's action, believing in munitions first.

No Shortage of Petrol.

15,438,600 gallons of petrol were imported into this country last month. This is a big increase over the June figures, the amount then being 12,662,635 gallons. It is also more than was imported twelve months ago, the figures for July, 1914, being 14,497,722 gallons.

A Case for Police Action.

A correspondent, Mr. W. H. Stallard, calls our attention to a glaring instance of a road hog whom he encountered to his hurt on the Newport-Wellington (Salop) Road. When travelling in the middle of the road he met three men in a cart coming in the opposite direction. The cart was on the wrong side of the road, but when the motor cyclist was within thirty yards the driver suddenly pulled right across the road, forcing Mr. Stallard into the kerb, so buckling the front wheel and throwing him on to his head. These men, we are told, were seen passing up and down the road several times. In a case of this kind it is advisable to communicate with the police without delay.

Appointment of Leading Competition Rider.

Mr. B. Alan Hill has lately joined the editorial staff of *The Motor Cycle*. It is perhaps due to him and to ourselves to state that in September last Mr. Hill joined the British Red Cross, and was serving in France as driver on the 4th Motor Ambulance Convoy until last February, when he was invalided home, and subsequently received his discharge. It may be remembered that, previous to the war, he was a successful competition rider on Rudge and Indian machines, and competed regularly in the Scottish Six Days Trials, having figured in all but one of those trying events. On each occasion he gained a gold medal, and, as a matter of fact, has been singularly successful in long distance competition work, having won a gold medal in each six days trial in which he has ridden—English or Scottish—eight in all. Alan Hill has also taken part in most of the London-Edinburgh and all the London-Exeter runs, and has on two occasions ridden in the Tourist Trophy Race.

From Gallipoli!

"We are all feeling the monotony here very much, and *The Motor Cycle* is very welcome when it comes along. I hope we go to England when we finish here, as I should like to sample some of your roads."—Extract from letter from Gunner D. Gibb, of the New Zealand field artillery, now serving on the Gallipoli Peninsula.

Latest Road Reports.

KENT. LONDON-BROMLEY-SEVENOAKS-TONBRIDGE. The surface of this road is now very poor, being full of undulations rather than pot-holes. The Tunbridge-Hastings road is a little better. Hawkhurst-Maidstone-Wrotham-Sidcup-Lewisham-London. This road on the whole is in pretty good condition considering the nature of the traffic to which it has been subjected during the last twelve months, and forms a good route to the South Coast (Hastings, etc.).

Practically all roads in Winchester are in a bad state. Winchester to Southampton, bad in parts; Winchester to Basingstoke, fairly good; Winchester to Romsey, bad; Winchester to Alton, fairly good (about to be tarred); Winchester to Andover, fair; Winchester to Newbury, fair; Winchester to Portsmouth, not bad; Winchester to Stockbridge, fair; Winchester to Petersfield, fair.

SPECIAL FEATURES.

CUR OVERSEA TRADE.
MILITARY MOTOR CYCLE MATTERS.
THE SPORTING SIDE OF MOTOR CYCLING.

A Tip for Rigid Footboards.

A correspondent tells us that fou or five pieces of rubber gas tubin bound together and fastened to th footboard form an excellent insulatin cushion, which very considerably lesser the footboard vibration, and increase the comfort of the machine.

The War Funds.

Last Monday's totals of some of th principal war funds read as follow:

The Times Fund for Sick and Wounded	£1,622,19
The Queen's Work for Women Fund	163,71
Indian Soldiers' Fund ...	146,20

Motor Cyclists in the National Register.

No doubt a great many motor cyclist mentioned their favourite hobby whe filling in the National Register las Sunday. Thousands of young men hav acquired practical skill whilst moto cycling which should be of inestimabl service to the State, but the form an instructions were not made clear on thi point. Further, a good deal of waste energy would no doubt have been save had a question such as "Are yo physically sound and fit?" been asked. I will mean many enquiries to ascertai whether men of recruitable age are suffer ing from some disability or bodily defect

The lady's new model 2¾ h.p. Excelsior passenger outfit. Driven by Mrs. W. H. Carson, this machine has already "made good" by making a top gear climb of Stoneleigh Hill with passenger, and also by climbing Saintsbury—a well-known Cotswold gradient, with a grade of about 1 in 6½. The gear ratios are 5¾ and 11½ to 1. There should be a good field for a lady's special sidecar outfit, as the increase in the ranks of lady solo riders is now equally noticeable among those favouring passenger machines.

Midland Motor Cyclists' Volunteers.

The M.M.C.V. Corps held a recruiting parade on Saturday when it was successful in obtaining recruits for both the Regulars and itself. On Sunday members of the Corps spent the day field-sketching at Rowington.

Natives of Uganda like Motor Cycles.

Motor cycles are popular with the chiefs of Uganda, and at Kampala there are about twenty natives who ride them. The majority of the machines are Triumphs, both four and two-stroke models being in evidence.

United Services Brooklands Race Meeting.

As was expected from the great success attending the "all khaki" meeting at Brooklands on August 7th, the venture is to be repeated, and the second meeting will be held on Saturday, September 4th. A list of events and other details will be found elsewhere in this issue.

Average Prices.

We give below the average prices for the various second-hand models offered for sale in *The Motor Cycle*. We quote those models of which at least five weekly averages have appeared during the past two months. Where it is possible to obtain a sufficient number of each model, we also give the average for the past week.

Make.	Year.	H.P.	Last week's average.	Average for past 8 weeks.
A.J.S.	1914	6 3 sp. sidecar	£72	£72
,,	1913	6 3 sp. sidecar	—	£53
,,	1914	2¾ 3-speed	£42	£43
Ariel	1914	3½ 3-speed	—	£42
,,	1914	3½ 3-sp. sidecar	—	£53
,,	1914	6 3-sp. sidecar	£63	£58
Bat	1914	8 3 sp. sidecar	£55	£56
,,	1913	8 2-sp. sidecar	—	£52
Bradbury	1914	6 3-sp. sidecar	£75	£63
,,	1914	4 3-sp. sidecar	—	£41
B.S.A.	1914	4 3-speed	—	£46
,,	1914	4 3-sp. sidecar	£60	£57
Calthorpe	1914	2 2-speed	£18	£19
Chater-Lea	1914	8 3-sp. sidecar	£68	£68
,,	1913	8 3-sp. sidecar	—	£52
Clyno	1914	6 3-sp. sidecar	£73	£68
,,	1914	2½ 2-speed	—	£30
,,	1913	6 3-sp. sidecar	£55	£55
Douglas	1914	2¾ kick start	£42	£44
,,	1913	2¾ 2-speed T.T.	—	£35
,,	1914	4 2-sp. sidecar	£59	£50
Enfield	1914	6 2-sp. sidecar	—	£64
,,	1914	3 2-speed	£38	£42
Humber	1913	3½ 3-sp. sidecar	£38	£41
Indian	1914	7 2-sp. sidecar	£58	£63
James	1914	4½ 3-sp. sidecar	—	£54
Lea-Francis	1913	3½ 2-speed	£47	£48
Levis	1914	2½ 2-speed	—	£29
Matchless	1914	7 3-sp. sidecar	—	£71
,,	1913	7 3-sp. sidecar	—	£51
Norton	1914	4 3-speed	—	£50
New Hudson	1914	6 3-sp. sidecar	—	£57
,,	1914	4 3-sp. sidecar	—	£51
N.U.T.	1914	6 3-sp. sidecar	—	£60
Premier	1914	3½ 3-sp. sidecar	—	£52
P. & M.	1913	3½ 2-sp. sidecar	—	£49
,,	1914	3½ 2-sp. sidecar	—	£59
Rex	1914	6 3-sp. sidecar	—	£58
,,	1913	6 3-sp. sidecar	—	£43
Rover	1914	3½ 3-speed	—	£46
,,	1914	3½ 3-sp. sidecar	—	£53
,,	1913	3½ 3-sp. sidecar	£38	£43
Royal Ruby	1914	3½ 2-speed	—	£44
Rudge	1914	3½ multi sidecar	—	£50
,,	1914	3½ multi	—	£34
,,	1913	3½ multi	£33	£34
Scott	1914	3½ 2-sp. sidecar	—	£60
,,	1914	3½ 2-speed	—	£47
,,	1913	3½ 2-sp. sidecar	£54	£46
Sunbeam	1914	6 3-sp. sidecar	—	£76
,,	1914	3½ 3-speed	—	£57
Triumph	1914	4 3-sp. sidecar	£55	£56
,,	1914	4 3-speed	£40	£45
,,	1913	3½ 3-sp. sidecar	£46	£46
,,	1913	3½ free engine	£35	£36
Williamson	1914	8 2-sp. sidecar	£85	£70
Zenith	1914	6 Gradua sidecar	£68	£52
,,	1913	6 Gradua sidecar	—	£47
,,	1913	3½ Gradua sidecar	£36	£35

"The Weekly Blue Bit of Light"

Is the title given to *The Motor Cycle* by one of our Dutch readers. He refers to its lighting effect among the dull collection of daily war literature.

Clamouring for British Motor Cycles.

A Pretorian reader tells us that British-made motor cycles are practically unobtainable in South Africa at the moment, and he knows several motor cyclists in his district anxious to buy, but cannot get them even for spot cash. The new models on arrival are drawn for by depositors who have been waiting months for them. A Durban dealer told our informant that he could easily dispose of forty new models if he could only get hold of them.

The Motor Cycle Trade.

The July Board of Trade returns show a big drop in the imports of motor cycles over the previous month's figures, but this drop is balanced by the big increase in the June figures over those for May, which we called attention to in our issue of July 15th. The exports have dropped back again after the partial recovery recorded in the previous returns. Following are the actual figures:

IMPORTS.

July, 1915.—495 motor cycles, value £24,442 (including parts and tyres not imported with complete machines, £37,827).

June, 1915.—822 motor cycles, value £34,990 (including parts and tyres not imported with complete machines, £65,671).

July, 1914.—172 motor cycles.

EXPORTS.

July, 1915.—881 motor cycles, value £39,924 (including parts and tyres not exported with complete machines, £64,601).

June, 1915.—1,020 motor cycles, value £45,128 (including parts and tyres not exported with complete machines, £68,162).

July, 1914.—2,089 motor cycles.

The Accident to the Irish Mail.

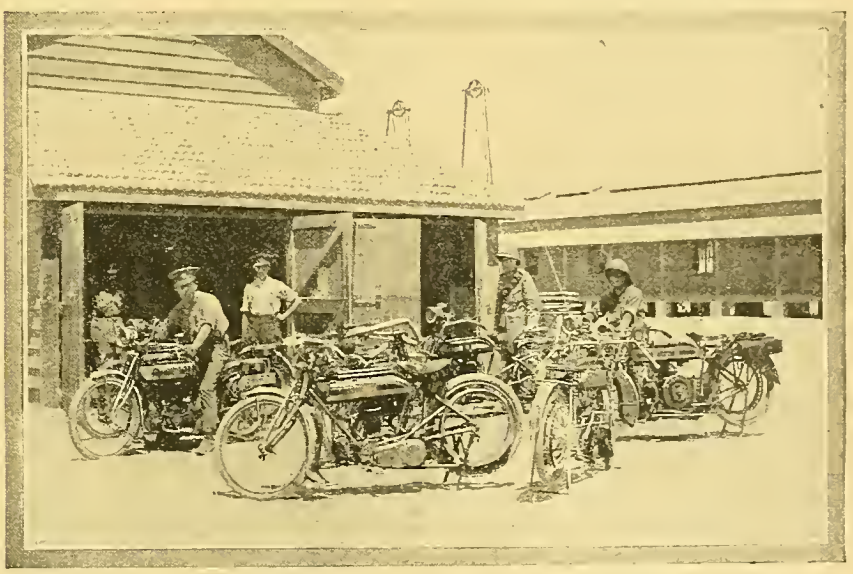
Hundreds of motor cyclists and motorists at the week-end visited the scene of Saturday's accident to the Irish mail train on the L. and N.W. line near Weedon. The overturned carriages could plainly be seen from the old Roman road known as Watling Street from the hill a mile on the London side of Weedon, a village between Daventry and Towcester. The last carriage was hauled on the line on Sunday afternoon, about 4.30, and a severe thunderstorm shortly afterwards burst over the scene.

New Lighting Regulations.

New regulations were issued last week to the effect that in the London area lamps on all vehicles are in future to be lighted half an hour after sunset (instead of an hour as hitherto), and to remain lighted until half an hour before sunrise (instead of an hour as hitherto). It is presumed that these regulations are the results of the dimmed lights, but at any time it is a good idea, and we hope to see it permanently adopted throughout the country. There is no doubt that the most dangerous time on the road is the hour after sunset, due to the fact that so many road users leave the lighting of lamps until the very last moment.

Presentations to a Well-known Irish Rider.

Mr. J. F. A. Day, who has for some time past acted as assistant hon. secretary of the Dublin and District Motor Cycle Club, is shortly about to leave Ireland to take up his residence in California, and the members of the club took advantage of the occasion to express their appreciation of his services to the club by entertaining him to dinner and making him a presentation of a gold watch. A presentation was also made to Mr. Day on behalf of the Sun Cycle and Fittings Co., whose machine he has ridden with considerable success in the competitions of the club. The hill-climbing competition that was to have been held at Ballinaslaughter Hill did not take place.



Some despatch riders' machines with the Mediterranean Expeditionary Force. Douglases, Triumphs, and B.S.A.'s will be recognised; the machine on the right is a Swiss Moser.

ANOTHER UNITED SERVICES RACE MEETING.

At Brooklands on Saturday, September 4th. List of Events.

THE "United Services" is the more comprehensive title adopted for the next Brooklands race meeting, which is open to any member of the British Army, Navy, or Allied Forces (in uniform). A good programme has been outlined, and the meeting generally will be conducted on the lines which ensured such a success for the "All-khaki" gathering on August 7th. The sprint races will on September 4th be held on the finishing straight, which is now being put into thorough order.

List of Events.

No. 1.—TWO-STROKE HALF-MILE SPRINT, for motor cycles fitted with two-stroke engines of a capacity not exceeding 270 c.c.

No. 2.—LIGHTWEIGHT HALF-MILE SPRINT, engine limit 350 c.c.

No. 3.—MEDIUM-WEIGHT HALF-MILE SPRINT, touring machines, engine limit 550 c.c.

No. 4.—MEDIUM-WEIGHT HALF-MILE SPRINT, racing machines, engine limit 550 c.c.

No. 5.—QUICK-CHANGE PLUG RACE.

No 6.—UNLIMITED HALF-MILE SPRINT, engine limit 1,000 c.c.

No. 7.—SIDECAR HALF-MILE SPRINT, engine limit 1,000 c.c.

No. 8.—LIGHT CAR HALF-MILE SPRINT, for cycle cars and light cars not exceeding 1,100 c.c.

No. 9.—SERPENTINE FAST RACE, for solo machines of any type

No. 10.—JUNIOR HILL-CLIMB, engine limit 350 c.c.

No. 11.—MEDIUM-WEIGHT HILL-CLIMB, engine limit 550 c.c.

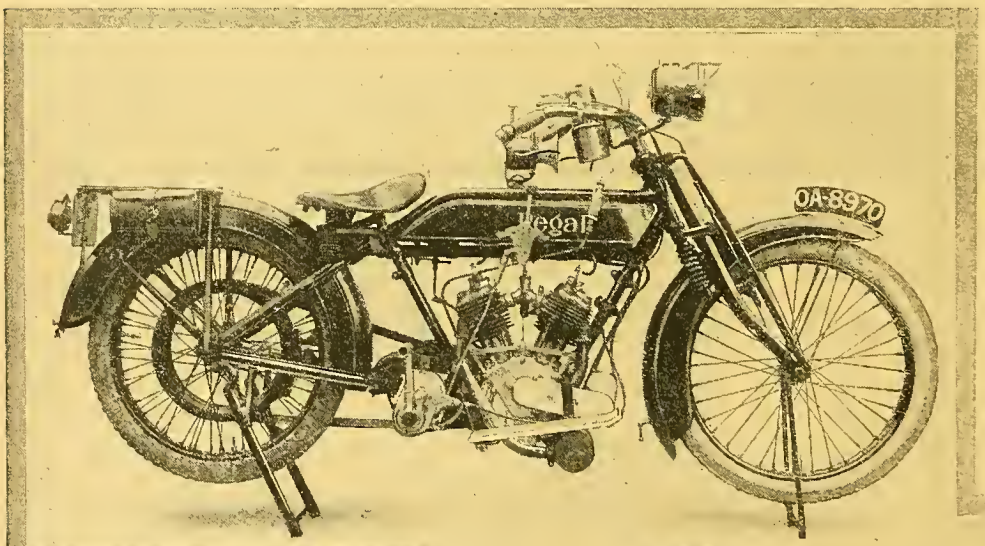
No. 12.—UNLIMITED HILL-CLIMB, engine limit 1,000 c.c.

The sprint races will be held on the "finishing straight" with standing starts.

As in the case of the first meeting, *The Motor Cycle* will present a silver cup for the best aggregate performance of a competitor on any one machine. First and second prizes will also be awarded according to the number of entries received.

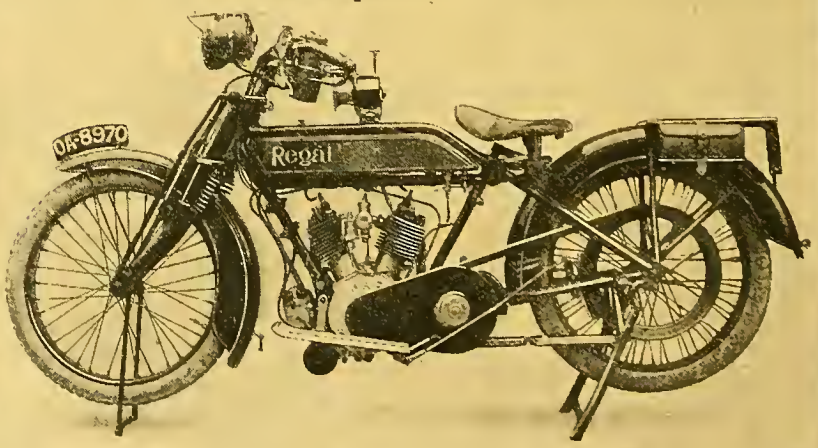
Entries close on Saturday, August 28th. They should be addressed to Mr. T. W. Loughborough, of the Auto Cycle Union, Pall Mall, S.W. Mr. Loughborough and Lieut. F. M. C. Houghton (whose letter in *The Motor Cycle* originated the All-khaki meeting) are the joint hon. secretaries. The entry fee for each event is 2s. 6d. Admission to the track is 1s., but members of the home clubs and competitors will be admitted free of charge.

Motorists from Derby to Leek, on the Ashbourne Road, should be careful not to leave their vehicles unattended whilst calling at restaurants or hotels. For a breach of the regulations a correspondent was recently fined 10s., or seven days' imprisonment, and was ordered to pay a witness's expenses.



A FOUR-SPEED TWIN-CYLINDER MOUNT.

A striking Regal which is fitted with a twin-cylinder J.A.P. engine and a four-speed Jardine gear. Drive is by chain to the countershaft gear box and thence by belt. It is a neat looking machine and well adapted for solo or sidecar work. The belt pulleys of this new model, it will be noticed, are of almost equal size.



Mr. LIONEL S. W. ROOK, of Erdington, writes:—

"Now a word about the gear. I am more than satisfied with it. Last week I and a passenger (about 20 stone in all) made a non-stop run from here to Ledbury, which means, as you know, some stiff pulling over the Malverns. Twice going up the Wyche I was baulked and nearly stopped, but the pulley answered perfectly, and you can guess how very pleased I was. In fact, to sum up, I have tested it in every conceivable way, and it has always acquitted itself wonderfully, and I must congratulate you on your ingenuity in producing such a novel gear. Rest assured I shall recommend it wherever possible."

Read what "The Motor Cycle" says:—

"We were afforded an excellent demonstration of the action of the gear on a 3½ h.p. Triumph. Not only was free engine obtainable, but on the very lowest gear, when the belt was quite slack, there was no sign of slip, and in this position it was impossible to prevent the motor cycle from moving off easily by any attempt to hold it back."

Mr. H. W. PHILLIPS, of Blackheath, London, writes:—

"I am pleased to inform you this is a very satisfactory gear and works splendidly."

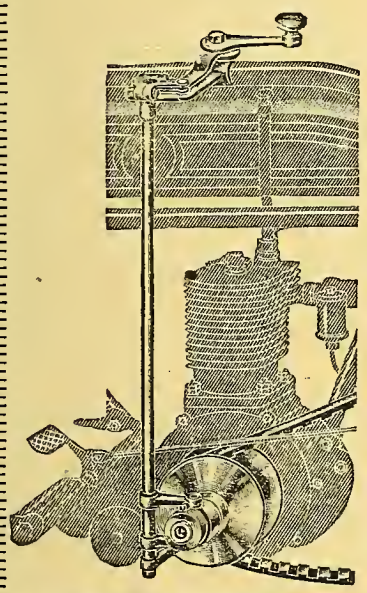
Mr. H. THOMPSON, of Hurley, Atherstone, writes:—

"The Grado Multi-Pulley that was fitted to my bike a little while ago is very good, and I am satisfied with it. It certainly does all that one requires. I am 15 stone, and I often take a 10-stone passenger, and can get up all hills although my machine is only a 3½ Blumfield. In traffic one can travel as slow as desired. For starting it is quite all right, and one can guess I feel the benefit, being a heavy man. The old method of pushing was hard work. I shall have pleasure in recommending your pulley at any time."

Read these letters from riders who have proved the value of

The GRADO Multi-Gear.

The Simple Variable Pulley arrangement for Belt-driven Machines.



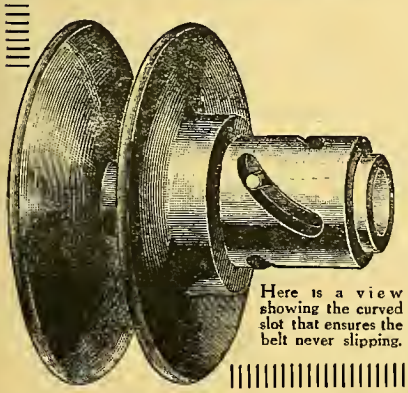
The GRADO GEAR as fitted to machine.

The Grado Gear is most simple in construction—there is nothing to get out of order, and it can be fitted to a standard belt-driven machine in 2 to 3 hours. Why not write for our Catalogue TO-DAY?

PRICES.

Pulley complete (as illustrated), bored to suit engine shaft up to 4½ h.p.	**£3 3 0**
Up to 6 h.p.	**£3 10 0**
Lightweights	**£2 10 0**

We can supply a Special Pulley for engine with Extending Crank Bosses, like the J.A.P., Old Rex, Minerva, etc., for 10/- extra. Recess up to 1¾in. diameter; up to 2¼in. diameter, if necessary, 12/- extra.



Here is a view showing the curved slot that ensures the belt never slipping.

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Telephone - 1187 Mid.

An Outstanding Victory.

WINNING the Irish End to End Trial in the face of the keenest competition from big twin machines of double its h.p. is the latest achievement of the 4¼ h.p. B.S.A. Motor Bicycle. The first place in the flexibility test (solo) also fell to the B.S.A. while the B.S.A. with Sidecar was the only combination of so small h.p. to complete the course. It is interesting to note that five B.S.A's started and all five machines finished. The awards given below are further convincing evidence that it is quite unnecessary to employ an expensive, heavy high-powered machine for solo or sidecar work.

PALMER TROPHY	Won by Mr. R. Jones.
GOLD MEDAL	Won by Mr. R. Jones.
GOLD MEDAL	Won by Mr. T. Toole.
GOLD MEDAL	Won by Mr. F. L. Dooley.
SILVER MEDAL	Won by Mr. W. J. Chambers.
SILVER MEDAL	Won by Mr. T. J. Woods.

Another B.S.A. Success.

CORK and District M.C.C. ONE DAY TRIAL.

GOLD MEDAL	Won by Mr. F. L. Dooley.
GOLD MEDAL	Won by Mr. E. W. Whitaker.
BRONZE MEDAL	Won by Lance-Corpl. Thompson.

TWO of the three machines WINNING THE TEAM PRIZE WERE B.S.A's.

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Hill-climbing and Racing in South Africa.

MOTOR cyclists in South Africa, or, to be more correct, those S.A. motor cyclists not fighting in the great war, continue to hold occasional trials which, although naturally not so well supported as in the pre-war days, help to keep those who remain at home enthusiastic, and so prevent club affairs from becoming moribund. These remarks apply also to motor cycling in New Zealand and Australia, and, with home competitions practically suspended, the doings of our Colonial friends are of more than usual interest.

The Cape Province, S.A., in particular, appears to contain many very keen riders, and this week we are enabled to publish details of three trials held by clubs in that State. On July 11th, the Eastern Province M.C.C. whose headquarters are at Port Elizabeth, held a twenty miles road race which resulted in some good sport.

As a result of recent heavy rain, the road (from Uitenhage to Green Bushes *via* Fitch's) was in a shocking state, and there were one or two falls. Some of the competitors were in a state of exhaustion at the end of the twenty miles over such bad roads. Results:

SCENES IN THE EASTERN PROVINCE (S.A.) M.C.C. ROAD RACE.

(Top) 3½ h.p. Alldays and sidecar, driven by H. Braybrooke, at speed.

(Middle) Some of the competitors at the starting point.

(Bottom) Dennis (2¾ h.p Douglas), winner of the solo class.

SOLO CLASS.

1, Dennis (2¾ h.p. Douglas), actual time 33m.; handicap, 8m.

2, Paton (3½ h.p. Rudge), actual time 36m.; handicap, 4m.

3, Scrimgeour (5 h.p. Indian), actual time 38m.; handicap, 6m.

SIDECAR CLASS.

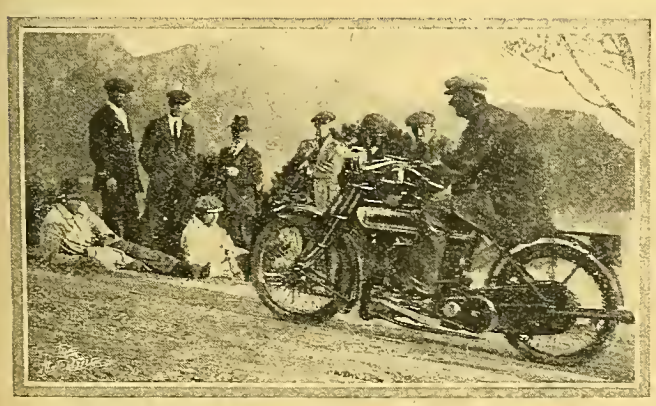
1, S. Nevay (5 h.p. New Hudson), actual time 41m.; scratch.

2, H. Braybrooke (3½ h.p. Alldays), actual time 44.; handicap, 2m.

3, A. Burton (4 h.p. Triumph), actual time 53m.; handicap, 8m.

Further down the coast the East London M.C.C., continuing its activities, held a hill-climb last month at Kwelegha. There were sixteen competitors, and the hill contained three cross gulleys, which do not altogether assist one in making good time. Results:

1, F. Kurts (3½ h.p. Rover).
2, G. Cock (3½ h.p. Rover).
3, H. Feller (3½ h.p. Rover).
4, F. Miles (3½ h.p. Triumph).



J Wyllie (A.J.S.), winner of the Cape Peninsula M.C.C. flexibility test.

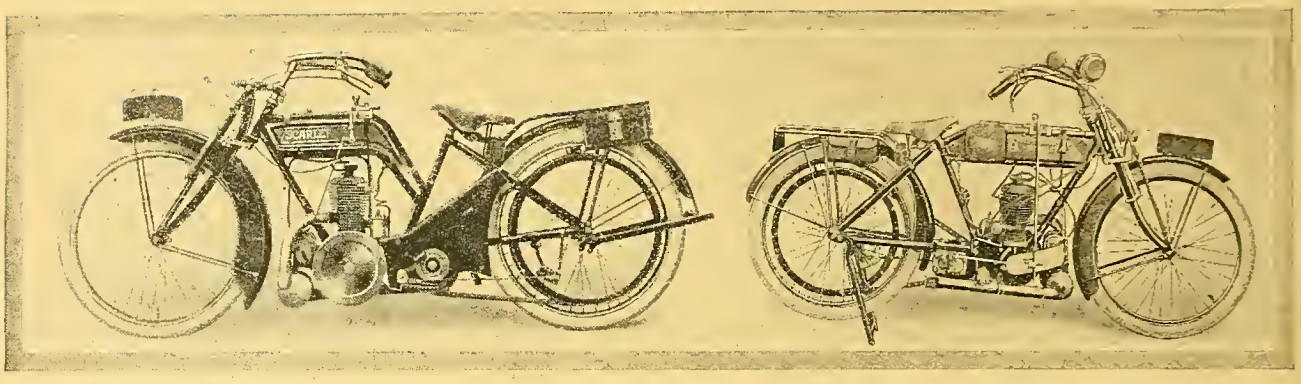
A Flexibility Hill-climb.

The Cape Club recently held a flexibility hill-climb for novices. A slow and fast climb, each about half a mile in length, was the order of the day, with one class for solo riders and one for sidecarists. The same gear was to be used in both attempts, while braking or clutch slipping or touching the ground entailed disqualifications.

The course was badly cut up—S.A. is in the very heart of winter now—but this did not prevent over a dozen riders turning up. Results:

SOLO CLASS.—Winner: J. Wyllie (A.J.S.), variation in time 1m. 59⅗s.

SIDECAR CLASS.—Winner: E. Binns (Premier), variation 1m. 51⅗s.



The 2½ h.p. two-stroke Scarlet—the lady's model on the left. The engine is a 269 c.c. Metro, and both models can be supplied with or without a two-speed countershaft gear. The illustrations are of the two-speed models.

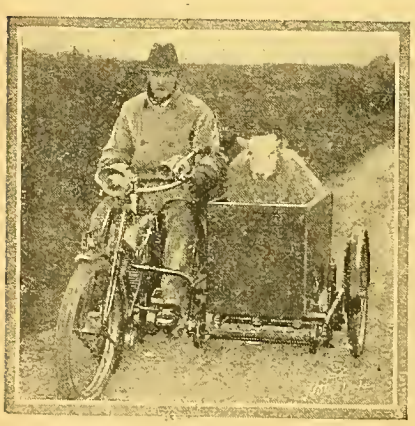
THE SCARLET TWO-STROKE

A NEAT newcomer to the ranks of lightweights is the Scarlet, manufactured by Messrs. Scarlett and Hodkin, of Plymouth Grove West, Manchester. The Scarlet is made in three models—single-speed, two-speed, and ladies' model. The engine is the same in all three, viz., a two-stroke Metro, 70×70 mm., giving a cubic capacity of 269 c.c. It is fitted with an outside flywheel, E.I.C. waterproof magneto, and a Senspray carburetter.

In the case of the two-speed model a countershaft gear box is fitted, with combined chain and belt drive. The lady's model is identical with the ordinary model, only with the exception of the top tube, which in the former case is dropped sufficiently to give freedom for the rider's skirt. The machines are enamelled in scarlet, while the tank is of a rather darker shade of red with black lining.

A DETACHABLE SIDE-CARRIER.

THE accompanying illustration shows a rider on his 3½ h.p. two-speed motor cycle and sidecarrier, in which he took a sheep fifteen miles to a patriotic sale. How the woolly passenger enjoyed the drive is not recorded, but he has successfully put on the motorist's straight-ahead stare, and appears to be looking forward to the journey. The sidecarrier, which is built of three-ply wood and one-inch flooring, is provided with a lid, which is not shown in the illustration. It only cost £1, and fits with thumb-screws to the same chassis as the owner's sidecar body. The passenger body can be removed and the sidecarrier put on in about two minutes. The owner says he has taken sheep, calves, hens, paling posts, a push bicycle, furniture, and even a cooking range in the sidecarrier.

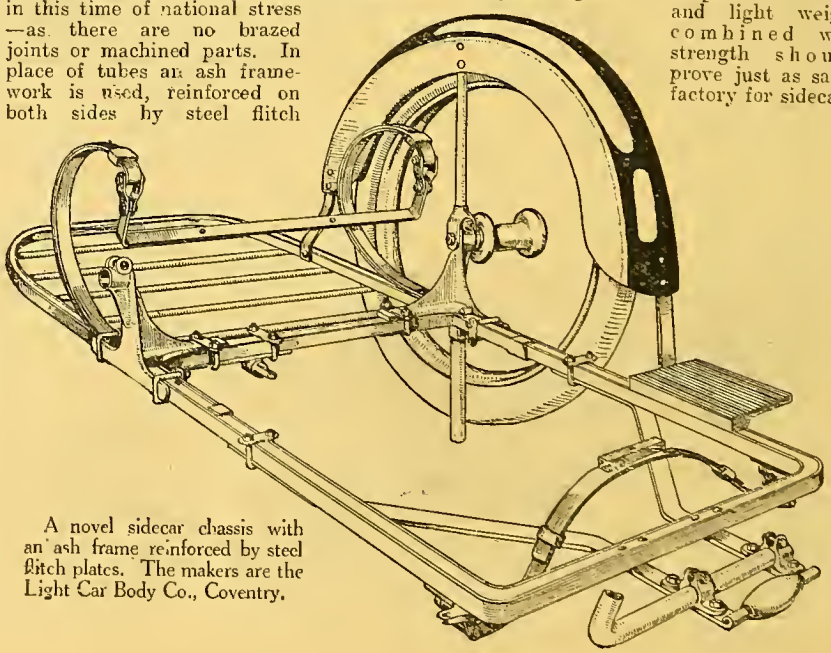


An unusual sidecar passenger.

A NOVEL SIDECAR CHASSIS.

A NEW type of sidecar chassis has been manufactured by Messrs. the Light Car Body Co., of Coventry, the feature of which is the ash frame. One of the points where this chassis scores over the orthodox type is that it can be successfully manufactured without highly skilled labour—an important point in this time of national stress—as there are no brazed joints or machined parts. In place of tubes an ash framework is used, reinforced on both sides by steel flitch plates, which are riveted together. The frame consists of an oval main member that carries the wheel axle and the diagonal saddle support. The spindle and the rear chain stay lug are held by two substantial forgings attached to the chassis by means of bolts and also by clips. These at the same time secure the C springs. The body is supported at the front on a transverse spring. The main front connection is attached to the chassis at four points, thus ensuring rigidity, while the support is taken from the centre. In order to give a finished appearance, a small roller is fitted, which also, in the unlikely event of a connection breaking, would prevent the front of the chassis from digging into the ground and stopping the machine suddenly.

We are informed that the weight is about the same, or, if anything, less than that of the tubular type, strength for strength. We understand it has been thoroughly tested, and has proved most satisfactory, there being no whip. It will be remembered that this type of chassis was used with success on cars a few years ago. Its simple construction and light weight combined with strength should prove just as satisfactory for sidecars.



A novel sidecar chassis with an ash frame reinforced by steel flitch plates. The makers are the Light Car Body Co., Coventry.

This is Second Lieutenant Barnard and his

3½ h.p. Sunbeam.

He is holding the Cup presented him for scoring the most wins at the All-khaki Meeting at Brooklands, on August 7th.

His Sunbeam made both the slowest time of the day and the fastest on the test hill.

"The Motor Cycle" Photo.

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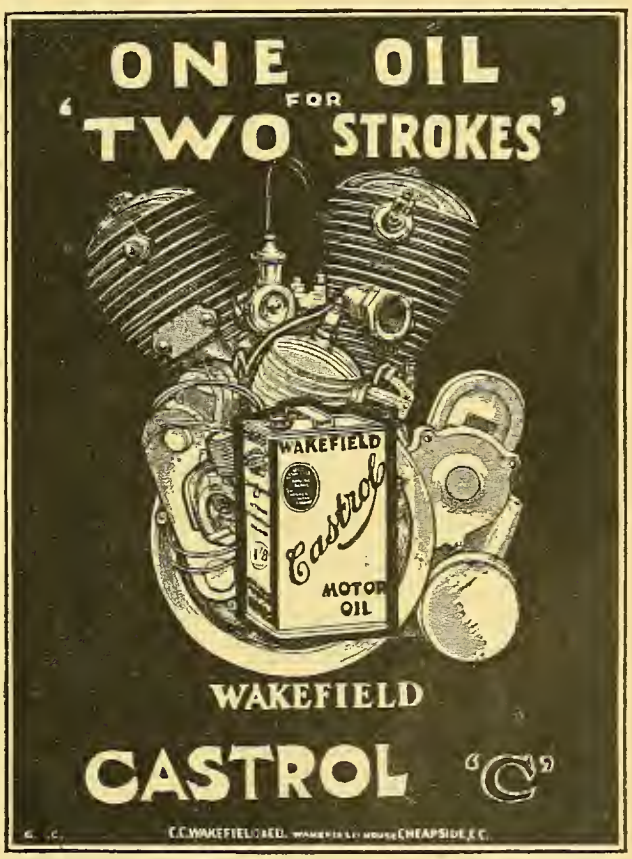

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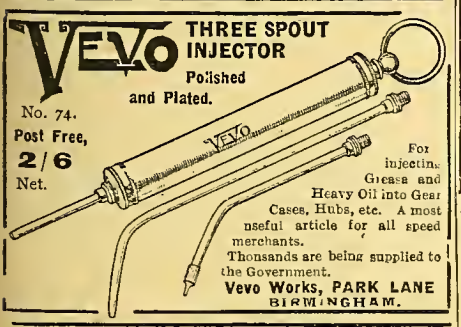

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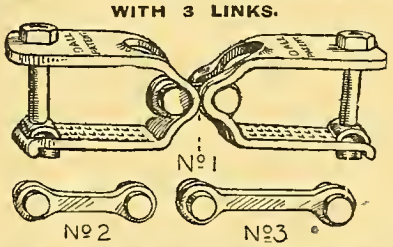

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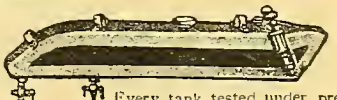

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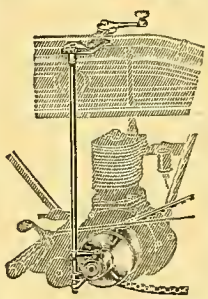

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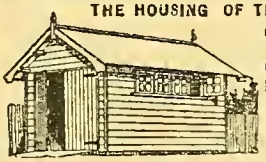

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A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

A Leaky Cylinder Head.

I have a 1913 model 2¾ h.p. four-stroke motor cycle with a detachable cylinder head. Will you please let me know the remedy to stop the leakage of lubricating oil from this point?—S.N.P.

The joints of the cylinder head should be clean and true, and a copper and asbestos washer fitted. If one is not enough, try two. See that the holding-down bolts are screwed tightly and evenly, so that the strain on each is equal.

Two-stroke v. Four-stroke.

I have heard that the J.A.P. engine is a four-stroke. If so, is this better than a two-stroke? What is the meaning of the term?—NOVICE.

You are quite right, the J.A.P. engine is a four-stroke. Briefly, the difference is this. A four-stroke engine has an explosion every four strokes, *i.e.*, two complete revolutions of the flywheel, while a two-stroke has an explosion every revolution of the flywheel. The four-stroke is more flexible and better understood than the two-stroke, but the latter has fewer working parts, and develops considerable power at low speeds.

No Compression in Front Cylinder.

I should be glad if you would put my mind at rest. I have a 2¾ h.p. Douglas, and I never seem to have a good compression in the front cylinder. It sounds as if the compression escapes into the crank case. I cannot pull the engine over the compression in the back cylinder, but can do so easily on the front. I have just fitted new piston rings with but very little improvement. Is this because the back cylinder gets more oil than the front? I cannot find any signs of a crack anywhere, and the machine takes me up any hill without trouble, but will not pick up speed on the level on opening the throttle.—A.M.

We have had considerable experience with the machine mentioned in your letter, and have never suffered from a similar trouble. The engine never seemed to have very much compression, but it pulled well despite this. Probably matters will improve when the new piston rings have become run in. Try fitting a smaller jet. We take it for granted that you have made sure that there is no leakage past the valve seatings.

Shaft-driven Motor Cycles for the War Office.

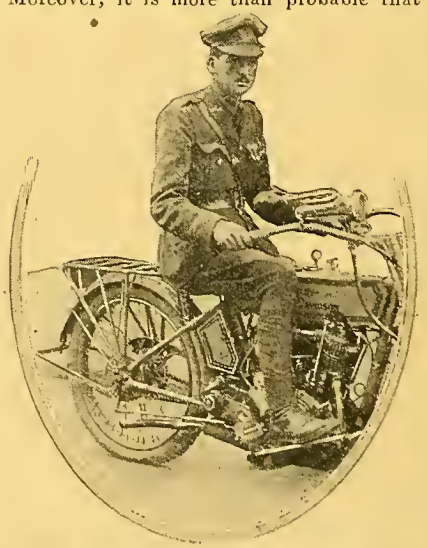
Has the Triumph Cycle Co. made for the War Office a machine which is shaft-driven all through?—CLYNO (Active Service).

To the best of our knowledge no shaft-driven motor cycle has been made for the War Office either by the Triumph Cycle Co. or any other firm.

Increasing the Speed.

I am the owner of a 1909 3½ h.p. machine which is capable of doing 55 m.p.h. with ease. I call this exceedingly fast, considering everything on it is absolutely standard, including a 32 jet. I am anxious to see what this machine can do. (1.) How should I proceed to time it for speed? (2.) Can I run with only one piston ring? (3.) What difference will this make?—W.C.H.

(1.) You could fit a large jet and arrange for more air, and possibly advance the magneto slightly. (2.) A single piston ring will diminish friction slightly. (3.) You might reach a speed of 58 or 60. We are, however, of the opinion that you will be most unwise to upset the present settings of such a first-class machine, except as an experiment, more especially since complete satisfaction is obtained. Moreover, it is more than probable that the results obtained from any alterations or additions to the machine would result in dissatisfaction in general riding. A speed of fifty-five miles per hour for a machine of this date is, we think, exceptionally good.



Lieut. Bicknell, of the 2/5th Gloucesters, on his 7-9 h.p. Harley-Davidson.

Adjustments for Touring.

My machine is a 3½ h.p., 1911, two-speed gear, with a light sidecar attached, and I shall be glad if you will say: (1.) How to time the engine to get the best results. (2.) What size jet should be used. (3.) Best magneto timing. (4.) Carburetter adjustment. (5.) How to obtain easy starting. (6.) Would a long exhaust pipe flattened at end, without exhaust box, comply with present exhaust regulations, pipe to extend just beyond back wheel? I want to obtain the best results for touring. (7.) How far down the cylinder should piston have travelled before exhaust valve opens?—G.H.

(1.) The most satisfactory timing for ordinary riding is as follows: Piston on dead centre (top), exhaust valve just closed. Inlet valve to open immediately after exhaust has closed. If the valves are set in this manner the closing of the inlet and opening of the exhaust will come automatically correct. This timing will be found best for ordinary touring conditions, but it is, of course, possible to obtain better results for speed with special timing, which can only be found by experiment on each individual engine. (2.) Standard Triumph jets about 30 and 32 will be found most suitable. (3.) Piston on dead centre (top firing stroke), contact breaker two-thirds advanced. (4.) Standard setting, viz., 32 jet, petrol level rising to within $\frac{1}{32}$in. from jet orifice. (5.) To obtain easy starting and good running make sure all parts are clean and adjusted correctly, *i.e.*, valves ground in, cylinder and piston free from deposit, valve springs in good order, carburetter adjusted as in No. 4, contact breaker clean (points separating not more than $\frac{1}{32}$in.), plug points clean and not too far apart (about $\frac{1}{32}$in. to $\frac{1}{16}$in.); compression must be good. (6.) No; a flattened exhaust pipe does not comply with the law, which insists on an expansion chamber or silencer being inserted between the engine and the outlet pipe. (7.) The exhaust valve should commence to open when the piston is about half an inch from bottom of stroke.

Tappet Adjustment.

Q. Will you please advise me on the following: My 3½ h.p. (single-speed) has recently been overhauled by the makers. When starting it clicks (it is not a knock), the sound seems to come from the tappets. When speed is gained the sound stops, but on slowing down it comes on again. I have tried all nuts, but have not had the timing case off. I might add I use plenty of lubricating oil.—AB 2175.

A. The noise you are troubled with is in all probability caused by the clearance between the tappets being too great. When the engine is worn the clearance should be about the thickness of a visiting card. Also see that there is plenty of oil in the timing gear.

Benzole for Two-strokes.

Q. I have a 1915 2½ h.p. single-speed two-stroke, geared about 5¾ to 1. I should be glad if you would be good enough to inform me on the following points: (1.) Do you consider benzole a suitable fuel? Is there any truth in the statement that it causes the engine to run hot? (2.) What would you say my petrol (or benzole) consumption ought to work out at per gallon? At present I do not think I am getting more than 65 m.p.g., and I always drive on full air. (3.) At a steady speed of, say, 17 or 18 m.p.h., would you say that an oil (drip) feed of rather more than one drip per second was excessive?—P.C.H.

A. (1.) Benzole can be used quite satisfactorily. In two-strokes you will not find it run hotter than petrol, provided you get the air supply to the carburetter correctly adjusted for it. (2.) There would not be a great difference in the consumption, though it is probable that you would do a greater distance on benzole. Your consumption at present is rather high. You would probably do better with a slightly smaller jet. You will require a smaller jet for benzole than for petrol. (3.) The quantity of oil you mention should be about correct. Provided blue smoke does not issue continually from the exhaust you are not over-lubricating.

Repairing a Tube.

Q. Just recently I experienced great trouble in trying to put a patch on an inner tube. I did everything possible, but could not get the patch to stick. I also took it to a garage, and the people there were beaten just the same. I then purchased a new tube, rode home, and discovered a small puncture. I tried to mend it, and had exactly the same trouble—could not get the patch to stick until it had stood all night. Can you explain the reason? I consider it is the nature of the tube. Can you suggest any method whereby I could patch a tube quickly, as a puncture on the roadside should not take many minutes to mend?—C.T.

A. The usual reasons for a patch not sticking are: Tube not clean and slightly roughed, patch old or dirty, solution not good. With a Patch Quick outfit or some similar outfit, you should have no difficulty in making the patch stick if you follow the following directions: Thoroughly clean tube with petrol, then rough it slightly with sandpaper, apply solution to tube and patch (not thickly), and allow it practically to dry, then if patch is applied and pressed into position with thumb and fingers you will find it will adhere. Be careful not to touch the solution with the fingers after it has been applied.

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"A.B." (Bury).—Sociable sidecars of various makes. Comfort, wear on tyres, skidding, name of makers and price.

"A.H." (Coventry).—Grado multi-pulley. Is it severe on belts, and does the belt slip on the lowest gears?

"T.K." (Bath).—3¾ h.p. water-cooled Scott and sidecar. Hill-climbing, ease of starting, reliability, and general efficiency.

ROUTES.

PORTSMOUTH TO PLYMOUTH.—H.J.W.

Portsmouth, ferry to Gosport, Southampton, Totton, Cadnam, Ringwood, Wimborne, Bere Regis, Dorchester, Bridport, Lyme Regis, Colyford, Exeter, Chudleigh, Ashburton, Ivybridge, Plymouth. Approximately 160 miles.

FOREST HILL (LONDON) TO SWANSEA.—C.H.P.

Forest Hill, Dulwich Common, Christchurch Road, Clapham Common, Battersea, Upper Richmond Road, Twickenham, Staines, Ascot, Wokingham, Reading, Newbury, Hungerford, Marlborough, Beckhampton, Calne, Chippenham, Acton Turville, Chipping Sodbury, Iron Acton, Pilning, train to Severn Tunnel Junction (this passage is quite easy, the service is good, and the charges are reasonable), Newport, Cardiff, Bridgend, Aberavon, Neath, Swansea.

NEWPORT TO BLACKPOOL.—E.I.

Newport, Pontypool, Abergavenny, Hereford, Leominster, Ludlow, Craven Arms, Church Stretton, Shrewsbury, Wem, Whitchurch, Tarporley, Warrington, Wigan, Preston, Lytham, to Blackpool; approximately 190 miles. To avoid the manufacturing towns of Warrington and Wigan, follow road signposted by the R.A.C. beginning on the outskirts of Warrington and continuing through Rainhill, Prescot, Rainford, Ormskirk, Rufford, to Preston.

KIDDERMINSTER TO INVERNESS; also distance.—J.M.M

Bridgnorth, Wellington, Crudgington, Hodnet, Whitchurch, Tarporley, Eaton, Stretton, Warrington, Newton-in-Makerfield, Brighton, Wigan, Preston, Garstang, Lancaster, Carnforth, Kendal, Shap, Penrith, Carlisle, Gretna Green, Ecclefechan, Lockerbie, Beattock, Crawford, Abington, Lanark, Carluke, Newmains, Airdrie, Denny, Stirling, Perth, Dunkeld, Pitlochry, Blair-Atholl, Dalnaspidal, Dalwhinnie, Kingussie, Aviemore Station, Carrbridge, Freeburn Inn, Daviot, to Inverness. Approximate distance, 450 miles.

TWO-STROKE MACHINES IN THE R.N.A.S.

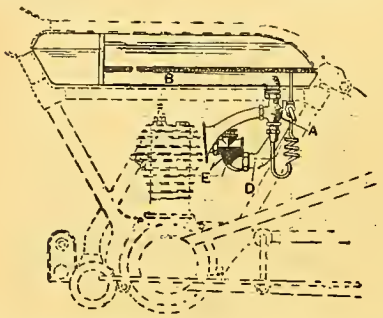
An imposing group of thirty Scott motor bicycles, with a background of R.N.A.S. lorries, photographed somewhere in the Near East.

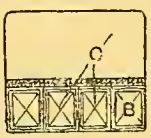
PATENTS

BY ERIC W WALFORD.

An Interesting Vaporising System.

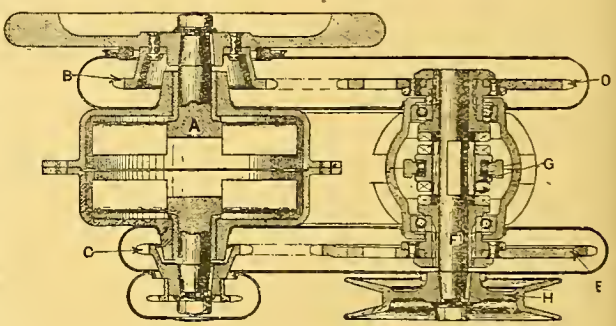
In the specification it is pointed out that the air passing to the engine can only absorb a certain proportion of petrol, and that, consequently, any excess of petrol supplied passes through the engine uselessly. To overcome this and obtain a saving of fuel it is proposed to supply petrol from the tank to a carburetting chamber A, which, instead of being in direct communication with the inlet pipe, leads to a series of conduits B arranged in the lower part of the tank. The small sectional illustration shows four conduits. These lie longitudinally along the tank, and are connected at their ends so as to form a long tortuous passage. The interior of the passage is lined with some absorbent material such as Turkey towelling, the material being formed into a tube or stocking and held in a partly distended condition against the sides of the conduits by X-shaped strips C which fit the corners of the conduits. The end of the conduit remote from the entry of the carburetted air communicates, by means of a pipe D, with a chamber E containing a throttle and an extra air valve, from which the mixture passes to the engine. It is stated that by passing the carburetted air through the lined conduits any excess of petrol is absorbed, so that the ingoing charge is of such a nature that it is completely consumed and no waste occurs.—E. R. Godward, No. 12,930, 1914.





An Engine and Gear Unit.

With the engine is combined a countershaft which can be driven at either of two speed ratios. Revolving with the crankshaft A are two chain sprockets B C of different dimensions, transmitting their motion by chains to corresponding chain wheels D E mounted upon sleeves revoluble upon the countershaft F. Either of these sleeves may be clutched to the countershaft by the sliding dog clutch member G, thereby transmitting the motion, according to the ratios of the particular sprockets engaged, to the belt pulley H.—F. A. Kimberley and the James Cycle Co., Ltd., No. 26,424, 1913.



An Attractive Show Card.

The makers of the Abingdon King Dick machine have issued a well-designed showcard. A picture of a King Dick sidecar outfit is the prominent figure.

Grease and Oil Injectors.

Messrs. Arthur R. Price, Vevo Works, Park Lane, Birmingham, inform us that thousands of their three-spout grease and oil injectors have been ordered for war purposes by the Government.

Abingdons in London.

We are informed that Messrs. G. H. Smith and Co., 12, Mortimer Street, W., are agents for the Abingdon motor cycles and sidecars, which can be seen at this address.

Changes of Address.

The new address of the New Ryder Motor Cycle Co., Ltd., is 76, Belmont Row, Birmingham.

The business of the H.S.M. cycle car will in future be handled entirely by the manufacturers, the H.S.M. Manufacturing Co., from 97, Besson Street, New Cross, S.E.

War Effects on Trade.

While speaking generally the motor cycle trade is in a flourishing condition, there are instances in which the war has caused the downfall of certain firms, especially those in a small way of business. A typical example is the case of a man we know, whose accessory business has practically dwindled to nothing as a direct result of the war. He is a trained engineer, and altogether a thoroughly good man, with a good knowledge of the trade, so he should have little difficulty in finding a berth where his services would be appreciated. Any firm needing such a man will be put into communication with him on application to the Editor.

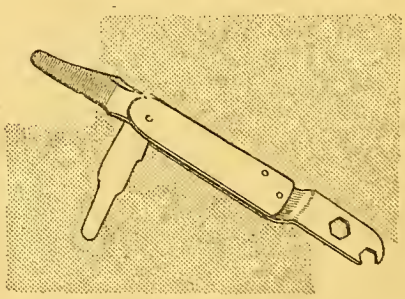
SPARKLETS

The H.D. in 1916.

Mr. Victor Welsford returned from the U.S.A. last week, and we understand that he will shortly be issuing details of the Harley-Davidson programme for 1916, which at this early stage is fully arranged.

Catalogue Received.

Alldays motor cycles. This catalogue shows the details of the Allon two-stroke, and the 3½ h.p. and 6-8 h.p. machines. Alldays and Onions, Fallows Road, Birmingham.



A neat and handy little magneto knife, recently placed on the market by Messrs. Ward and Goldstone, Sampson Works, Salford, Manchester. It comprises a magneto spanner, a contact file, and a gauge for setting the platinum points.

Books Reviewed.

"Aluminium Facts and Figures." British Aluminium Co., 108, Victoria Street, E.C. This little booklet contains much valuable information to those working in aluminium.

"Staffordshire." W. Bernard Smith. Cambridge University Press. 1s. 6d. An interesting, well written, and well illustrated guide book of Staffordshire, dealing with the county from a geographical and historical point of view. It is printed on art paper.

Three of the "Handy Homeland Handbooks." The Homeland Association, Ltd. 1s. These are complete with maps, and are full of useful information. The books under review are of Dartmouth, Totnes, and the River Dart; Dorking, Leatherhead, and Ashtead; and the Council Official Guide to Barnstaple (3d.) These books are invaluable to the many motor cyclists who are engaged in touring in England at the present time.

"The Internal Combustion Engine." H. E. Wimperis, M.A., A.M.I.C.E., A.M.I.E.E. Constable and Co. 6s. 6d. A useful textbook for advanced students, dealing with the internal combustion engine in all its types.

"Motor Cycle Principles and the Light Car." D. Appleton and Co., 28, Bedford Street, Covent Garden. 6s. nett. An American book written in the American style, which gives a fund of information that can be generally obtained from English handbooks. It gives information on light cars, cycle cars, and motor cycles, and deals with a number of systems which are practically obsolete in this country. Dealing with spring suspension of motor cycles, two illustrations are given of the Indian system, fore and aft.

MOTOR CYCLES FOR SALE.

Auto-Wheels.

AUTO-WHEEL, good order, with spring attachment; £7/10.—Clare, 28, Worsley Rd., Farnworth. [X4162

AUTO-WHEEL, £9, n t run 400 miles, excellent condition.—Browne, 94, East Sheen Av., S.W. [1215

AUTO-WHEEL, just overhauled by makers, new Palmer tyre; £10/10.—Lamb's, 151, High St., Walthamstow. [1098

WALL Auto-Wheel, second-hand, perfect order, overhauled by makers; £10.—Seen at 248, Bishopsgate, London, E.C. [9128

AUTO-WHEELS, standard or commercial model, £14/14, or 26/3 monthly; Auto-Wheels de Luxe, £15/15, or 28/3 monthly.—Seen at 248, Bishopsgate, London, E.C. [1271

Bat.

6 h.p. 1913 Bat Combination, 3-speed, new tyres; sacrifice £38/10.—103, Holloway Rd., London. [9932

BAT 1913 Combination, 2 speeds, chain drive, kick start; £42/10.—2, Trewint St., Earlsfield. [X4241

8 h.p. Bat-Jap Combination; £55, or exchange lower power solo or combination; seen any time.—714, Holloway Rd. [1129

ABSOLUTELY New 8h.p. 2-speed Bat-Jap, grand sidecar machine; £45/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X4065

BAT-J.A.P., 1913, 6h.p., torpedo tank, 3 speeds, free engine, fine cane sidecar, guaranteed perfect; expert examination invited; £45.—Duerder, 37, Oak St., Colne. [X4108

BAT-J.A.P., 8h.p., red sporting model, and Fitsu sidecar, fast, complete, and perfect; £42 quick sale.—Reeves, Lieut., 4c Reserve R.F.A., Weedon, near Northampton. [1234

1912-1913 8h.p. Bat-Jap., 2-speed, chain drive, Gloria; £42; can be seen showrooms, Service Co., Holborn. Quote No. 241.—Lieut. Strutt, 17th Hatfield, Broad Oak, Essex. [1269

Bradbury.

BRADBURY, 3½h.p., 1911, with Millford sidecar, fine condition; £19/10.—69, Hanbury St., Whitechapel, E. [1236

BRADBURY, 1913, 4h.p., N.S.U. 2-speed, F.R.S. head light, splendid condition; £25/10.—Alfred Proctor, Chepstow, Mon. [X3939

BRADBURY, 2-speed gear and clutch, in perfect order, guaranteed; £35.—Colmore Depot, 31, Colmore Row, Birmingham. [X4061

1915 Bradbury.—Immediate delivery from stock of 6h.p. sidecar combination.—Alexander's, 115, Lothian Rd., Edinburgh. [1246

BRADBURY, 1912, 4h.p., 2-speed N.S.U., new tyres fitted, and engine just overhauled; bargain, £27/10. —A. Holland, Earlsdon, Coventry. [X4150

BRADBURY, 2-speed, and free, torpedo sidecar, very little used, everything complete; accept £38.—171, King's Rd., Kingston-on-Thames. [1294

BRADBURY, 4h.p., and coachbuilt sidecar, N.S.U. 2-speed, new tyres, lamps, horn, tip-top condition; bargain, £38.—Williams, Douglas Hill, Bangor. [X4091

1913½ Bradbury, Sturmey 3-speed, coachbuilt sidecar, Lucas horn and lamp, spare, all sound condition; £40.—M. J. Scriven, Alcester Rd., Studley. [X4012

1914½ 4h.p. 3-speed Countershaft Bradbury, De Luxe sidecar, 3 lamps, horn, speedometer, Pillion seat; £60.—W. Merry, South Normanton, near Alfreton. [X4199

BRADBURY, 1911, 4h.p., Grado gear, Bosch mag., good condition; £16; seen evening, appointment.—Clark, 101, Windmill Lane, Deptford, S.E. [1109

BRADBURY 1914 6h.p. 3-speed Combination. countershaft 3-speed gear, chain drive, coachbuilt sidecar; £55.—The Premier Motor Co., Aston Rd., Birmingham. [1198

1914 4h.p. Bradbury, with coachbuilt sidecar, never used, owner on active service; cost £78, accept £68, with all accessories.—Phipps, 48, Upper Mall, Hammersmith. [X3716

BRADBURY 1914 3½h p. Twin, Douglas type, 3-speed and clutch, chain and belt, not done 1,500 miles, in new condition; price £50.—East Dartford Garage, Ltd., 80, East Hill, Dartford. [1143

BRADBURY, 2¾h.p., low frame, mag., B. and B. carburetter, nice condition, running well; sell cheap, £12/10, or give with cash for 3-speed sidecar lot.—Harris, 70, Park Place, Clapham Park Rd., S.W. [X4183

Brough.

BROUGH, 3½h.p. twin, horizontal countershaft 3-speed; £63; early delivery.—W. P. Edwards, Taunton. [X4324

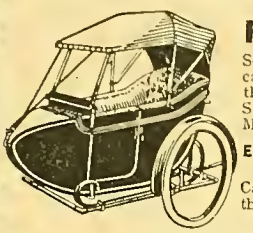
BROUGH 1913 6h.p. Twin, 3-speed Sturmey, excellent 2½in. tyres, Xl'all, enamel and plating good, with large Millford cane sidecar, side door, storm apron, luggage grid, all recently overhauled; £40.—69, Barras Lane, Coventry. [X4292

Brown.

3½h.p. Brown, m.o.i.v., perfect, B.B., Whittle belt, battery; £6/10.—Lucas, Old Lane, Prescot. [1114

CORONET Sidecar Chassis

is designed for long life, and has a wonderful reserve of stability, and is safe on greasy roads. Luggage carrier built into frame. Cannot shake loose, and is a boon when touring.



From £6 6s.

Send for illustrated catalogue describing these well known Sidecars. Several Models

Easy Payments or Exchanges.

Can be supplied through any dealer.

We can give immediate delivery of all models, and suitable for any make of machine.

WE CAN DELIVER FROM STOCK

THE WORLD'S RECORD MACHINE.
THE WORLD'S VALUE MACHINE.

We will make a special allowance for your machine in part payment. Write for terms, as we are large contractors.

7-9 h.p. Harley-Davidson.

The most improved sidecar machine made. Fitted with automatic mechanical oil pump like a car, 3-speed sliding countershaft gear, fool-proof, both hand and foot control to clutch, spring seat, 3in. tyres, silent running engine, will just tick over when in free engine, double stem handle-bar made from rolled cold steel, carrier one steel stamping. spare petrol tank; in fact, refinements not found on any other machine. Full detailed catalogue upon application.

PRICE—7-9 h.p., 3-speed model **£68 5**
ditto, ditto, electrically equipped **£76 13**

You cannot beat us on exchanges. Yorkshire dealers supplied

Coronet Sidecars for Harley-Davidsons.

We make a special Sidecar, enamelled French grey to match, 28 × 3in. tyre, apron to cover entire body, and fourth point attachment **£13**

BOOTH'S BIG BARGAINS.

3½ h.p. **PREMIER**, new 1915, 3-speed countershaft model **£60 0**
6 h.p. **REX**, 1912, 2 speeds, complete with new coach Sidecar **£33 10**
7-9 h.p. **HARLEY-DAVIDSON**, 1915, 3-sp. model with coach Sidecar to match, nearly new **£69 15**
2 h.p. **CALTHORPE** Lightweight, 1914 model, Precision engine, countershaft 2-speed gear, easy starter, nice condition **£18 10**
6 h.p. Twin **BRADBURY**, 1915 model, 3-speed, complete with £16 16s. Bradbury Sidecar, speedometer, screen, £4 4 electric lighting set, only run about 1,000 miles; cost nearly £100 ..... **£75 0**
3 h.p. **LINCOLN-ELK**, 1910 model, M.O.V., magneto, B. & B., h.-b. control, enamel and plating in splendid condition **£12 15**
7-9 h.p. **HARLEY-DAVIDSON**, 1915, 3-sp. model, only run about 1,000 miles **£58 10**
4 h.p. **BRADBURY**, 1911, 2-speed gear, complete with Sidecar **£30 0**
6 h.p. **ENFIELD** Combination, late 1913 **£59 15**
3½ h.p. **L.M.C.**, 1913, countershaft gear .. **£25 0**
3½ h.p. **REX**, 1909 Millenuium 2-speed .. **£18 10**
MOTOSACOCHE Lightweight, magneto .. **£8 15**
6 h.p. Twin **REX**, spring forks **£11 10**
4 h.p. **ROC**, 2 speeds, magneto **£12 10**
1912 **ENFIELD** Combination **£40 10**

MISCELLANEOUS.

New 12/6 Electric Head Lamp **5/8**
Brand New Waterproof Magneto **£3 10**
New Accumulators, 10 amps. **6/11**; 40 amps **12/6**
New 21/- Glare Brass Electric Tail Lamp . **4/11**
New 2 h.p. Gray Stationary Petrol Engine, electric ignition, 2 flywheels **£10**

BOOTH'S MOTORIES,

PORTLAND PLACE, SKIRCOAT ROAD,

HALIFAX.

'Phone 1062. Close at 6 p.m.

MOTOR CYCLES FOR SALE.

Brown.

2¼h.p. Brown, thorough working order; £7, or near offer; must sell.—W.G., 66, Mountgrove Rd., Highbury, N. [X4116

1907-8 Brown, accumulator, Mabon, 8-speed, free, spares, sidecar; bargain, £14/10.—556, Lea Bridge Rd., Leyton. [1002

B.S.A.

B.S.A., model K, just arrived; £59/15.—Lamb's, 151, High St., Walthamstow. [1093

1915 B.S.A., model K, and coach sidecar, in stock. —Middleton's, 27, Stroud Green Rd., N. [1032

B.S.A., 1914½, 4h.p., countershaft, chain drive, lamps, horn, perfect; £48.—Nichol, Beal, Northumberland. [X4052

B.S.A., 1913, 3½h.p., free, 2-speed, Lucas, splendid condition; £35.—Perrin, Catherine St., St. Albans. [X3722

B.S.A. Model H., 1915, just received, and Mille-Fulford sidecar; £77.—Eyles and Eyles, St. Aldates, Oxford. [X4165

B.S.A., 1912 (late), 3½h.p., Bosch mag., B. and B., tip-top running order; £30, no offers.—17, Linley Rd., Bruce Grove, N. [1235

B.S.A., 1914, 2-speed, clutch, and coachbuilt sidecar, combination as new; £40, bargain.—Ramsey, 13, Birkbeck Av., Acton. [1085

B.S.A., 1912, 3½h.p., 2 speeds, F.E., Montgomery coach sidecar, perfect, tyres new; trial; £38.—Smith, 33, High St., Northwich. [X4163

B.S.A., 1913½, chain drive, 2-speed, F.E., speedometer, mirror, P.H. lamp, in perfect condition; £39.—Ormerod, New Hall Hay, Rawtenstall. [X4111

B.S.A., 1914, 4¼h.p., 3-speed countershaft gear, coachbuilt sidecar, speedometer, lamps, and horn; £55.—The Premier Motor Co., Aston Rd., Birmingham. [1191

B.S.A. 1914½ Combination, 4¼h.p., chain drive, 3-speed gear, kick starter, speedometer, lamps, horn, all spares; £55.—229, Manchester Rd., Higher Ince, Wigan. [X4023

B.S.A., 1913, 3½h.p., chain drive, 2-speed, free engine, coachbuilt sidecar, wind screen, accessories, spares, perfect condition; £45.—50, Crayford Rd., London, N. [9972

1914½ 4h.p. B.S.A., 3-speed countershaft, 20 gn. Bramble sidecar, screen, Lucas lamp, horn, speedometer, excellent condition; £55. — Hilder, Reginald Rd., Bexhill. [1080

1914 B.S.A., 4¼h.p., 3-speed countershaft, chain drive, speedometer, all accessories, Ivy coachbuilt sidecar, wind screen, under 2,500 miles; £65.—Blight, Beechwood, Beechwood Av., West Finchley, N. [1140

1915 B.S.A., new, just arrived, 4¼h.p., 3-speed countershaft gear, chain-cum-belt drive, £59/15: also new £12 Sun sidecar to match, first cheque £69 secures this splendid combination.—Utting and Son, Burnham Market, Norfolk. [X4306

1915 B.S.A., 4¼h.p., all chain drive, and B.S.A coachbuilt sidecar, speedometer, 3 lamps, horn, mirror, 3 spare inner tubes, spare plugs, valves, chains, puncture outfit, tools, etc., perfect condition, ready for the road; best offer above £65.—Barnett, 9, Collingham Rd., S.W. [1232

Calthorpe.

CALTHORPES, all models in stock.—Lamb's, 151, High St., Walthamstow. [1091

CALTHORPE, 3½h.p., 2-speed; £33.—Seen at 248, Bishopsgate, London, E.C. [1273

CALTHORPE-J.A.P., new 1915 2¾h.p. single and 2-speed models in stock.—Moss, Wem. [X4268

CALTHORPE, 1915, 2-speed, good order, accessories; 18 gns.—Fox, Lodge Farm, Ongar, Essex. [1111

CALTHORPE.—1915 latest 2-speed lightweight models in stock; cash or exchange.—Eagles and Co., High St., Acton, W. [X4189

CALTHORPE, 4¼h.p. Precision, 1913 combination, 2-speed countershaft, coachbuilt; £40.—11, Hermit Rd., Canning Town, E. [1207

CALTHORPE Motor Cycles, J.A.P.'s and 2-strokes, from £27/14; send for list and easy payment terms. —Storey's, 118, Gt. Portland St., W [0647

CALTHORPES.—Any of this famous trio delivered from stock; extraordinary value.—Agents, Colmore Depot, 31, Colmore Row, Birmingham. [X3026

CALTHORPE-J.A.P., 2¾h.p., Enfield change speed and free engine, new June, 1915, not done 100 miles; £28.—Corporal Cooper, Army Pay Office, Dover. [1179

CALTHORPE, 1915, J.A.P., 2¾h.p., Enfield 2-speed, just arrived from works; immediate delivery; £34/13.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9614

CALTHORPE, 1915, 2-stroke, 2-speed, just arrived from works; immediate delivery, fitted with special magneto; £31/18.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [9615

1915 Calthorpe-J.A.P., 2-speed and clutch, £34/15; also 2¼h.p. 2-stroke, 2-speed, £31/8/6; delivery from stock; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6409

Campion.

CAMPION, 2-stroke, 1914, in splendid condition; first cheque £19.—Walbro' Motor Co., Ely, Cambs. [X4131

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CENTAUR Lightweight, new cylinder, piston, bushes, tyres, belt almost new; £18.—Ings, West Tisted, Alresford. [X4197a

CENTAUR, 3½h.p., 1912¾, 2-speed, wicker sidecar, fully equipped, speedometer; £28.—19, Hadrian St., E. Greenwich. [9973

CENTAUR, 3½h.p., m.o.v., good tyres and belt, lamp, grand bike for beginner; £6/10.—64, Mill Lane, Brixton Hill. [X4244

Chater-Jap.

CHATER-J.A.P., 1914¾, 4h.p. twin, 2-speed countershaft, kick starter, beautiful condition; £46.—4, Loughborough Rd., Brixton, S.W. [1178

Chater-Lea.

1914 8h.p. Chater-Lea and Coachbuilt Sidecar, splendid turnout; £57/10.—Jones, Broadway, Muswell Hill. [1255

CHATER-LEA, No. 7, 8h.p., coachbuilt sidecar, speedometer, etc.; £50, or offer.—C., 4, Talbot Rd., Tottenham. [9979

3½h.p. Chater-Lea, coachbuilt sidecar, Bowden 2-speed, free engine, kick starter, mag., speedometer, just overhauled; £28.—Pearce, High St., Dartford. [1120

CHATER-LEA, No 7, and sidecar, 1914, 8h.p. twin engine, 3-speed gear box, chain drive, disc clutch, and accessories; £60.—Alford, 23, Belle Vue Rd., Barnes, S.W. [1302

CHATER-LEA (Genuine), 8h.p. J.A.P., 1912 (late), 2 speeds, condition like new, perfect sidecar machine; trial; £50.—Seen at Butterworths' Garage, Mill Lane, Brixton Hill. [X4245

Chater-Lea-Jap.

CHATER-LEA-J.A.P., 8h.p., 3-speed, clutch, 16 gn. coach sidecar, Lucas set, Lucas horn, P. and H. set, Cowey, rear light, new 26×3 Palmer on back; £50.—Tafe, 69, Willmington Gardens, Barking. [9921

Chater-Peugeot.

5h.p. Twin Chater-Peugeot, U.H. mag., Druids, N.S.U. gear, just overhauled, and guaranteed in new condition throughout, including tyres and belt, with wicker torpedo side entrance sidecar; a genuine lot, 20 gns. cash, or good lightweight.—A. Davis, Tibberton, near Gloucester. [X4219

Clyno.

CLYNO and Sidecar, 1913, lamps, horn, speedometer, extra covers and tubes; 46 gns.—50, Clapham Rd., S.W. [9722

CLYNO 1913 3-speed Combination, several spares, including tyre, grand condition; £55, offers.—Neat, Ironmonger, Middlesbrough. [X4305

CLYNO, June, 1914, 6h.p. combination, with No. 6 sidecar, 3-speed, kick-starter, all accessories; 66 gns.—Lamb's, 151, High St., Walthamstow. [1092

CLYNO, 1913, 6h.p., and coachbuilt sidecar, detachable wheels, 3 speeds, clutch, and starter; £55.—P. J. Evans, John Bright St., Birmingham [1156

1912 Clyno Combination, excellent condition, overhauled at works, done 4,500, speedometer and lamps.—Whaley Smith, Westburton, Aysgarth, Yorks. [X3698

1912¾ Clyno Combination, recently overhauled, and in good condition, not used since August, 1914; owner on active service; £42, no offers.—41, Manchester St., Grimsby. [X4114

1914 Clyno, 2½h.p., 2-speed, and clutch, and nearly new light sidecar, excellent condition throughout, combination £31, separate £28 and £4.—Barnish, Half Acre Rd., Rochdale. [X4213

1913 5-6h.p. Clyno Combination, cylinders, chains, 2 tyres new, engine thoroughly overhauled, new ball bearings, etc., 2 lamps, hood, screen, 4 detachable wheels, very comfortable, and a splendid climber; any trial; price £60.—Ramuz, 151, Leigh Rd., Westcliff-on-Sea. 'Phone: 269 Southend. [9986

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CONNAUGHT 2-speed 2-stroke; £35/3/6.—Lamb's, 151, High St., Walthamstow. [1099

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DIAMOND New 1915 2½h.p. 2-stroke; £29/13/6; delivery from stock. — Motories, 68, Horton St., Halifax. [0707

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2¾h.p. Douglas, 1911, It; £19/10.—Cox, 85, Church Rd., Willesden. [X4239

1911 Douglas, 2 speeds, complete; £19.—Cross, Jeweller, Rotherham. [X4107

1915 2¾h.p. 2-speed Douglas, good as new.—Cross, Brawery, Huntingdon. [1079

DOUGLAS, 1913, perfect condition; £33.—W. Crowder, Thimblehy, Horncastle. [X4206

1915 4h.p. T.T. Douglas, 3-speed, accessories; £49.—19, The Drive, Chingford, Essex. [1023

DOUGLAS, 2¾h.p., 2-speed, 1911, overhauled, new tyres; £23—180, Albert Rd., Southsea. [X4164

1915 Model U Douglas, T.T. bars, Lucas lamp and horn; snip, £44.—Wilderspin, Chatteris. [1170

DOUGLAS, 1912, 2¾h.p., splendid running order, new lamps; £20.—64, Church St., Brighton. [9917

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DOUGLAS, 1910, new back tyre, good condition; £16/10.—Johnson, 4, Apsley Crescent, Bradford. [9936

DOUGLAS T.T., 1914, all accessories, guaranteed perfect; £40.—Cecil Rumens, Tilsden, Cranbrook. [1037

DOUGLAS'S, 1913, 2-speed, in excellent condition; £34 and £32, bargains.—50, Clapham Rd., S.W. [9721

DOUGLAS, 2¾h.p., 1911, in good order; bargain at £19/10.—5, Park Av., Palmer's Green. N. [1033

DOUGLAS, August, 1914, T.T., 2¾h.p., 2-speed, Lucas lamp and horn; £37.—Paxton, Pity Me, Durham. [X4051

DOUGLAS, 1913½, 2 speeds, clutch, kick starter, faultless condition; £37/10.—Sinclair, East Molesey. [X4314

DOUGLAS, 2-speed, as new, all accessories; £32; owner gone to Front.—420, Richmond Rd., East Twickenham. [1167

2¾h.p. Douglas, 1912 model,, 2-speed and kick start, complete; price £30.—Hopkins, New St., Ledbury. [1282

DOUGLAS 1913 and 1914 second-hand machines in stock, £28 to £43.—Turpins, 22 and 29, Preston Rd., Brighton. [0716

2¾h.p. T.T. Douglas, 1914, Lucas lamp and horn, new back tyre, spare belt; £40.—15, King's Ter., Southsea. [1270

DOUGLAS, 2¾h.p., clutch model, lamps, spares, etc., excellent condition; £44/10.—8, Gt. Chapel St., Oxford St., W. [1063

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1914 Model W Douglas, 2-speed, kick, lamp, horn, all spares, new condition, ridden about 1,000; £42.—Jarmain, Harwich. [9967

DOUGLAS, 1915, 3 speeds, all accessories, hardly been on road; £45, no offers.—W. Baxter, 46, Marmion Rd., Clapham. [1118

DOUGLAS.—All models from stock from sole wholesale and retail Midland agents, Colmore Depot, 31, Colmore Row, Birmingham. [X3036

DOUGLAS, 1915½, 2¾h.p., 3-speed, U model, scarcely used; £47/10.—Box L1,140, *The Motor Cycle* Offices, 20, Tudor St., E.C. [9990

DOUGLAS, late 1913, 2¾h.p., 2 speeds, perfect condition, little used; 30 gns., bargain.—Dunlop, 163, Mottram Rd., Stalybridge. [X4094

MOTOR Cycle, Douglas, 1915, 2¾h.p., 3 speeds, new condition, for sale.—W. Livingstone, Wilton Castle Estate Office, near Redcar. [X4203

1913 Douglas, 2¾h.p., 2-speed, P. and H. lamp, horn, and all spares, recently overhauled; £34.—Lund, South View, Kington, Herefordshire. [X4091

DOUGLAS, 1913, 2¾h.p., 2-speed, excellent condition, recently overhauled; £32.—Lt. Haynes, 11th Divisional Train, Frensham, Farnham. [X4075

DOUGLAS, 1914¾, 2¾h.p. model W, 2-speed, all accessories, tyres and condition perfect; £43, bargain.—Rinkside, Penrhyn Rd., Surbiton. [1222

DOUGLAS, 3½h.p., 1914¾, coachbuilt sidecar, and all accessories, excellent condition; £68.—Woodfield, St. Thomas's Hospital, Westminster. [9954

DOUGLAS, 1915, 4h.p., 3-speed, clutch, kick-start, Perceles coachbuilt sidecar, all on; £68.—Seen at Stag Motor Works, East Finchley, London, N. [1122

DOUGLAS, T.T., 1914, 2¾h.p., 2-speed, speedometer, lamp, horn, spares, tools, in good condition; £40.—Hale, jun., 32, Clarence Rd., St. Albans. [9956

2¾h.p. 1910 Douglas, good order, £18; 3½h.p. 1906 Rex, with mag., and B.B. carburetter, £11; 2h.p. N.S.U., mag. ignition, £7.—Walker, Fishburn, Ferryhill. [X4319

DOUGLAS, 1913, new condition, 2 speeds, clutch, kick starter, Palmer, Hutchinson, new 1915 Binks; £34.—Egerton, Winter Gardens, Bournemouth. [1038

DOUGLAS 1915 T.T., 2-speed, 2 new covers, spare belt, lamps, complete, perfect condition; £46.—Letters, P. Johnson, 12, Powerscroft Rd., Clapham, N.E. [1228

DOUGLAS, 2¾h.p., fast, drop bars, new tyre, lamp and generator, and accessories, in good condition; £16.—Savory, 1, Sidney Villas, Worcester Park, S.W. [1087

DOUGLAS, 2¾h.p., 2-speed, December, 1913, free engine, kick-start model, Lucas lamp, generator and horn, rear lamp, extended mudguard shields, Hutchinson tyres, guaranteed in thorough working order and condition.—L.P., 14, Gt. Queen St., Kingsway, W.C. Price £42. [1105

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HUMBER, 2h.p., bought new 1914, B.B., variable ignition, h.b.c., Dunlop tyres and belt as new, splendid condition; £17.—Usher, 45, Lyndhurst Rd., Peckham. [1268

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3½h.p. 1911 Humber, 2-speed, free engine, handle start, footboards, Harcourt radiators, good tyres, spares, tools, etc., perfect condition; £29.—31, Douglas St., Barrow-in-Furness. [X3938

3½h.p. Humber, 2-speed, handle starting, comfortable sidecar, tyres nearly new, head light, generator, speedometer and spares, perfect running order; bargain, £30.—Falkinghridge, Esplanade, Whitby. [X4121

HUMBER, 1911½, free engine, 2 speeds (new gears last year), speedometer, all accessories, recently overhauled, with practically new coachbuilt sidecar; £27/10.—Bennett, 22, St. Mary's Rd., South Norwood. [9992

HUMBER, 3½h.p., 2-speed, free engine, clutch model, just been thoroughly overhauled, head and tail lamps, all in splendid condition, ready to ride away; a bargain, £25.—J. Reeves, Fordwich, Canterbury. [1152

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7-9h.p. Indian, 1914, 2-speed, speedometer, Krieco, Miller; £40.—Habergham, Vicarage, Burnley. [X3689

INDIAN Combination, 1914, 7h.p., 2-speed, clutch, accessories; £58/10.—28, Tranmere Rd., Earlsfield. [X4260

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INDIAN and Wicker Sidecar, 1914 (early), 7h.p., clutch, speedometer, lamp, horn, new tyres; £47.—Nichol, Beal, Northumberland. [X4053

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1915 Indian Road Racer, as new, some shifter; sell £50, or exchange combination.—Manning, 20, Elm Grove Rd., S. Farnborough, Hants. [1174

1912 Indian Combination, 7-9h.p., 2 speeds, clutch, new chains, good condition; £35.—59, Derbyshire St., Bethnal Green Rd., London, E. [1230

INDIAN, 1913, 7-9h.p., 2 speeds and clutch, spring frame, T.T. bars, fully equipped, condition as new; £55.—Blaud, 13, Avondale Rd., Derby. [X4074

1915 Indian, model C, Millford sidecar; £22/10; purchased July, not soiled, luxurious combination.—37, Richmond Park Rd., Bournemouth. [1039

INDIAN, 5h.p. model B and 7h.p. model C combinations in stock; preferential terms for large deposits.—Lamb's, 151, High St., Walthamstow. [1090

INDIAN, 1915, 5h.p., 3-speed, kick starter, new 3 weeks ago, 540 miles, lamps, speedometer, horn, as new; cost £70, take £60.—Webb, Belmont, Surrey. [9924

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INDIAN, 1910, 5-6h.p., twin, stand, carrier, spring forks, lamp and horn, splendid condition; £18.—Murray's, 37a, Charles St., Hatton Garden, Holborn. [X4221

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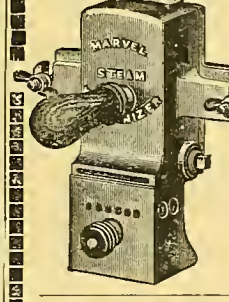

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INDIAN, 1915, 5h.p., 3-speed model; £63; delivery from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. 0717

INDIAN Combination, 4½h.p., 2-speed, free engine clutch late 1912, in perfect condition, set of spares; seen after 6 p.m.; £35, or offer.—Hart, 12a, Tidal Basin Rd., London, E. [X4021

1914 Indian, Headee Special, 7-9h.p., electric starter, lighting, De Luxe sidecar with screen, all accessories, perfect condition guaranteed; bargain, £55.—Lovell, Crindau, Newport, Mon. [1009

INDIANS, the tried and proven mounts. Don't experiment.—Immediate delivery all models, at Alexander's, 115, Lothian Rd., Edinburgh; and 272-274, Gt. Western Rd., Glasgow. [1237

INDIAN, 1914, late, 7-9h.p., electrical equipment, electric starter, with Millford coachbuilt sidecar, with hood and screens, only done 3,000 miles, almost new condition; bargain, £63.—604, Mile End Rd., N. [1238

INDIANS have consistently scored for years in all the British speed competitions; for durability, power, and all that counts, there's nothing to touch them.—All models for instant delivery at Alexander's. [1240

INDIAN 1915 models in stock: 7-9h.p., 3-speed, model C, £73/10; 5h.p., 3-speed, model B, £63/10; sidecars to fit; exchanges or extended terms.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0491

3½h.p. 1915 Indian, 3-speed, clutch, kick starter, F.R.S. lamp set, Wisco tail lamp, Turner long horn, A.K. knee-grips, Dunlop tyres, tools, done about 1,000; £54.—Telephone 172, or Dickins, Heronsgill, Horsham. [1916

INDIANS, twice winners of team prize in Scottish Six Days Trials; the test that counts; that's the machine which will suit you—Buy now at Alexander's, 115, Lothian Rd., Edinburgh; and 272, Gt. Western Rd., Glasgow. [1239

1914½ Indian Combination, electric equipment, speedometer, spares, splendid condition throughout; 55 gns., first money order secures, bargain, no offers.—Warren, Glearoy, Queen's Rd., Frinton-on-Sea. [1259

INDIAN 7h.p. Twin, 3-speed, electric light and horn, speedometer, £65; also 3½h.p. Indian, twin, 3-speed, £50, no offers; 1915 machines; owners left for Front sooner than expected; both as new.—Lewis, Wadcroft, Kettering. [X4149

1914 7h.p. 2-speed Indian Combination, 2 new spare Dunlop covers, dissolved acetylene outfit, speedometer, spare chains, set College mudshields, and numerous other spares; £65, or exchange 2-seat.—Wilderspin, Chatteris. [1169

INDIAN, late 1913, 7-9h.p., with Cowey speedometer and Mills-Fulford Radio spring wheel sidecar, whole outfit in perfect order; £55.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. 0569

INDIAN, Headee Special, 1914¾, 7-9h.p., combination, dynamo lighting set, Mills-Fulford model de luxe sidecar, coachbuilt, hood and screen, speedometer, and everything on; bargain, £67.—Lawrence, 30, Harriet Mews, Sloane St., Knightsbridge. [1134

INDIANS in Stock.—All models for immediate delivery, also sidecars to match, 3½h.p. £60, 5h.p. £63, and 7h.p., electrically equipped, £73/10, including 3 speeds and kick starter; also famous 7h.p. clutch model, road racer, £57.—P. J. Evans, Midland Distributing Agent, John Bright St., Birmingham. [1157

1913-14 7h.p. Indian, 2-speed, clutch, spring frame, electric light, horn, kick-starter, new chain, mudguards, etc., engine in excellent condition, fast, and wonderful puller, luggage grid, spare handle-bars; £50.—Congreve-Pridgeon, Vicarage, Steyning. Also Mills-Fulford sidecar, just re-varnished; complete with cycle, £60. [9912

James.

JAMES Combination, done 3,000 miles, new condition; £45.—34, Homecroft Rd., Sydenham, S.E. [1210

JAMES, 1914, 3½h.p. twin, 3-speed, handle clutch, chain drive, excellent condition; £47.—Rickinson, Burdon, Darlington. [X4141

JAMES, 4¼h.p., 1914, countershaft 3-speed, kick starter, and coachbuilt sidecar, overhauled; £52.—Broadway Garage, Ashvale Rd., Tooting. [9941

3½h.p. 3-speed 1914 Countershaft James, and coachbuilt sidecar, perfect order, speedometer, and all accessories; £50.—Humphries, 8, The Village, Charlton, S.E. [1072

JAMES, 4¼h.p., all chain drive countershaft gear, and coachbuilt sidecar, full range of accessories; £53; any trial; bargain.—Colmore Depot, 31, Colmore Row, Birmingham. [X4057

4¼h.p. James Motor Cycle (late 1912), and coachbuilt sidecar, Amac, P. and H. lamp, horn, Stewart speedometer, wind screen, engine recently overhauled, splendid condition throughout; £40.—Maynard, Grocer, Scarborough. [1074

MOTOR CYCLES FOR SALE.

James.

EXCEPTIONALLY Fast 3½h.p. Twin James, June, 1914, special engine, done 68 m.p.h., climb Litton Slack with extra passenger; £40, or with sidecar £46, no offers.—Millard, Chesterfield. [X4180

JAMES, 1915, 4¼h.p., 3-speed counter-shaft gear, clutch and kick starter, chain drive, Canoelet sidecar, with Lucas electric lighting outfit, Lucas electric horn; £90/15.—Colmore Depot, 261, Deansgate, Manchester. [0674

JAMES 1914 4¼h.p. Big Single, 3-speed counter-shaft gear, clutch and kick start, Canoelet coachbuilt sidecar, complete with speedometer, head lamp, sidecar lamp, watch, mirror, etc., excellent condition; £56.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0551

J.A.P.

2½h.p. J.A.P., B.B., Hellesen, new tyres; bargain, £6/10.—10, Brisbane Rd., Reading. [9964

CASH Offer for 1914 5h.p. twin J.A.P. 3-speed Hazelwood, completely overhauled examination.—6, West Heath Av., Hampstead. [X4070

4h.p. J.A.P. Engine, 3-speed, electric light set, Stewart speedometer, 1914, condition as new; £45.—80, Trafford Rd., Salford. [1248

1911 6h.p. J.A.P., Chater-Lea, P. and M. 2-speed gear, and Mills-Fulford cane sidecar, splendid combination; £35.—Walker, Fishburn, Ferryhill. [X4320

LIEUT. MARTIN'S Racing J.A.P. 90° Motor Cycle and sidecar, capable of 90 m.p.h.; cost £117; been 500 miles only; take £75.—Martin, c/o 65a, Rosendale Rd., West Dulwich. [X4270

J.E.S.

J.E.S. Lightweight, nearly new, specially built frame, direct drive, Amac carburetter, lamp and stand; originally £23, £13, or close offer.—Fletcher, 20, Brockman Rd., Folkestone. [X4054

Kerry.

KERRY-ABINGDON, 3½h.p.; £16/16.—Seen at 248, Bishopsgate, London, E.C. [1272

2¾h.p. Kerry, accumulator, in good order, including tyres; £5/10, or part exchange juvenile cycle.—Ben Pullan, Cirencester. [X3937

KERRY, 2¾h.p., Splitdorf mag., B. and B., Druid forks, lamp, horn, accessories; £15.—Shepherd, 220, Cranbrook Rd., Ilford. [9926

KERRY-ABINGDON, 1911, 3½h.p., in good condition, tyres good, mag., and B. and B.; £15.—Wickes, 117, Western Rd., Lewes. [1219

Lea-Francis.

LEA-FRANCIS, 1914, 3¼h.p., 2-speed, h.h. and foot control clutch, F.R.S. head light, Kempshall tyres, just overhauled; accept £45 quick sale.—Mulligan, 23, Victoria Av., Cardiff. [9935

1915 Lea-Francis, 3½h.p., single-cyl., khaki finish, 3-speed, hand clutch, lamps, horn, speedometer, done 2,000 miles, splendid order; price £55, or near offer.—Sutherlands, Carlisle Av., St. Albans. [1050

Levis.

LEVIS Popular, 2¼h.p., just arrived; exchanges or cash; £28/1.—South Eastern Garage, Herne Hill, S.E. [1183

LEVIS, 2-speed gear, and special light sidecar, as new; £36.—Colmore Depot, 31, Colmore Row, Birmingham. [X4058

LEVIS Popular; £28/1 cash, or fifth down, 2½% on balance.—Referee Cycle Co., 332, High Holborn, W.C. [2773

1915 Levis, 2½h.p., Popular model, absolutely in stock; £28/1; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6410

LEVIS 1915 Popular Model, 2¼h.p., just arrived from works; immediate delivery; £28/1.—Wilkins, Simpson and Co., 11, Hammersmith Rd., London. [9613

LEVIS Popular, 2½h.p. single, and 2-speed, and De Luxe models.—Sole Midland distributing agents, Colmore Depot, 31, Colmore Row, Birmingham. [X3034

LEVIS 2-stroke Motor Cycles, latest 1915 models.—Sole London and district agents, Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent. [0711

1914 Levis, No. 1, 2½h.p., cost £38/10, bought June, also lamp, generator, horn, good condition; £26, complete.—Pines, 61, New Fillebrook Rd., Leytonstone. 'Phone: Jarrolds, 3821 Central. [1295

Lincoln-Elk.

LINCOLN-ELK, 1913, 4¼h.p., 2-speed, 1915 B. and B. carburetter, Palmer cord and Hutchinson tyres, good sidecar machine; £25.—Siggers, Kenninghall, Norfolk. [9950

Matchless.

MATCHLESS, 8h.p., 1911¾, splendid order; £28, offers.—15, Aughton Rd., Birkdale, Southport. [X4072

2¾h.p. Matchless-Jap, 2-speed, Rom tyres, full equipment; £28.—Cottis and Sons, Ltd., Epping. [1277

1913 8h.p. Matchless Combination, complete; £55.—Meldon, 30, Harrow Rd., Leytonstone, N.E. [1011

1914 Matchless Combination, 7h.p., in excellent condition; £116.—Box 9,115. *The Motor Cycle* Offices, Coventry. [X4299

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MATCHLESS 8h.p. Combination, 1913, 2 speeds, in splendid condition; any trial; £45.—Lane, Commercial Inn, Morley, near Leeds. [X4097

1913 Matchless, 8h.p., and Phœnix sidecar, 2 speeds, speedometer, etc., splendid condition; £50.—Dixon's Motor Garage, Brownhill Rd., Catford. [9927

MATCHLES, 6h.p. J.A.P. engine, 2 cyls., Montgomery sidecar, hood, screen, Cowey speedometer, Bosch mag., good condition; after 3.—Pointer, 107, Blackfriars Rd., S.E. [1186

MATCHLESS Combination, 1913, in perfect condition, everything as new, spare cover, guaranteed faultless; £55; would entertain light car in exchange.—J. K. Butler, Fruiterer, Ascot, Berks. [1218

MATCHLESS 1914½ 7h.p. Combination, splendid condition, 3 new tyres, D.A. cylinder, Lucas lamps, hood and screen, Binks carburetter, about £20 accessories and spares; cash £80.—Manager, Willesden Hippodrome, Harlesden. [9928

MATCHLESS 7h.p. 1914 Coachbuilt Combination, perfect, hood, screen, F.R.S. and Lucas lamps, Lucas horn, Cowey speedometer, spare tube, and complete set of tools; cost £110, accept 80 gns.—Ramus, 26, High St., Southend. [1216

MATCHLESS, 1914, 7h.p., 3-speed combination, coachbuilt sidecar, with hood and wind screen, luggage carrier, etc., Lucas head lamp, horn, and tail lamp, perfect condition; £70.—The Premier Motor Co., Aston Rd., Birmingham. [1197

MATCHLESS, 8h.p. J.A.P., 2 speeds, F.E., pedal starting, lamp, rear light, horn, large saddle, backrest, Turner £25 coachbuilt sidecar, wind screen, hood, splendid condition; £39/10.—Brooklands Cottage, Vickers Works, Dartford. [9913

MATCHLESS-J.A.P., late 1913, 8h.p., 2-speed, and free engine, chain drive, fitted with Millford Curvette sidecar, new 1915 chassis, full stormproof cover and sidecar mat, Miller head light and generator, rear light fitted, new cycle car Kempshall rear, Bates No. 1 others, spares include new exhaust valve complete, Renolds chain parts, Amac jets, Matchless nuts and bolts, etc., unridden this year, machine in excellent running condition; £45.—Grimson, Dykehead Rd., Airdrie. [X4268

Minerva.

3½h.p. Minerva, B. and B., spring forks, fast, climb anything, gift, £12; sidecar optional, £3.—Tucker, 142, Salmon Lane, Limehouse, E. [1297

MINERVA, 3½h.p., Bosch watertight mag., B. and B. carburretter, very low built, in excellent running order; £12.—29, Park Rd., Hampton Wick. [1117

MINERVA Lightweight, Bosch, B. and B., spare belt, climb anything; £10.—Gibbs, 135, Pembroke St., King's Cross, London, N. [X4118

Moto-Reve.

MOTO-REVE, 1910, 2¾h.p., good tyres, belt, lamp, etc.; bargain, £11.—Butterworth's Garage, Mill Lane, Brixton Hill. [X4243

1911 Twin 2¾h.p. Moto-Reve, Druid spring forks, lamps, horn, and spares; 13 gns.; tyres excellent.—W. Haworth, 34, Netherbury Rd., South Ealing, W. [1291

MOTO-REVE, 2h.p., single-cyl., single gear, absolutely the best M.-R. ever handled, climb all main road hills, seed 5 to 38 m.p.h., good throughout; £12/10, or give with cash for 7-9h.p. Indian speed model.—Cox, 85, Church Rd., Willesden. [X4240

Motosacoche

1915 Motosacoche, as new; owner enlisted; £47.—7, Pemberton Gardens, Holloway. [1056

MOTOSACOCHE, 2¼h.p., good running order, mag., Brown and Barlow (new), spring forks; £9.—Greener, Shotton. [9987

1¾h.p. Motosacoche, Druid forks, mag., spare Hutchinson tyre and tube, new; £10; just been overhauled.—Homestead, Birchington. [X3936

MOTOSACOCHE, 1914, 3½h.p., twin, 2 speeds and kick starter, thoroughly sound; £32.—P. J. Evans, John Bright St., Birmingham. [1153

MOTOSACOCHE, 6h.p. M.A.G. engine, 2-speed gear, entire chain drive, slightly soiled only, complete with accessories and sidecar; £77.—Colmore Depot, 31, Colmore Row, Birmingham. [X4064

1914 3½h.p. Twin Motosacoche, chain drive, Enfield 2-speed, speedometer, best accessories, 1915 light coach sidecar, special wind screen, smart combination; £45.—3, Dingwall Gardens, Golder's Green. [X4228

New Hudson.

2¾h.p. New Hudson, J.A.P. 3-speed, lamps, accessories, perfect order throughout; £24.—Dosser, Slingsby, Yorks. [X4202

NEW Hudson, 3½-4h.p., free engine, coachbuilt sidecar, 3-speed, splendid condition; £52.—Simpson, 94, Albany Rd., Camberwell. [1208

NEW Hudson, 1911, 2¾h.p., Armstrong gear and clutch, horn, and lamp, with separate generator, splendid condition, mag.; £24.—Davis, Depot, Todmorden. [X4018

1914½ New Hudson 6h.p. Coach Combination, perfect, hood, screen, speedometer, watch, lamps, carrier seat; £65, cost £95.—44, Cavendish Av., Eastbourne. [1202

MOTOR CYCLES FOR SALE.

Scott.

SCOTT, 1914½, T.T. bars, Binks, Lucas lamp and horn, new condition; any trial; very fast; £52/10.—Collings, London and Provincial Bank, Pontypridd. [X3693

SCOTT, 1913, 2-cyl., 2-speed, kick starter, drip, Bosch, Lucas lamps, horn, etc., Gloria £25 sidecar, splendid condition; £42/10.—69, Pembroke Rd., Walthamstow. [1144

SCOTT, 3¾h.p. (late 1913), and Myers coachbuilt sidecar, Binks 1915 carburetter, horn, speedometer, 2 lamps, and watch, just been overhauled; £55.—Drewitt, 135, Manchester Rd., Southport [X3721

Seal.

SEAL Double-seated Motor Bicycle, 1915, 8h.p., steering wheel, wind screen, and hood, practically new; owner now an invalid.—No. 9,110, *The Motor Cycle* Offices, Coventry. [X4196

Sheffield Minor.

SHEFFIELD Minors (2-stroke), single and 2-speed models from stock only at Colmore Depot, 31, Colmore Row, Birmingham. [X3035

Singer.

SINGER, 1912, lightweight, 3-speed gear, accessories; £25.—Bunting, Harrow. [1040

SINGER, 1913, 2½h.p. T.T. model, fast; £20.—5, Sherboro Rd., South Tottenham. [X4220

SINGER Lightweight, Bosch mag., new back tyre, nice little mount; £14.—Dansie, Peldon, Colchester. [X4208

SINGERS.—Immediate delivery of 4¼h.p. chain drive 3-speed model; sidecars supplied to suit in stock.—Colmore Depot, 31, Colmore Row, Birmingham. [X3033

1912 Singer, 3½h.p., 1915 engine, 3-speed, Sturmey free, just fitted new speedometer, almost new tyres, fine condition, go anywhere; trial; £30.—69, Victoria Grove, East End Park, Leeds. (P) [X4166

SINGER, 3½h.p., 1912, Armstrong 3-speed, clutch, X'all saddle, fitted with 1914 Rover sidecar, splendid combination, tip-top condition; £37. — Carpenter, 51, St. John's Rd., East Ham, Essex. [1138

4½h.p. 1913 Singer and handsome 1914 Rover coachbuilt sidecar, splendid condition, 2-speed, countershaft, clutch, lamp, speedometer, Dunlop steel-studded tyres, several spares, done under 6,000 miles, appearance as new; £49, or offer.—Day, 18, Bicester Rd., Aylesbury. [1266

Sparkbrook.

SPARKBROOK Combination, 8h.p., 1914, speedometer, Binks, spares; £67.—Wigfall, Hillsbro', Sheffield. [9960

SPARKBROOK Lightweights. — 2½h.p. two-stroke 30 gns., or with 2-speed 36 gns.—In stock, at Alexander's, 115, Lothian Rd., Edinburgh. [1241

Sun.

NEW Sun-Villiers, 2-stroke, 2-speed, and F.E.; £33/17.—Walbro' Motor Co., Ely, Cambs. [X4130

SUNS, with Villiers or V.T.S. engines, single or 2-speed models; delivery from stock.—Colmore Depot, 31, Colmore Row, Birmingham. [X3028

1915 2½h.p. Sun-Villiers, 2-stroke, speedometer, set of lamps, horn, spare belt, Douglas semi T.T. handle-bars, fine condition; bargain, £28.—15, Bensham Lane, Croydon. [9984

Sunbeam.

1915 3½h.p. Sunbeam and Sidecar, splendid condition; £75.—Taplin, Brittox, Devizes. [X4193

SUNBEAM, 1914 model, 3½h.p., 3-speed, excellent condition; £50; private owner.—C/o Moore, Motors, Andover. [1172

SUNBEAM, late 1914, 3½h.p., 3-speed, large coachbuilt sidecar, hood, wind screen, lamps, horn, done 1,500 miles, equal to new; £75.—Davies, 25, Charlton Av., Dover. [X3407

1915 2¾h.p. Sunbeam, 2 speeds, kick starter, Lucas head lamp and horn, rear lamp, spare valve, etc., in first-class condition; £50.—No. 9,111, *The Motor Cycle* Offices, Coventry. [X4157

T.D.C.

T.D.C.-ARROW, 3½h.p., semi T.T., splendid condition, early 1914; £27.—92, Wellington St., Gravesend. [X4192

1914 3½h.p. T.D.C., 2 speeds, and free, and brand new Golby sidecar; a real bargain, £34, or best offer.—Williamson, 257, Belvoir Rd., Coalville. [X4212

3½h.p. T.D.C., 8 speeds, free, speedometer, lamps, good tyres, underslung coachbuilt sidecar, perfect order and condition; £30, or near.—Holland, 122, West Green Rd., Tottenham. [1220

Torpedo.

2¼h.p. Torpedo 2-stroke, used 7 weeks, like new; cost £33/10, £29.—Cottis and Sons, Ltd., Epping. [1278

£17.—Torpedo lightweight, 2½h.p., H.S., Bosch mag., Druids, almost new; or exchange push cycle and cash.—128, Dewsbury Rd., Leeds. [X4088

Triumph.

TRIUMPH, 1913, F.E., T.T. engine; £37.—36, Hawcoat Lane, Barrow-in-Furness. [X4020

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1913 Free Engine Triumph, perfect condition; £30.—Albert Ainsworth, Ashbourne. [X4224

TRIUMPH, 1911, 2-speed gear, splendid lot of accessories; bargain, £27/10.—Bunting, Harrow. [1042

JUNIOR Triumph, 2-stroke, 2-speed, splendid order; price £34.—36, Mayfield Av., Chiswick, W. [9997

3½h.p. Triumph, good condition, new piston, nearly new tyres; £14/10.—Johnson, Jeweller, Nuneaton. [X3701

1908 3½h.p. Triumph, in splendid condition, with Bosch mag.; £18.—Walker, Fishburn, Ferryhill. [X4318

1911 Clutch Triumph, excellent condition, lamp, etc.; £25.—Woodlands, Baring Rd., Beaconsfield. [1113

TRIUMPH, 1913, free engine, splendid order, £30, bargain; sidecar, £2.—29, St. Leonard's St., Bow. [1034

1914 4h.p. T.T. Triumph, splendid condition throughout; £37/10.—Pike, Church St., Chelsea. [1088

1915 Junior Triumph, new July, lamps, cost £45; offers; consider exchange.—Dosser, Sluggsby, Malton. [X4201

TRIUMPH, another good machine, speed gear, and light sidecar, lamp, horn, etc.; £28.—Bunting, Harrow. [1043

T.T., Triumph, 1912, splendid condition, recently overhauled; £29.—Jesmond, Brambledown Rd., Wallington. [1275

TRIUMPH Junior, 2¼h.p., 2-speed, valveless lightweight; £42.—The Premier Motor Co., Aston Rd., Birmingham. [1200

1912 Triumph, N.S.U. 2-speed, clutch, engine overhauled, tank re-enamelled.—Legge, 27, Brook St., Luton, Beds. [X4216

TRIUMPH 1914½ Combination, 4h.p., 3-speed, only run few miles; 54 gns., a bargain.—Emerson, Belle Vue Wakefield. [X4207

1911 Triumph, new Dunlop back wheel, new belt, everything in good order; £21.—Walbro' Motor Co., Ely, Cambs. [X4133

1912 T.T. Triumph, excellent condition, very fast, all accessories; £25.—Norris, 19, Taverstock Terrace, Holloway. [9981

1911 Triumph, clutch model, T.T. and touring bars, new piston, fast, reliable, splendid condition; £24.—F. Sowter, Brigg. [1001

TRIUMPH, 1914, 4h.p., clutch, single-speed, perfect condition, spares; £42.—Doctor, King Edward Memorial Hospital, Ealing. [1226

TRIUMPH, 1914, 4h.p., 3-speed hub, torpedo coachbuilt sidecar, speedometer, lamps, spares; £55.—Mason, Hosier, Cockermouth. [1279

TRIUMPH, 1914, 4h.p., 3-speed, T.T. roadster, and sidecar, speedometer, lamps, accessories; £35.—Oakthorpe, Kingsend Av., Ruislip. [1029

1912 Triumph, complete lamp, horn, etc., lately overhauled, in splendid running order; £33.—Phillips, Pitcairn, Basingstoke. [1233

3½h.p. Triumph, 1909, accessories, 16 gns.; sidecar, wicker, high doors, £3/10; Druid forks, £1/10.—72, Perry Vale, Forest Hill. [1187

TRIUMPH 1910 Clutch Model, in beautiful condition, lamp, etc.; sacrifice £22/10.—Longman, 1, King St., Acton. 1578 Chiswick. [1189

TRIUMPH, 1913, 3-speed, free engine, coachbuilt sidecar, wind screen, all accessories; £43.—62, Stondon Park, Honor Oak Park. [1084

TRIUMPH, 1911, in absolutely new condition, thoroughly overhauled, carefully used; £23/10.—Tarrant, Manor Farm, Eton Wick. [1078

TRIUMPH, 1914, 3-speed, Canoelet sidecar, and accessories, little used, perfect condition; £55, lowest.—48, Blunts Rd., Eltham, S.E. [1124

TRIUMPH, 1911, N.S.U. 2-speed gear (new), with all accessories, in splendid condition; £26.—W. G. Russell, 223, Worsley Rd., Winton, Manchester. [X4160

TRIUMPH Motor Cycle and Mills-Fulford sidecar for sale, used under 2,000 miles; price £58.—Apply, Box 9,078, *The Motor Cycle* Offices, Coventry. [X3687

TRIUMPH, 3½h.p., 1912 engine, 2 speeds, free engine, usual Triumph features, trial, £27/10; with sidecar £30.—Moss, Accountant, Chesterfield. [X3696

1915 Triumph Junior, all accessories, including rear light, not done 400 miles; price £35, bargain.—Taylor, Lower Green Av., Scholes, Cleckheaton. [X3697

TRIUMPH, 1912¾, clutch model, all accessories, new tyre, belt, carefully used; owner going Front; trial here; £26.—Lieut. Bedford, Castle Hotel, Taunton. [9985

1913½ Triumph, clutch model, adjustable pulley, new condition, climb anything, with accessories; £33.—Box 9,117, *The Motor Cycle* Offices, Coventry. [X4312

1913 3½h.p. Triumph, free engine, variable gear, new belt, accessories, splendid condition; £32.—James Smith, Woodcock Hall, Leetock Hall, near Preston. [X4092

1915 Junior Trimph, 2-speed, guaranteed carefully run under 500 miles only, splendid condition throughout; £34/10.—J. S. Pratt, Colwall, near Malvern. [X4100

MOTOR CYCLES FOR SALE.

Triumph.

1909 Triumph, 3½h.p., 2-speed, F.E., wicker sidecar, engine thoroughly overhauled, lamp, horn, tools; £27/10.—Bell, R.E. Office, Mill Hill. 'Phone: 1886 Finchley. [X3702

1914¾ T.T. Triumph, 4h.p., Clincher de Luxe, enamel and plating perfect, lamp, horn, all accessories; after 8 p.m.; £41/10.—Milford, 23, Greyswood St., S.W. [X3704

TRIUMPH, 3½h.p., F.E., variable gear, new wicker sidecar, Jones speedometer, mirror, all splendid condition; £42.—24, High St., Collier's Wood, S.W. [1260

1914 Triumph, 4h.p., T.T., 3-speed, semi T.T. bar, lamp, horn, speedometer, little used, condition guaranteed as new; £53.—Robinson's Garage, Green St., Cambridge. [6867

TRIUMPH, 3½h.p., 1909, fair condition, tank and frame re-enamelled last year, Millennium 2-speed and free, back tyre good, front worn; £20.—J.W., 1, Heath Hurst Rd., Hampstead. [1069

TRIUMPH, 1913, 3-speed, cane sidecar, Lucas lamp, rear light, horn, Cowey speedometer, complete equipment, guaranteed perfect; £45.—Sergt. Harvey, R.E., Park Rd. North, Bedford. [X4098

1914 Triumph, 4h.p., 3 speeds, Millford sidecar, new Palmer tyre on back, new Dunlop on sidecar, new Pedley belt, in thorough condition; £55.—C. Hall, 62, Sumatra Rd., West Hampstead. [1044

1913 Trimph, free engine, semi T.T., new Dunlop tyres, P. and H. lamp set, long horn, Millar rear light, recently re-bushed and overhauled by Triumph Co.; £33.—Walbro' Motors, Ely, Cambs. [X4128

TRIUMPH, 1913, free engine, all accessories, and spares, including belt, 2 inner tubes, and cover, just overhauled by makers, perfect; £35, nearest offer by August 30th.—C. F. Lambard, Ashbourne. [1017

TRIUMPH, 3½h.p., 1911, 2-speed countershaft, drip feed, new P. and H. lamp set, trip speedometer, condition perfect; any examination; £27.—Pinkerton, 50, Peak Hill, Sydenham, or 'phone Avenue 976. [1121

1911 Clutch Triumph, following new: Cylinder, piston, tappets, valves, Palmer, F.E., hub, and belt; good head light, spares; absolutely reliable; £30.—Bedford Villa, Fuller's Rd., Woodford, Essex. [1071

TRIUMPH, 3 speeds, and collapsible sidecar, accessories, all in splendid condition, £55; clutch Triumph, Palmer cords, speedometer, in good condition, £28.—Hazel Motors, 24-28, Woodford Rd., Forest Gate, E. [1168

TRIUMPH, Sept., 1913, Sturmey-Archer, fitted Gloria cane sidecar, recently overhauled, in perfect condition, good tyres, Lucas lamp, and horn; £46, or change higher power; private.—7, Wastdale Rd., Forest Hill. [1223

V.S.

5-6h.p. V.S. Combination, 2-speed, free engine, splendid condition; £25, or exchange Scott, Triumph, or Douglas.—Stone, 274, Gloucester Rd., Horfield, Bristol. [1225

Werner.

WERNER, 2½h.p., splendid running order, just completely re-bushed and overhauled, costing £5, late 1914 Amac, U.H. mag., tyres good, Whittle, lamps, spring forks, etc., 100 m.p.g.; great sacrifice, £12/10, or nearest.—Hayes, 55, Warren Rd., Torquay. [X4315

Williamson.

WILLIAMSON, 8h.p., Canoelet sidecar, good tyres; £38.—9, Waldegrave Rd., Teddington. [1058

WILLIAMSON New 8h.p. Water-cooled Sidecar Combination; £99/5; exchange quoted.—Motories, 68, Horton St., Halifax. [0706

WILLIAMSON Combination, 1914, done 4,000 miles, just been overhauled, fitted with new tyres, splendid condition; £62/10.—Simpson, Chemist, Brighton. [X3945

1914 8h.p. Water-cooled Williamson Combination, screen, accessories, and spares, as new, just overhauled; £70, no offers.—40, Eviugton Valley Rd., Leicester. [X4119

WILLIAMSON (September, 1913) 8h.p. w.c. Motor Cycle, coachbuilt sidecar, speedometer, screen, easy starter, spares, new condition, little used; £58/10, or nearest offer.—Rothwell's Boot Stores, Stacksteads, Rossendale, Lancs. [X4158

Win-Precision.

WIN-PRECISION, 1914, und sidecar, coachbuilt, 3¾h.p., 3-speed, heavy Dunlop; £40.—48, Evering Rd., Stoke Newington. [1051

Wolf.

WOLF 2½-3h.p. 2-strokes, three in stock; £25/8.—Lamb's, 151, High St., Walthamstow. [1096

WOLF, 1915, 2½-3h.p., 2-stroke, only had little use; £21/10.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [1212

Yale.

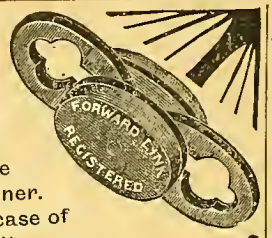
YALE Motor Cycle in stock, 8h.p., 2-speed, kick start; 60 gns.—Jones, The Broadway, Muswell Hill. Sole agent for N. London, trade and retail. 'Phone: Hornsey 2562. [7636

Zenith.

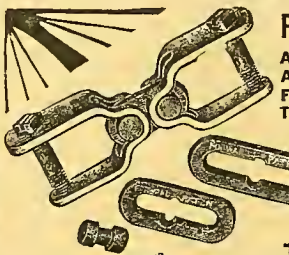
ZENITH, 1912, 6h.p., with sidecar; £25.—Dr. Mullock, Southwold. [9971

ZENITHS, 8, 6, 5, 3½h.p., best sidecar machines extant.—Timmons, Mansfield. [X4170

FORWARD LEATHER COVERED LINK should be carried by all users of the Forward fastener. Invaluable in case of too short a belt.



1/- from all agents.



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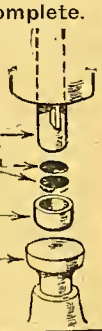


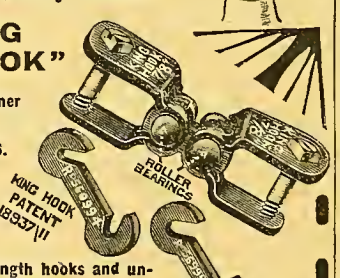
Made in three sizes, 5/16, 3/8, and 7/16

6d. set of four.

1/- set of eight.

With quantity of discs.

"KING HOOK" The super hook fastener with **ROLLER BEARINGS.**



Double strength hooks and unbreakable screws.

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"KING HOOK" leather covered links, **10d.** each.

"CHAMPION KNUT,"

An exceptionally strong and reliable fastener at a popular price. Guaranteed to give complete satisfaction.

9d. detachable. **1/-** adjustable.

FORWARD MOTOR CO.,

SUMMER ROW, BIRMINGHAM.

Makers of **FORWARD BRITISH PLUGS.**

MOTOR CYCLES FOR SALE.

Zenith.

1914 Zenith-Green, with cane sidecar, not ridden 300, all spares; £51.—Jarmain, Harwich. [9968

ZENITH, 1913, 3½h.p., Gradua, and sidecar, in splendid order; £37.—P. Corby, 88a, High St., Merton. [1014

A BRAND New 1915 Zenith Combination, 8h.p.; £106.—Box 9,116, *The Motor Cycle* Offices, Coventry. [X4300

1915 Zenitha.—Immediate delivery from stock of most models.—Alexander's, 115, Lothian Rd., Edinburgh. [1245

6h.p. Zenith-Gradua Combination, clutch, and kick starter, speedometer, accessories; £60.—R. Davis, 14, High St., Biddulph. [X3703

1914 6h.p. Zenith, new underslung cigar shape sidecar, good condition; bargain, £54.—683, Leytonstone Rd., N.E., Essex. [1049

ZENITH, 1913, 6h.p., clutch, kick-start, Canoelet sidecar, all on; £45.—Seen at Stag Motor Works, East Finchley, London, N. [1123

1913 Zenith-Gradua 6h.p., clutch, kick starter, only 2,800, absolutely like new throughout.—Parkinson, Builder, Chatteris. [1267

ZENITH, 1912, 3½h.p. Jap, Gradua gear, Bosch mag., thoroughly sound; £30.—P. J. Evans, John Bright St., Birmingham. [1155

ZENITH, 4-5h.p., 1915, countershaft model, new condition, ridden under 200 miles; £60.—28, Lindsey Rd., Bishop's Stortford. [X4333

ZENITH-GRADUA, 4h.p. J.A.P., sidecar, P. and H., exhaust whistle, horn, new Dunlops on back, reliable; £35.—Nicholson, Butcher, Barking. [9922

ZENITH, 1914, 4-5h.p. twin, and 1914 sidecar, speedometer, new condition; £48.—B. Stone, 28, St. Ann's Rd., Burdett Rd., London, E. 'Phone: 65 East. [9996

ZENITH-GRADUA, 1914, 5h.p. twin, excellent order and condition, horn, lamps, plugs, tools, new tyre back; £48.—Particulars, Tom Simpson, Hatter, Stalybridge. [9977

1912¾ Zenith, 3½h.p., new tyres and belt, J.A.P. engine, with speedometer, lamps, and Montgomery sidecar; £32/10, good condition.—Trimm, Summer Rd., East Molesey. [9995

ZENITH 8h.p. 1914 Combination, clutch, Gradua gear, Cowey, lamps, fully equipped, as new; bargain, 48 gns.; appointment.—37, Shernhall St., Walthamstow. [1065

ZENITH, Zenith, Zenith, 1914, 8h.p., 90×77½, Millford coachbuilt sidecar, and all accessories; £65, or offer.—Cass's Motor Mart, 5, Warren St., Euston Rd., W. Museum 623. [1149

ZENITH-GRADUA, 1913½, 6h.p., and Millford Corvette sidecar, semi T.T. bars, lamps, horn, speedometer, spares, carefully used, fast; £45.—10, Netherton Rd., St. Margaret's, Twickenham. [1008

1914 Zenith Combination, Gradua gear, countershaft, and kick starter, in good condition, 3 lamps, speedometer, and spares, and accessories; £54.—Rhiewbank, Kentish Rd., Belvedere, Kent. [9999

ZENITH-GRADUA, 1913½, 4h.p., clutch, kick start, lamp, horn, whistle, tools, Swan sidecar (nearly new), insurance, very smart turnout; £41, or sell separately.—71, Muswell Av., Muswell Hill, London. [9974

1914 9h.p. Zenith-Gradua Combination, No. 7 Gloria, finished in red, excellent order, very fast, all accessories, £80; also light car chassis, complete with road wheels, gear box, steering, condition as new.—Plant, 7, Park St., Bow. [9982

ZENITH Gradua 1915 Models in Stock.—3½h.p. twin model B 59 gns., 4-5h.p. model D 62 gns., 8h.p. model H 73 gns. plus 5% increase; sidecars in stock; exchanges, extended terms.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0481

1915 6-10h.p. Zenith-Gradua and torpedo sidecar, only done a few hundred miles, absolutely in perfect condition, and guaranteed as new, all accessories; cost £108.—For inspection and trial run apply, West Lodge, St. George's Hill, Weybridge. [X4087

ZENITH 1915 countershaft models, delivery from stock: 3½h.p. twin, model B, 60 gns.; 4-5h.p., model D, 64 gns.; model H, 8h.p., 74 gns., plus 5% surcharge; sidecars in stock to fit; exchanges or extended terms arranged.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0492

Ladies' Machines.

1913 Lady's Douglas, condition as new; £38; any trial.—Nixon, Brampton, Cumberland. [X4112

LADY'S Forward Motor Cycle, 1914, 2¾h.p., 3-speed; £25, or near offer.—Kent, Terminus Buildings, Seaford, Sussex. [X3941

LADY'S Hobart 2¾h.p. Motor Cycle, 1914 model, re-enamelled and overhauled by makers, in perfect order; £35, or near offer.—Glenroy, Walsgrave Rd., Coventry. [X4302

LADY'S Late 1914 Douglas, Lucas lamp, horn, and accessories, perfect condition, unsoiled, only done 400 miles; buying combination; £48/10.—Blackwell, 3, Leicester Terrace, Northampton. [X4178

Miscellaneous.

N.S.U., 2¾h.p., free engine; 1914 Connaught, 2¾h.p.; both good condition, ready for the road; £20 each.—Hunt, Settle. [X4229

THE MOTOR CYCLE
ESTABLISHED IN 1903
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Eliminating Weaknesses.

A FEW weeks ago a suggestion was made in these columns that motor cycle experts might well be appointed by the Government to study the conditions under which motor cycles are used at the Front and report upon any desirable alterations or amendments in design. Such an obvious course, it might be argued, has already suggested itself to the powers that be; it may have been, but we have our doubts, judging from the information constantly reaching us. For instance, a certain popular make of motor cycle used by the army at the Front has given constant trouble in one outstanding particular, and it is now quite an ordinary thing to see such machines running about with certain important parts, such as fork, wheel, and hub, taken from another make of machine. There is nothing very serious in this, it is true, if we have an abundance of mechanics with nothing else to do but to effect the alterations and an inexhaustible supply of parts, but such really is not the case. Now it must be understood that we are not necessarily taking to task the firm whose machine has needed the attention to which we refer. It would indeed be a miracle if no single machine at the Front failed to develop some little weakness in view of the extremely severe conditions under which it is regularly used. The *pavé*, the badly cut up roads due to abnormal traffic, and the constant riding over the roughest tracks are bound to tell their tale, but what does astonish us is the fact that this trouble has been allowed to continue so long. It was last autumn when the weaknesses in motor cycles selected by the Government began to make themselves manifest, and we contend that there has been ample time in the interim to strengthen up or amend the design of any faulty part. Manufacturers at home may have some idea of what is needed, but only experienced men on the spot can state authoritatively that this or that is wrong for the exceptional conditions, and demand a rectification of the error in future consignments of machines. One hears frequent cases of the frame of a certain make of motor cycle giving out, other cases of fork weakness, and so on until one wonders when engineering skill will be called in to rectify these weaknesses. This is where expert advisers could minimise tremendously the work of the mechanics of the Army Service Corps.

Motor Cyclists and Compulsory Service.

FOR some months past a section of the daily press has been urging the Government to adopt compulsory service forthwith, and without necessarily expressing a diverse or favourable view of this national movement, we should like to make it known far and wide that, so far as motor cyclists are concerned, to urge compulsion at present is rather beside the point. There is no dearth of applicants so far as this patriotic section is concerned. For months past our efforts have been taxed to the utmost in coping with the applications we have received from prospective recruits, and we go so far as to say that were motor cyclists treated in a businesslike manner, and in a manner they expect to be treated, the numbers would be increased threefold. We refer mainly to anomalies in the matter of payment. We have dealt with the subject before, and, as our readers know, it is not a question of the low rates of pay—for that matter the British Army is, as a rule, very well paid—but the inconsistencies of paying different rates to motor cyclists performing exactly the same kind of work. The rates for motor cyclists vary from 1s. 2½d. to 6s. per day, depending upon the section, which every reasonable man will agree is absurd; all car drivers get 6s. per day, and frequently a man whose experience is just insufficient to pass him as a car driver has to accept pay but one-fifth of the amount. Before there is compulsion we contend that the first move is to equalise the rates of pay.

An index to the advertisements in this issue will be found on the page facing the back cover.

The Variable Pulley Countershaft Speed Gear.

A DESIGN WHICH IS FREQUENTLY RESUSCITATED.

MANY readers will remember that in the days of the tricar boom, about 1904, there was produced a gear invented by Captain Low (named, I believe, the Lindsay-Low gear, and shown at the Stanley Show), which then looked like solving the problem of variable speed and transmission, but unfortunately experience with this and subsequent gears of the same type has shown that, although very good in theory, there are practical objections in the case of its application to a motor cycle which prevent it being very successful.

A diagram making clear the operation of this gear is shown in fig. 1. Between the engine and the rear wheel, which is represented by the circle A, is a countershaft B, which swings on an arm C controlled by a speed lever D. The countershaft carries two fixed pulley flanges E and F and a sliding flange G, both sides of which are bevelled the same as the flanges E and F. On each side of the sliding flange G there is consequently a belt pulley, the diameter of which varies according to the position of the flange G along the countershaft. In the sectional view the right-hand pulley is of large diameter and the left-hand one small. By moving the flange to the left the diameters of the pulley grooves change.

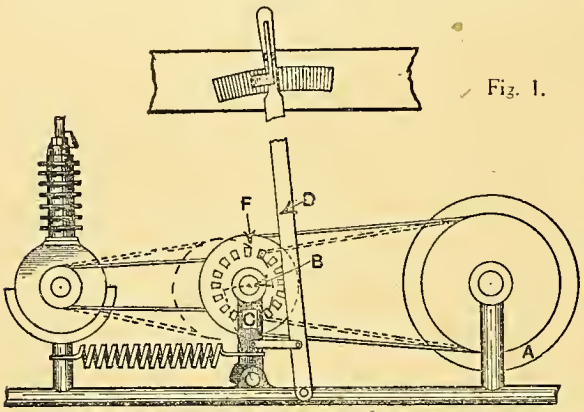
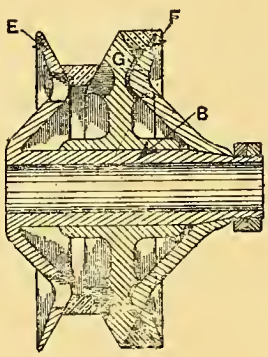


Fig. 1.



Drawings from the patent specification of the Lindsay-Low gear

In full lines in the larger diagram the engine is shown as driving on to the small pulley of the countershaft, and the larger pulley on this shaft drives the back wheel so that one has a high gear. By pushing the lever D forwards the dotted line position is reached in which a big double reduction of gear is obtained between the engine and back wheel. As the lever is moved forward the back belt tends to tighten and the forward one slackens off. The back belt, therefore, forces the flange over, and the diameters of the two belt grooves change to suit the relative tensions of the two belts.

Consequently this simple arrangement provides a gear which is gradually variable over a fairly large range, but the chief difficulty in applying this gear to a motor cycle is that one is compelled to use two short belts, and everybody knows that it is difficult to make a short belt stand up. Although one can demonstrate the practical operation of a gear of this kind, experience alone shows that serious trouble with belts ensues.

The belt line changes as the countershaft is moved forwards and backwards, and to overcome this various schemes have been suggested by later inventors. In patent No. 20,894 of 1909, granted to Messrs. W. E. and F. R. Lea, the whole countershaft was free to slide slightly, so that the positions of the pulleys automatically adjusted themselves and the correct belt line was maintained. A similar suggestion is made in J. A. Prestwich's patent No. 30,168, 1910, in which it is stated that the complete pulley could be made movable on the countershaft.

It will be gathered that this kind of countershaft gear is very attractive to inventors, and it is not surprising to find that it has lately cropped up again, the inventors being Messrs. W. W. and W. H. Wall, patent No. 25,050, 1912. Fig. 2 shows the compound pulley mounted upon the countershaft K. This is carried by one end of a lever L, the other extremity extending to near the top bar for operation by the rider. In this case, to move the pulley sideways to deal with the change of belt line the lever near its pivot engages a kind of cam M. These later inventors have apparently done nothing to overcome the difficulties previously experienced with the belts, and until one is assured that this has been dealt with I cannot see that this latest construction to come to light should be any more practical in the long run than its predecessors.

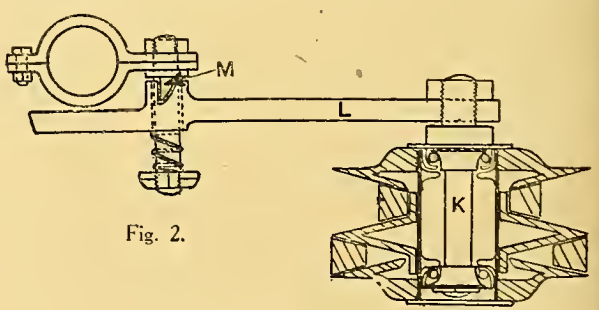


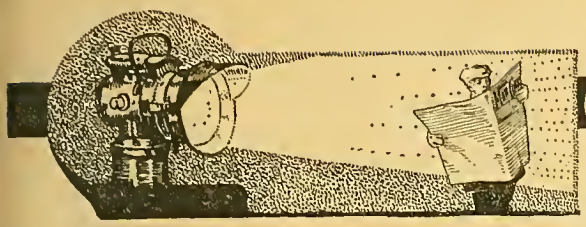
Fig. 2.

It may be of interest to mention that a gear of this kind, made some six years ago, is before me as I write, having been traced in a corner of my office, discarded as impractical in the limited space available on a motor bicycle.—E.

"The Motor Cycle" Photographs

Duplicates of photographs appearing in "THE MOTOR CYCLE" will be supplied at the following rates: Unmounted prints half-plate, 1/6 post free; mounted, 1/9 post free. This refers to photographs taken by "THE MOTOR CYCLE" operators.

Orders, which must be accompanied with remittance should be addressed to the Photographic Department—Iliffe and Sons Limited, 20, Tudor Street London, E.C.



Occasional Comments

"By Ixion"

Where Small Engines Score.

Nobody has laid sufficient emphasis on the vast superiority of small engines in respect of accessibility. I am a born tinkerer—eternally dismounting the mechanism of my machines, sometimes because they need it, sometimes because it is raining and I have nothing else to do, sometimes out of sheer curiosity and the wish to do justice to designers. But for all my enthusiasm I rather shirk the job of decarbonising the average big twin, and when I overhaul a 3½ h.p. single I am usually tempted to rest content with removing the cylinder, leaving the crank case *in situ* on the frame, because I know it is a heavy job to get a 500 c.c. engine back into a frame single-handed. But who minds whipping a baby two-stroke or other 2¾ h.p. power unit out of the frame? The all-round clearance is so great that you can be sure of getting it away with the minimum of labour and coaxing, and when it is out you can walk down the garden, carrying the engine in one hand.

The Swing-up Stand.

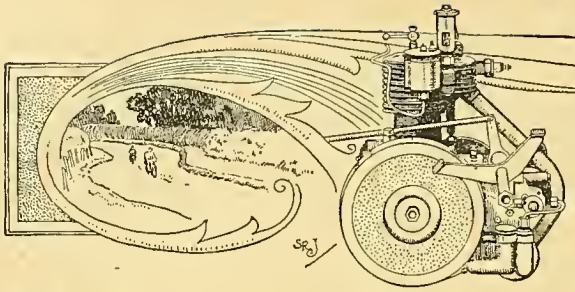
Is there a master patent in respect of the stand which raises itself by means of a spring when the machine is wheeled off it, of which the Rudge is an excellent example? Years ago, when our makers compelled us to stoop over the tail of our machines, and secure the stand by means of a dirty little wing nut (supposing it had not dropped off on the road) I penned many a vitriolic note in favour of the "kick-up" stand. I don't particularly detest the kick-up stand nowadays, but I am at present afflicted by a machine which has a fat place in the centre of its cross-bar, the fat place being guarded by projections at each end, and mounted so far out of centre that it just fails to register with the spring catch. As a consequence I have to stoop over the mudguard when I wish to fasten the stand, and meanwhile the exhaust extension spits carbon dioxide in my face. Thus I am pining for the spring-up stand, such as adorned my last Rudge. How many of my readers recall the old Price stand, which had two separate legs, each of which had to be disengaged from a spring catch individually, and hoisted up? What a chance for a little ceremonial in the M.M.G.S. if such stands were still in vogue. "Raising stands by numbers! At the word one, tilt machine away from you, right hand on the saddle peak. . ."

Double Clutch Control.

I have been trying a 1916 Harley-Davidson, and under ordinary circumstances should have bought one, as the design is extremely interesting, including such attractive features as combined hand and foot clutch control, mag-dynamo lighting-cum-ignition, and a carburetter which permits of 4 m.p.h. on top gear. But at a time when our imports vastly exceed our exports, it seems to be a point of honour with patriots to prefer home-built stuff, and so I owe my impressions of the "H.D." to the courtesy of a friend, whose conscience is less fastidious than mine about the national interests. Incidentally, the "H.D." does not seem inclined to shed its twiddly bits, after the manner of so many American machines. Yankee workshops appear to stock a curious brand of taps and dies, as their bolts and nuts tend to become frightfully loose after a tenth part of a turn; from this defect the "H.D." is certainly free. I was much taken with the combined clutch control. Hand control is certainly the goods for starts from rest, as you want your legs for propping up the machine while the engine is getting to work, especially when the machine is a 7-9 h.p. and scales the best part of 3 cwt. On the other hand, foot control is more convenient when once the outfit is on the move, as one hand is often absorbed with the engine control, and the other is needed for sounding a hooter. I recommend the dual control to British designers of heavyweights *de luxe*.

Spring Frames.

The leading publicists have not yet got busy on the benefits which war confers on nations in partial compensation of its frightful losses; but it is at least obvious that it should benefit motor cyclists in certain directions. In particular, it has so completely broken up our already inadequate road surfaces that the problem of spring frames is bound to be tackled when the industry resumes its normal round. My experience of motor cars seems to suggest that the countries with the worst roads invent the best car suspension systems, but the parallel does not apply to motor cycles, for America's roads are probably the worst in any civilised country, and the American motor cycle engineers have reached no unanimity on the springing question. The Indian, of course, is an example of what can be done, but the average Yankee maker is satisfied with a clumsy solution; he piles up engine power, which enables him to fit enormous car-size tyres and rims; and possibly he supplements these makeshift notions with a spring saddle pillar, often so crudely carried out that the saddle leather is constantly fouling some metal part of the frame. In England we are even less enterprising, and so far little or nothing has been attempted; the lethargy of American makers under even worse conditions suggests that the problem is very thorny. Much of my riding is done over roads corrugated by heavy gun and lorry traffic; and oddly enough, my greatest comfort this year has been attained with machines differing widely in design. My Baby Levis was genuinely comfortable over the bumps at speeds up to 30 m.p.h., but bucketed at higher speeds; and a 6 h.p. Ariel, with rather sloppily-inflated tyres, was delightful up to the same speed. At high speeds practically every machine I have ridden this year has been a real liver shaker, and made me sympathise with the American car racer who fitted shock absorbers between his teeth!



ELECTRIC LIGHT FROM A MAGNETO.

MR. PETTYT, of Maude's Motor Mart, recently gave us an opportunity of examining a magneto fitted up in accordance with a very ingenious scheme by its late owner, who is now a member of the R.N.A.S. The idea was to make the magneto available to supply current for lighting lamps or charging accumulators without rendering it useless for its original purpose.

To put this plan into execution, a drum was mounted on an extension of the armature shaft beyond the contact breaker. This drum, which is shown diagrammatically in the accompanying sketch, consists of three portions, of which Nos. 1 and 2 form the commutator. The commutator serves to change the alternating current of the magneto into a continuous current suitable for charging accumulators, while Nos. 2 and 3, electrically connected by a pair of brushes and a metal bridge piece, serve to regulate the supply of current to the commutator. The various brass segments are insulated from one another by insulating rings, and also by the insulating blocks. There is only one such block in segment 3, and its purpose is to interrupt the flow of current to segment 2, and thence from the external circuit to the accumulator for a short time before the separation of the points occurs at the contact breaker of the magneto. During the greater part of the revolution, the current from the primary of the magneto passes from segment 3 to segment 2, and thence to one or other of the brushes. The other of these brushes bears, meanwhile, upon segment 1, which is connected to the other side of the accumulator and to the frame of the machine, thus completing the primary circuit back to the other end of the primary coil of the armature. As the drum rotates, the brushes alternately bear upon segments 1 and 2. There are two insulating blocks, and twice in every revolution, at the time when the primary current is very low, the brushes cross these insulating blocks, and exchange segments with one another. The result is that each brush, instead of collecting an alternating current from the armature, collects a current flowing in one direction, and therefore suitable for charging a battery. This current, of course, is not steady, but rises and falls as the armature rotates. At the same time it conforms to the essential of not changing in direction. For a short time during every revolution, this current to the accumulators is interrupted altogether. This is when the insulating block on segment 3 passes under its brush and interrupts the circuit. If the current were free to flow to the cells at all times, the operation of the magneto for ignition purposes would be interfered with.

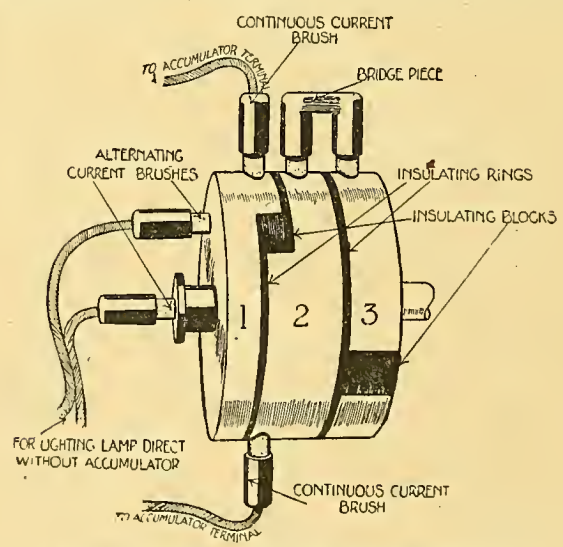


Diagram of commutator for converting alternating current of a magneto to continuous current for charging, as described in the accompanying letterpress.

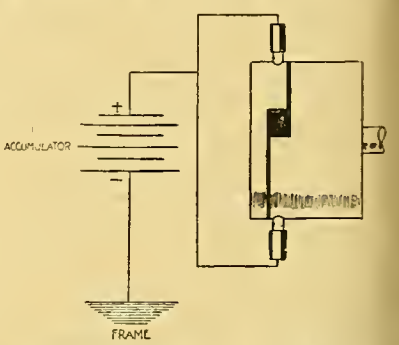


Diagram showing how the connections are made for charging. Both wires are connected to one terminal of the accumulator, the other terminal being earthed.

It occurred to the designer of this interesting apparatus, that it might be useful not only to be able to light lamps through an accumulator, but also to be able to keep a lamp burning when no cells were being carried. For the latter purpose, he adopted the simple method of fitting the two brushes A B, one of which draws off an alternating current from the insulated central screw. This current can be used for lighting a lamp, subsequently completing its circuit through the second brush A B bearing on the side of segment 1, and thus connected to the frame of the machine.

The device briefly described has been proved to work quite satisfactorily, both for charging and for direct lighting. When the former was going on, the magneto functions just as usual, but when lighting the lamps direct, it is more difficult to get it to fire at low speeds, owing to the interference with its ordinary functions by the circuit to the lamps. Separate switches are, of course, required to determine the flow of current along the two lighting circuits and the ignition circuit.

A Visit to a Signals Training Centre.

How Royal Engineer Despatch Riders are fitted out for Active Service.

IN our issue of July 15th we gave a short description of an R.E. Signal Station, and thanks to our kind friend through whose courtesy we were enabled to take particulars of this, we recently spent a still more interesting afternoon at the principal centre where those who enlist in the R.E. to do signal work receive their instruction. Naturally, a number of these men are despatch riders. The scene on this occasion lay in a beautiful country residence standing in its own grounds. In the house itself was the officers' mess and numerous class rooms, while nearly all the officers and the men slept under canvas in the park.

There is a fine village green outside the entrance gates, and at the time of our arrival over a hundred D.R.'s were being inspected previous to their departure for the Front. It was, indeed, a fine sight, as may be realised from the illustrations in our centre pages last week. The men were fully equipped with overcoats, map cases, revolvers, and were, in fact, in full field kit, while on the carriers were the usual large square box on which extra clothing rolled up was strapped. What a different outfit from that carried by the competition rider, who enters a long distance trial under "touring conditions"! With these he does not comply, but this cannot be said of the D.R. who goes to serve his country carrying very little more than the average motor cycle tourist who wishes to cover his journey with just sufficient for his comfort should take with him.

The machines were the latest pattern 2¾ h.p. W.D. Douglases and 4 h.p. Triumphs, and both they and the men looked extremely smart and businesslike. After an inspection, the men were drawn up in formation representing three sides of a square, and an elderly but smart Colonel, grown grey in the service of his country, addressed them and gave them friendly advice before starting on the event of their lives—their departure to fight for their King and the land they love so well. The address over, a sharp word of command rang out, and all rushed back at the double to their machines. These men were the finished article, and the order was executed with the alacrity one expects from the British soldier.

(Upper) Looking into the workshop at the despatch riders' training centre described on this page. In pre-war days the "workshop" was an outhouse of a country residence.
(Lower) Two old friends at the R.E. training centre—A. J. Sproston and A. Milner.

The hall was an ideal spot for a training centre. Its position and its beauty could not fail to appeal to the men, while the stables and outhouses, to say nothing of the courtyard, appeared to be made for the purpose. Each little outhouse was fitted up; most of them were workshops, while one of the stables had been ingeniously turned into a power-driven machine shop. The machinery consisted of a capital lathe, while the power was derived from a "dis-ed" (pronounced dissed) Douglas. In D.R. language the word "dis" is used to denote anything faulty or even scrapped. It has been borrowed from the R.E. Signal Service, whose men talk of a telegraph or telephone line being "dissed" when the messages are interrupted, meaning thereby disconnected. The frame of the Douglas had certainly suffered, and the poor little mount, minus front and back forks, resembled an old Motosacoche power unit as we remember it in the old days. It stood unclamped on a wooden box and drove the lathe by means of a long belt. It was started up for our benefit and did its work well. Its cooling was aided by means of two fan blades riveted on to the flywheel.

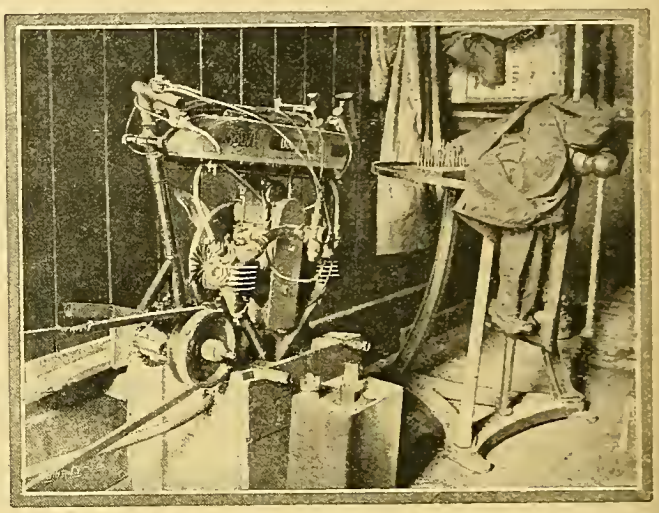
A Visit to a Signals Training Centre.—

In another part, a coach house was full of hard-working artificers, who were carrying out sundry repairs. Here we met two old friends, Sergeant Albert Milner, of Birmingham, and Corporal A. J. Sproston, of whose brave doings mention has already been made. We then had a stroll round the grounds and saw men receiving instruction in all the various phases of signalling. A visit to the stores was most interesting. In the spares department there was a stock which would almost have made some of our best known accessory dealers envious. Next to that was the clothing store, and a little further on a shed with the significant words "dissed bikes" chalked up.

A War Veteran.

Among the officer's "remounts" we saw a rusty old 1914 3½ h.p. three-speed hub gear Triumph, on which its name "Wind-up" was painted. What a tale that fine old stager could tell! It belongs to an officer who is one of the few survivors of the original signal company who went to France a year ago, and is about the only motor cycle which has lived through the whole campaign. The next shed was stocked with beautiful new machines not yet taken from their crates, waiting for the lucky D.R.'s to claim them.

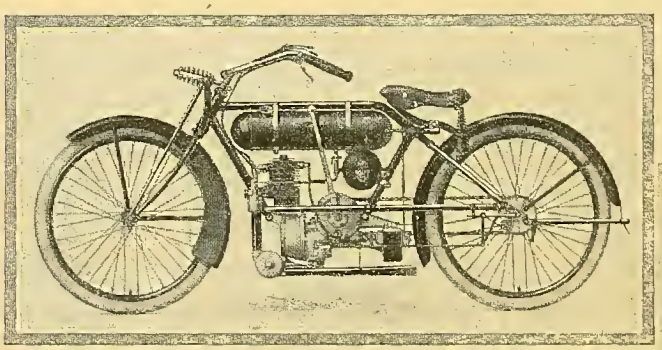
This concluded a most interesting afternoon, and left us deeply impressed by the feeling of what our favourite pastime was doing in serving King and Country.



The power plant in the "machine shop." Note the fan blade on the flywheel, also that the power unit is resting on the box without being clamped thereto.

The Two-stroke American Cleveland.

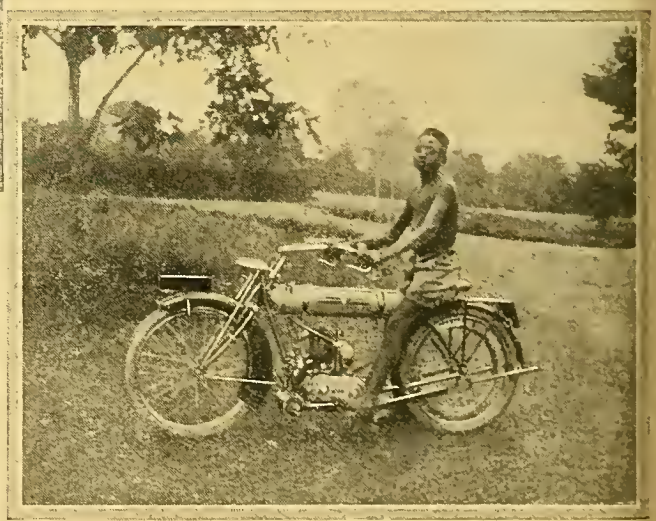
THE new two-stroke lightweight Cleveland, an American machine, particulars of which were given in *The Motor Cycle* of July 1st, 1915, page 6, has been remodelled and is now being placed on the United States market.



An American two-stroke lightweight, the Cleveland, which may shortly make its appearance on the British market. It sells in the United States for £30.

As we pointed out at that date, the Cleveland bears a very strong resemblance to a well-known Coventry machine, and the illustration of the marketed model as distinct from the experimental model does not lessen this impression. The design of the Cleveland is interesting as representing practically all that is good in British design plus American ideas in the unit system of construction and other notable details. Two-strokes, it may be interposed, are not generally favoured in America as yet, and the firm's announcement states that forty-three makes of two-strokes are on the market in England. To reiterate the essential details, the single-cylinder engine has a bore and stroke of 63.5 mm. × 70 mm. (222 c.c.). The crankshaft is longitudinal in the frame, and drives the two-speed gear by means of a shaft. A multi-plate clutch is located between the two-speed gear box and the driving chain to the rear wheel.

Modifications in the latest model illustrated consist of a dropped frame giving a lower saddle position and a straight exhaust pipe. Bowden control is adopted on this machine. The Cleveland sells in America at about £30. As American prices go this is rather high, partly explainable by the fact that it is about the first machine of its type.



A young Baganda chief (Uganda) and his two-stroke Triumph. The natives in that part of Africa are very keen on motor cycles, especially two-strokes, for as one chief said, "I like the two-stroke very badly, for it makes a good noise." We have to thank Mr. R. Freeman, of Kampala, Uganda, for the photograph.

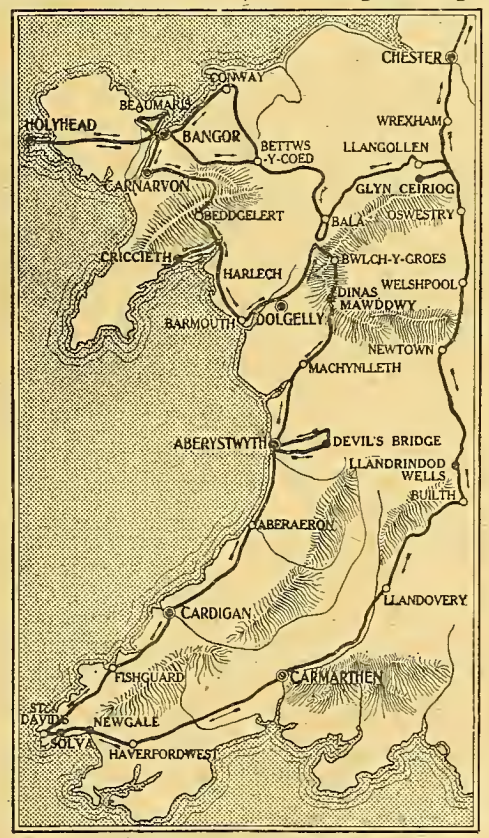
Through the Length and Breadth of Wales.

A Comprehensive Tour of 800 Miles.

A halt for tea by the side of Whitesand Bay, St. David's.

A LETTER arriving from the Zenith Co., to say "Machine despatched per passenger train," sent me in haste to Lime Street Station, Liverpool, where I found it covered in just one piece of brown paper, but quite safe and sound. I was soon riding home through the crowded streets, and was delighted to find that the big 8 h.p. was as easy to control as the 6 h.p. (if not easier) that had served us so well for over two years. The arrival of the new mount resulted in the planning of a holiday tour. After a few trial runs, the day arranged for the start arrived at last; this was a signal for the six weeks' spell of fine weather to break. We crossed the river from Liverpool to Birkenhead by the passenger ferry, the charge for the machines and passengers being only 8d.

After leaving Birkenhead, we covered the sixteen miles to Chester with but one stop to strap the luggage on more securely. Not until Chester was left behind did we feel we had really started. The roads to Rosset were very wet; then to Oswestry they were drier, but rather bumpy. After this, in spite of the rain, they were good. At Welshpool (sixty miles) we stopped for lunch. The weather clearing a trifle, we set out again, and, skirting Newtown, we were soon climbing the long twisting hill that leads to Llandrindod Wells. The road was of the scenic railway type. The Wells here did not impress us at all favourably. The modern red brick building seemed far too much in evidence. After putting in a gallon of benzole, which cost 1s. 8d. compared with 1s. 3d. in Liverpool, we proceeded through Builth, Llandovery, Llandilo, to Carmarthen, where we put up for the night, the distance for the day being 160 miles.



Route covered by the writer.

At breakfast we had a fish called sewin; it is a local fish caught by the coracle men. It was new to us, but was very similar to salmon. Before leaving, we rode to the river to inspect one of these remarkable little coracles. They are made of canvas and thin laths of wood tarred over, and are so light that they can easily be lifted on one finger.

The streets of Carmarthen are steep, narrow, and winding, which rendered driving somewhat tricky. We left by the Haverfordwest Road, which was in very good condition. It included a three-mile climb to Red Roses,

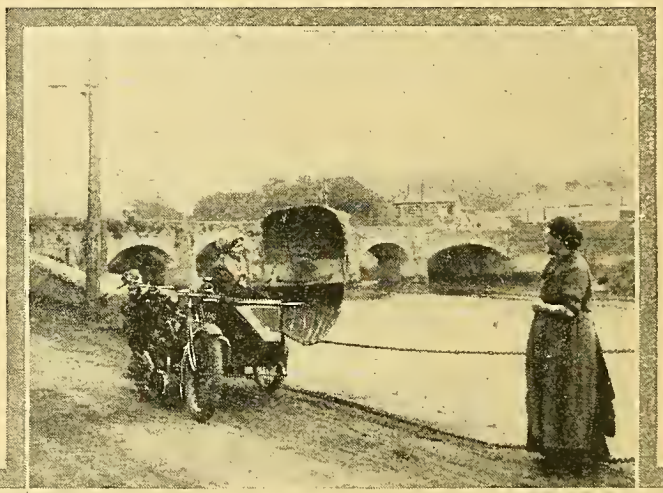
Through the Length and Breadth of Wales.—

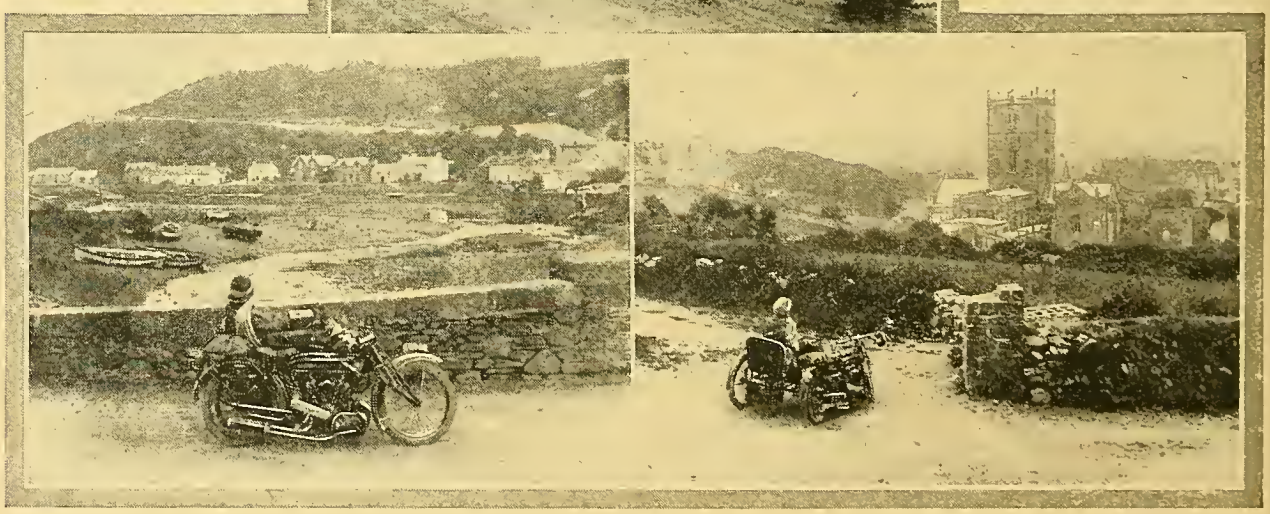
then a switchback to Narberth, where it was market day. Driving through the streets was rendered somewhat exciting by having to dodge the horses and cattle assembled for sale. Then a pretty run to Haverfordwest, with its castle on the hill top and the village clustered on the hillside below it. The High Street has a gradient of about 1 in 8, and is one of the steepest main streets I have ever seen.

The road after this was loose and undulating as far as Newgate, where it goes down to the sea and runs parallel with it, separated only by a 7ft. barrier of stones thrown up by the sea. The rise out of this bay was a real stunner, a hairpin bend and then what appeared to be about half a mile of 1 in 8. I got up pretty easily, but I should think any under-powered or over-geared machine would have considerable trouble in this district. Further on there was a steep hill into and out of that pretty little fishing village of Solva that made me feel thankful for the reserve of power we had.

IN SOUTHERN WALES.

Examining a coracle—a single seated fishing boat of extremely light construction. Carmarthen bridge in the background





Fishguard old harbour, showing new road in background leading up hill-side.

St. David's Cathedral and ruins.

An Interesting Cathedral.

The road to St. David's was good as a whole, though rather loose in parts. The approach to St. David's is up a long gentle hill, and our first glimpse of the cathedral was the sudden appearance of the top of its square tour, which seemed to shoot up out of the earth. The nearer we got the higher the tower became, until we topped the crest and looked down into a kind of basin with the cathedral and the splendid ruins at the bottom. Riding down to it required good brakes. We went in, and it seemed to be the quaintest cathedral in the kingdom. The inside is of a slate colour. The supporting columns staggered and splayed outwards at the top. Some old bells, and the stains on the floor where the bodies thrown up by the sea were laid, were all of interest to us.

The surrounding ruins took some little time to explore, but were well worth it. We left the cathedral with the soothed and satisfied feeling and effect which these grand masterpieces of architecture have on one. On reaching the motor we found the back tyre was flat. After repairing it we made for Whitesand Bay, about three miles distant, where we had a picnic tea and, seeming to have the whole world to ourselves, indulged in a bathe. We were so pleased with this far corner of Wales that we decided to spend the night here. Going for a walk after supper on the cliffs we were stopped by two soldiers who told us that no one was allowed there after 9 p.m.

The road to Fishguard was very difficult to follow as there were so few signposts, the surface, too, was bad, having been repaired by a quantity of loose flinty stones which were left for the traffic to roll in. Fishguard is not an inviting place, it is very similar to Holyhead. The old harbour is rather interesting, but the road down to it requires careful driving and good brakes. The rise out (northwards) by the new road is fairly easy.

I should like here to warn any reader contemplating a tour in this part of the country against taking the

6,943 miles— and not a puncture in either tyre!

A letter from William V. Pack, "Dale" Motor and Cycle and Electrical Works, Sunningdale, Berkshire:

"Will you please send me one 26 x 2½ Cover to fit 26 x 2¼ rim, the same as supplied to the Sunbeam Co. for 1914 3½ h.p. motor cycle.

"I mention this because I have had such good results with these fitted. I have now done 6,943 miles as registered by my speedometer, and have not even had a puncture in either tyre. I not only use my cycle for pleasure but for business purposes. I have a box carrier which holds 18 cans of petrol, so you will see that your tyres have some very rough usage.

"I want this new cover for a sidecar at present until it is needed for the cycle.

"Trusting you will send same by return."

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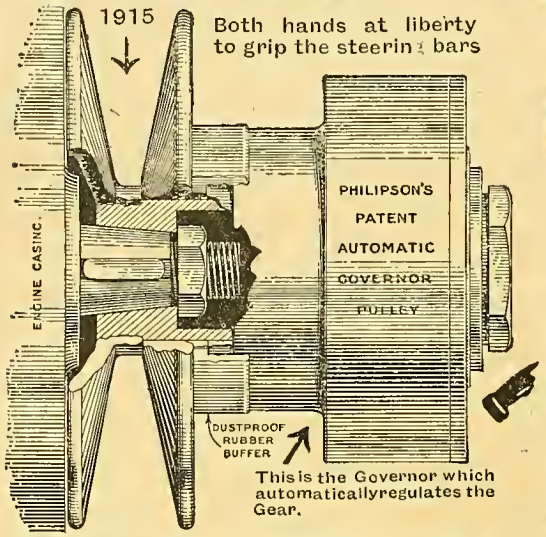
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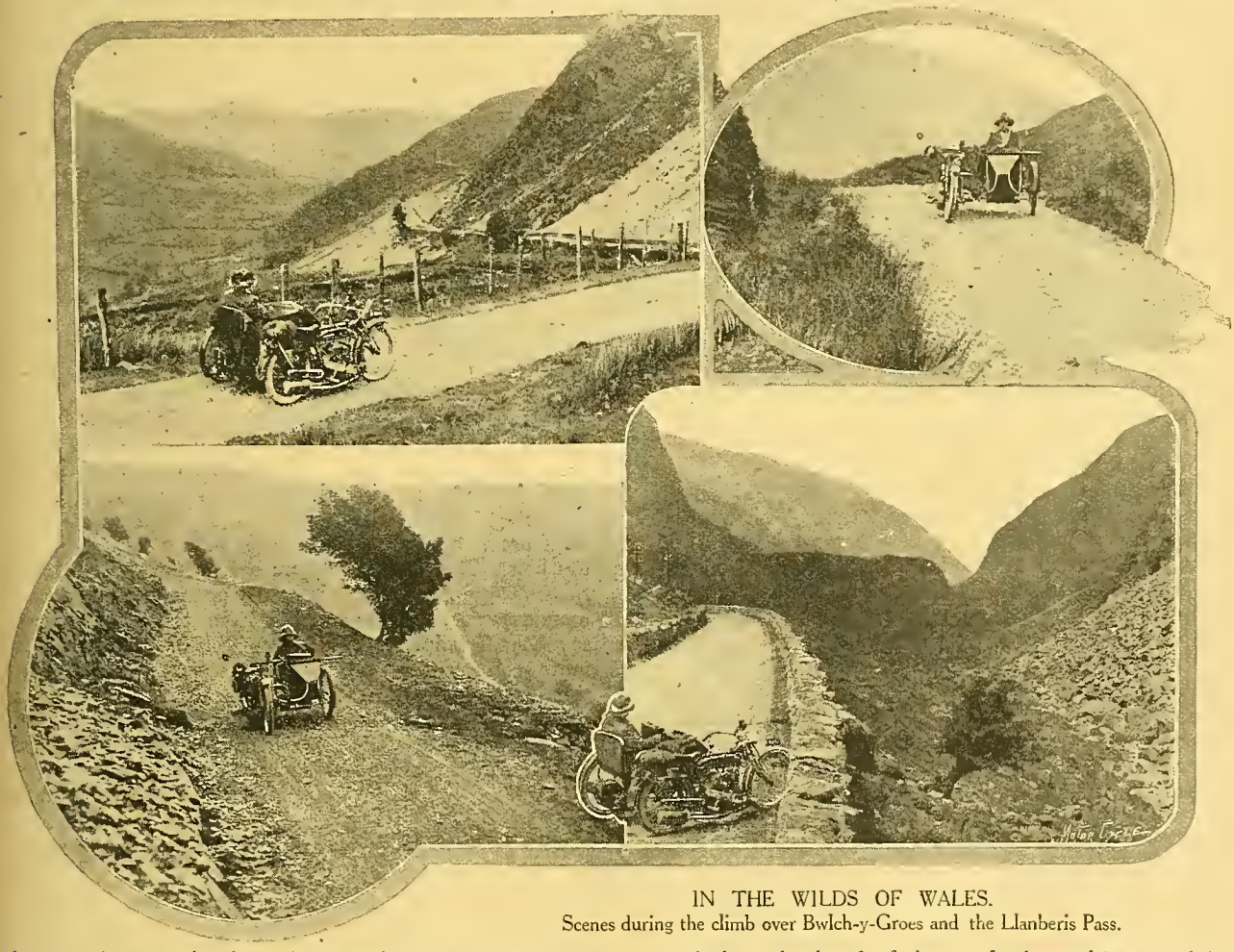
Through the Length and Breadth of Wales.—

coast road from Fishguard to Aberystwyth The roads are in a disgraceful state, full of pot-holes; also steep gradients and sharp bends abound. Neither does the scenery make it worth the trouble. The south-west coast is by no means the finest part of Wales. After we left Cardigan, a nail punctured the rear tyre, and, while engaged in the repair, the occupants of a two-seater car offered assistance. A mile further along the road we found the car with the near side wheels in the ditch. It was our turn to offer assistance. The car was apparently undamaged, so, with the assistance of a few local people, we had the car back on the road in a very few minutes. We



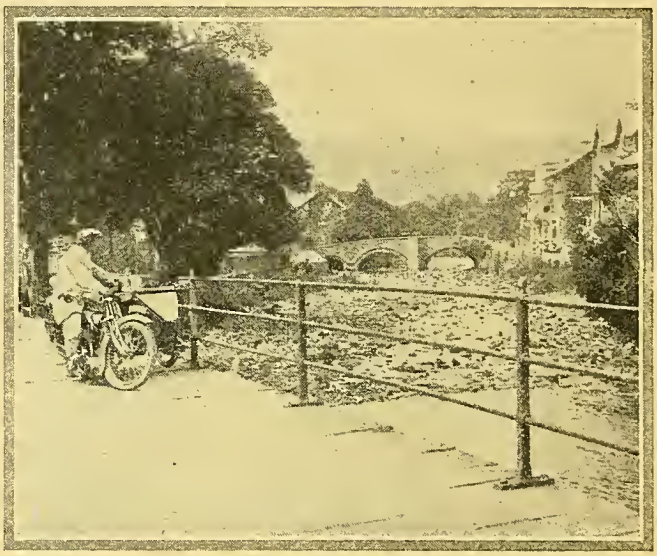
IN THE WILDS OF WALES.
Scenes during the climb over Bwlch-y-Groes and the Llanberis Pass.

then sped on again through the rain to Aberystwyth, where we elected to stay a couple of nights. On the second day, after a wet morning, the afternoon turned out bright, so we decided to get the machine out and do the circular tour of thirty miles to Devil's Bridge. This was a splendid top gear run up well engineered grades. The two hours spent exploring here are among the most pleasant recollections of our trip. No one should pass this way without paying Devil's Bridge a visit. Tiring of the seaside in the wet, we decided to make for Bala over the highest pass in Wales—the famous Bwlch-y-Groes. The few hours sunshine in the morning saw us cheerfully covering the miles between Aberystwyth and Machynlleth, but before we reached the village of Dinas Mawddwy the rain came pelting down and the thunder rolled; amid those wild hills the scene was most impressive.

Upon reaching the foot of the mountain we dismounted and walked round the hairpin bend to reconnoitre and decide the best way to negotiate the corner. Returning to the side convenient for the corner, it having a right hand bend, I attempted to take it fast, but it was no good; the weight of the luggage behind the sidecar when the machine was tilted on the gradient of about 1 in 5 lifted the front wheel, and it would not grip and bounced to the left; lifting the exhaust and applying the brakes saved us from sliding right into the ditch. I then let the machine run backwards into the bend of the road, then with a straight run sailed up in fine style. At the top we stopped to take a photograph, and as the rain had ceased we had a picnic. We seemed to be right on the top of Wales. The rain coming on harder than ever we coasted down the hill, having to open two gates *en route*, and took a photograph of the spot where Joe Edge, over two years ago, went over a precipice with an empty sidecar. Reaching Bala Lake we turned to the left and went *via* Dolgelly. About a mile from Barmouth we ran clear of the rain and entered that place with the water dripping off our oilskins, while ladies with sunshades up stared in astonishment. We still had a pint of benzole left from

Through the Length and Breadth of Wales.—

the gallon bought at Aberystwyth, and had covered a distance of seventy miles of heavy country, so I was naturally pleased with such economy. We put the machine up at Wilkinson's garage, where we received every attention, and the charges were the most reasonable found on the trip. The first fine day dawned as we left Barmouth for Harlech. Here we spent some two hours looking over the castle and basking in the sunshine on the walls. We then pushed on to Portmadoc. Before entering this town we were twice pulled up at toll bars and had to pay 9d. at each.



The village of Beddgelert.

The Most Beautiful Pass in Wales.

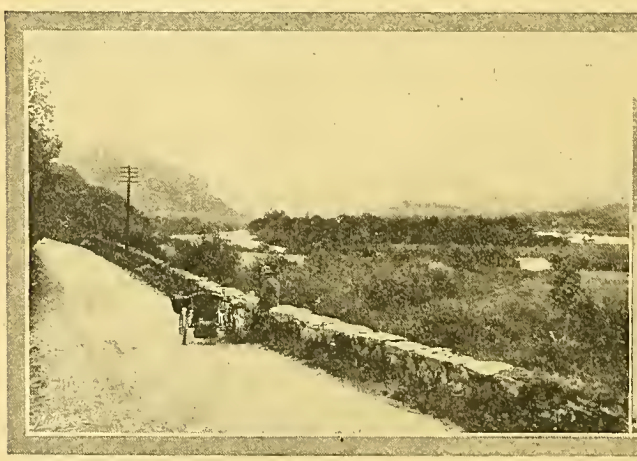
After crossing the embankment we entered the town and inspected the miniature railway that runs to Festiniog. From here we proceeded by a good road to Criccieth. The place was packed, as it was market day, so we drove on into the country, where we had a picnic far from the madding crowd, afterwards retracing our steps to Portmadoc and on to Beddgelert, *via* the Pass of Aberglaslyn. This pass is, to my way of thinking, one of the most beautiful in Wales. The colours and blending of tints on the mountain, with the Glaslyn sparkling below, make up a scene which it would be difficult to forget. The road is a good one, and though a long pull up, it is so well engineered that it is a comparatively easy climb.

Staying the night at Beddgelert, we walked to the supposed grave of Gelert, though it is now fairly certain that no dog was ever buried there. Next day we made a late start, being loth to leave so charming a spot. A nice run on top gear to the top of Llanberis Pass and a free-wheel run down brought us to old Llanberis, where we took a walk to see the waterfall. Then, circling Snowdon, we pulled up near the lake and climbed the hillside, after which we went on *via* Carnarvon to Bangor. From here we made trips to Holyhead (a splendid fast road), Bettws-y-Coed, Conway, etc. We made the return journey by Bethesda, Capel Curig, Bettws-y-Coed, Cerrig-y-Druidion, to Lake Bala, and after circling round this went on to Corwen, Llangollen, to Chirk, where we turned into the lovely quiet valley of Glyn-Ceiriog, staying the night at Dolywern. This is one of the few spots not known to the average tourist, but well worth a visit. As I was due back at the office the next morning, the machine was let out somewhat, and the forty-five miles to the end of our trip was covered somewhat over legal limit.

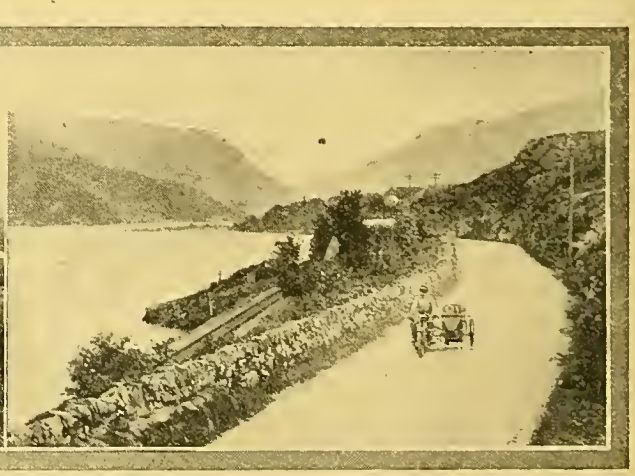
A Few Details of the Trip.

The trip covered 800 miles, during which time twelve gallons of spirit were bought, ranging in prices from 1s. 3d. to 2s. per gallon. The only troubles consisted of two punctures, a choked jet, and taking 1in. out of the belt. The immunity from belt trouble I put down to the large pulley and long drive. The engine and magneto were not touched. In conclusion, I must say that I think that my new 8 h.p. Zenith-Jap is more comfortable and at the same time safer than the lower powered mount, as one can take corners on hills more slowly and yet still be sure of being able to pick up afterwards. Curiously enough, I find no increase in the petrol consumption.

MERCURIAL.



Near the Pass of Aberglaslyn, between Portmadoc and Beddgelert.



A good stretch of road between Llanberis and Carnarvon.

MOTOR CYCLE TYRES.

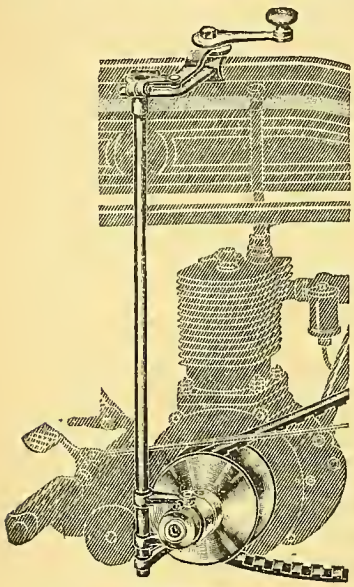
Protection to every thread of fabric is as important as the fabric itself. Like a spider's web, every thread in a Tyre casing is extremely sensitive. A weakness at one point will militate against the whole. Each thread must be carefully put in relation to the others and the rubber applied so that no weakness or strain arises at any point. In fact, every millimetre must be of equal calibre so as to produce the fabric that will stand Tyre work.
This is the care used in making the fabric for the Clincher, and is the guarantee of safety to every user.

"THE TYRES THAT ARE SUPERIOR"

THE NORTH BRITISH RUBBER CO., LTD.,
169, Great Portland Street, - - - London, W.
FACTORIES: - - - - - - CASTLE MILLS, EDINBURGH.

The GRADO Multi-Pulley

is just the thing, gives gear for 4-1—8-1, Lightweight 10-1.



Motor Cyclist ! Read what it will do for you.

This is no boast. It starts your machine like a car.

Takes machine and sidecar up hills impossible without.

Gets you safely through thick traffic.

Ensures safety over the greasiest roads.

In fact, it turns work into pleasure.

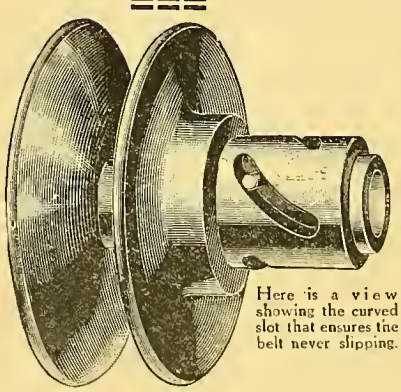
Just half a turn of the handle on the top tube changes from top gear to free engine. So Simple!

Read what a Police Constable says :

Police Station, Broughton,
Kettering, Aug. 16th, 1915.

Gentlemen,
I received the Grado Multi Pulley mid-day Saturday last. Thanks for your prompt attention to my order I fitted same and tried it same evening, and am delighted with it, it acts splendidly to every move of the control lever, and there is not the slightest slip with the belt. The fitting is quite simple. Once more thanking you,

I remain, yours faithfully,
Constable H. SWIFT.



Here is a view showing the curved slot that ensures the belt never slipping.

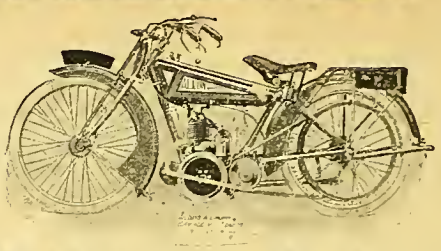
Fitted in two hours to Triumphs, B.S.A.,Bradbury Premier, T.D.C., Rex, Singer, Precision, and others.

Fit one to-day, you are sure to be pleased.

Prices : For Triumph, B.S.A., etc., **£3 3s.**
Lightweights, **£2 10s.**
Recessed for J.A.P., old Rex, etc., 10/- extra.

Write for Catalogue to-day.

The GRADO Manufacturing Co.,
64, Pershore Street, BIRMINGHAM.



Alldays Allon REGD. Two-Stroke

THAT it should be possible to get a really reliable and up-to-date motor bicycle at this price is in itself remarkable, and there's a reason for it.

SINCE the earliest days of motor cycling we have been building motor cycles. We have done all the experimenting. That experience was based on 250 years of the best engineering experience, and the result is seen in the perfection of the Alldays Allon. By large output, economical purchases of material, and continuous employment of the most highly-skilled workmen, we can produce the Alldays Allon at the unrivalled-value figure of

£30 plus 5% for Single-speed; **£37** plus 5% for Two-speed; and **£40** plus 5% for Two-speed, hand-controlled clutch.

Send for free Descriptive Booklet.

ALLDAYS & ONIONS (Pneumatic Engineering) Co. Ltd.
Estb. 1650.
Matchless Works .. .. Birmingham.
London .. .. 58, Holborn Viaduct, E.C.
Liverpool .. .. .. 53, Renshaw Street,

"THE MOTOR CYCLE" RECRUITING SECTION.

Recruiting Temporarily Closed for the Motor Machine Gun Service.

FOR a short time recruiting for the Motor Machine Gun Service has ceased. Motor cyclists have come forward splendidly for this section, and the training centre is now full up. As soon as further recruits are wanted, an announcement to this effect will be made in these columns.

The six cyclists who came from the Excelsior Training School last week were surprisingly proficient, considering their short training of only a week. The tests had been carried out on a rough common not far from the Excelsior Works, and the men were taught to ride in circles and to execute the figure 8 in and out of some football goalposts which happened to be handy. All of them, too, satisfactorily performed the brake test, and as the result of lectures and explanations by means of a sectional engine and parts, they were passed into the training batteries with a knowledge not only of driving, but of the internal mechanism of the machines. Their places were taken by six more cyclist recruits, who promise equally well.

One of the recruits, C. T. Williams, came specially from North Queensland to enlist, and though an experienced car driver, preferred the motor cycle section at 1s. 2½d. per day.

One or two motor cyclists who have served in volunteer battalions were accepted last week.

Any motor cycle agent willing to exhibit a special poster as soon as recruiting is re-opened may have a copy or copies on application to the Editor.

With further reference to the paragraph in our last issue respecting transfers, under War Office letter transfers from the Territorial armies are now forbidden. It will be known that transfers from the new armies have been prohibited for some time past. We have received further applications for transfers since our last issue went to press, and should any applicants not have received replies, they will gather the reason from the foregoing.

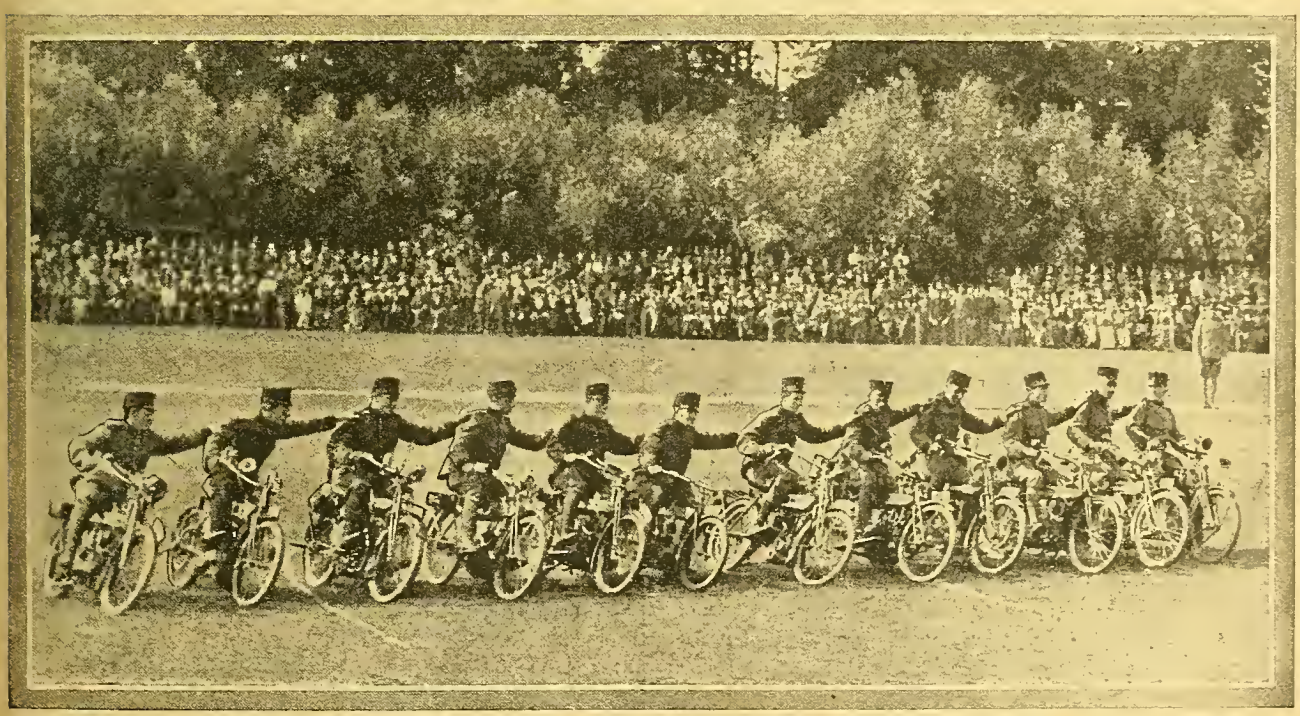
Of the sixty-odd recruits who attended last week's inspection the shortest was 5ft. 1in. and the tallest 6ft. 4in.

Latest recruits in the Motor Machine Gun Service are given hereunder :

Atkinson, F.	Fryer, R.	Pattison, J. B.
Barlow, W. S.	Gardner, D. G.	Poskitt, J. M.
Bloodworth, W.	Haley, H.	Rowntree, L.
Booth, W.	Hamer, T.	Spink, E. R.
Burbridge, D. J.	Hewitt, C. H.	Stark, T.
Caffrey, G. A.	Higgins, E. G.	Stearn, F.
Camm, T. V.	Hurd, J. H.	Stranger, G. H.
Carlisle, C. H.	Jewell, S. N.	Symmonds, L.
Carr, E.	Jones, W. J.	Tattersfield, N.
Castle, T. E.	Laws, H. E.	Templar, A.
Catling, E. C.	Lillford, T.	Tompkins, G.
Crowe, H. L.	Lowe, C. T.	Walker, J. W.
Davey, A.	Meats, C.	Watson, J. P.
Day, G.	Mell, L.	Williams, A.
Dowling, R. C.	Murdock, H. L.	Williams, C. T.

R.E. Despatch Riders.

Despatch riders are still wanted for the waiting list of the South Midland Divisional Area. Only experienced riders can be passed, and, before their names can be added to the list, a demonstration in riding abilities is necessary. All motor cyclists residing in Warwickshire, Worcestershire, Gloucestershire, Buckinghamshire, and Berkshire who wish to enlist as despatch riders in the Royal Engineers should apply for an appointment to the nearest inspecting officer for the area, viz., Lieut. H. Smith, 6, Brynland Avenue, Bishopston, Bristol; Mr. Geoffrey Smith, 19, Hertford Street, Coventry; or Mr. R. C. Davis, 11, Hythe Bridge Street, Oxford.



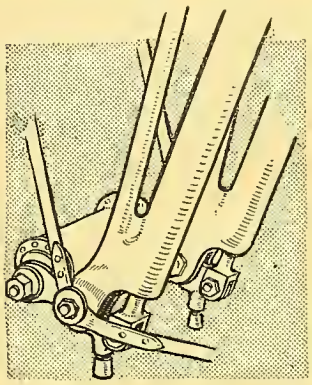
A DOZEN DUTCH MOTOR CYCLISTS GIVING AN EXHIBITION RIDE IN A CIRCLE.

Dutch military motor cyclists demonstrating their prowess before H.M. Queen Wilhelmina at the Hague. Many well-known British makes will be recognised.

THE 8 h.p. TWIN-CYLINDER THOR.

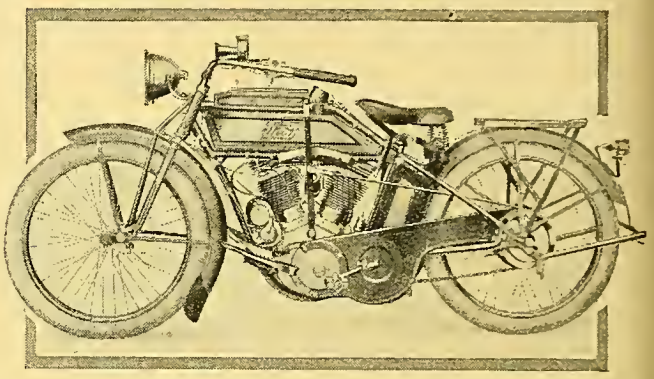
The Latest American Machine to be placed on the British Market.

THE 1916 8 h.p. twin-cylinder Thor, which hails from Chicago, follows generally American practice. It has a pleasing appearance, being enamelled in two shades of blue, with panelling around tank and toolbox. Its mechanical features are interesting. The cylinders, which are of 82.5 mm. by 92 mm. bore and stroke, are placed at an angle of 50°, and have entirely enclosed overhead inlet valves. This contributes much to the neatness of the machine, at the same time making for quiet running. The machine is fitted with a Schebler carburetter. A typically American feature is the combined Splitdorf magneto and dynamo, mounted on an extension of the crank case between the down front tube and cylinders. The accumulators are carried below the saddle-pillar. Twist handle-bar control is adopted, the left-hand operating the spark and the right-hand the throttle. The exhaust lifter is controlled by a lever on the right-hand side, operating by means of Bowden wire. Chain drive is employed, and the transmission is direct from the motor sprocket (which is under-geared and driven at a reduced speed, being mounted eccentrically to the engine-shaft) to combined clutch and two-speed hub gear.



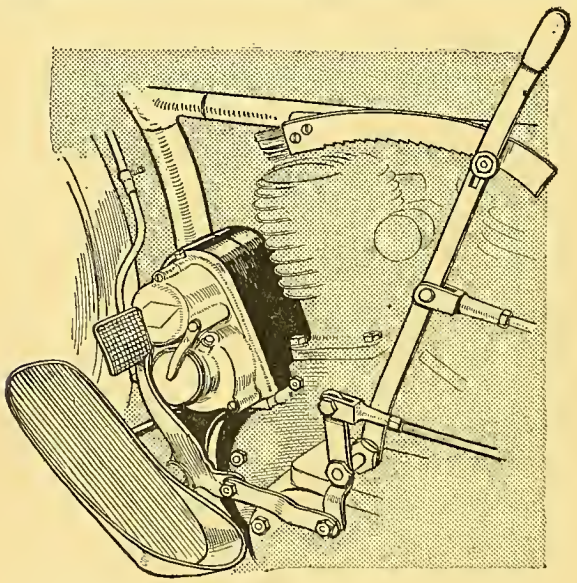
The cantilever front wheel suspension.

The springing consists of spring forks on the rigid truss principle, the springs being housed in the fork tubes and a spring saddle pillar. The toolbox is on the top tube over the tank, where also the speedometer (driven from the back wheel) is fixed. The main tank will hold two and a half gallons of petrol, and an oil tank holding three quarts is situated below the saddle.



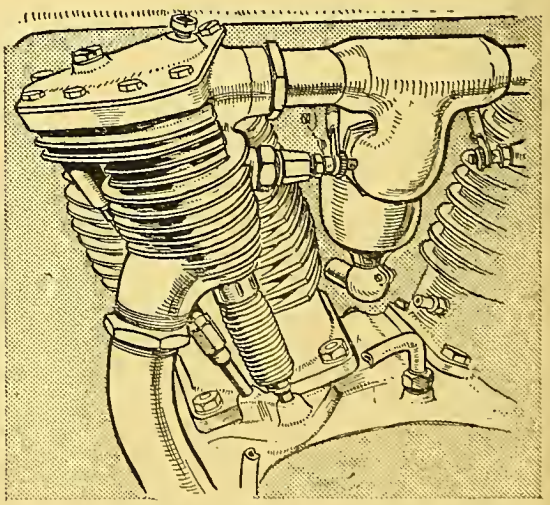
The latest American arrival—the 8 h.p. twin-cylinder Thor.

The London and Home Counties agency is held by Watkins and Harding, Ltd., Portman Garage, 172-4, Upper Richmond Road, East Sheen, S.W.

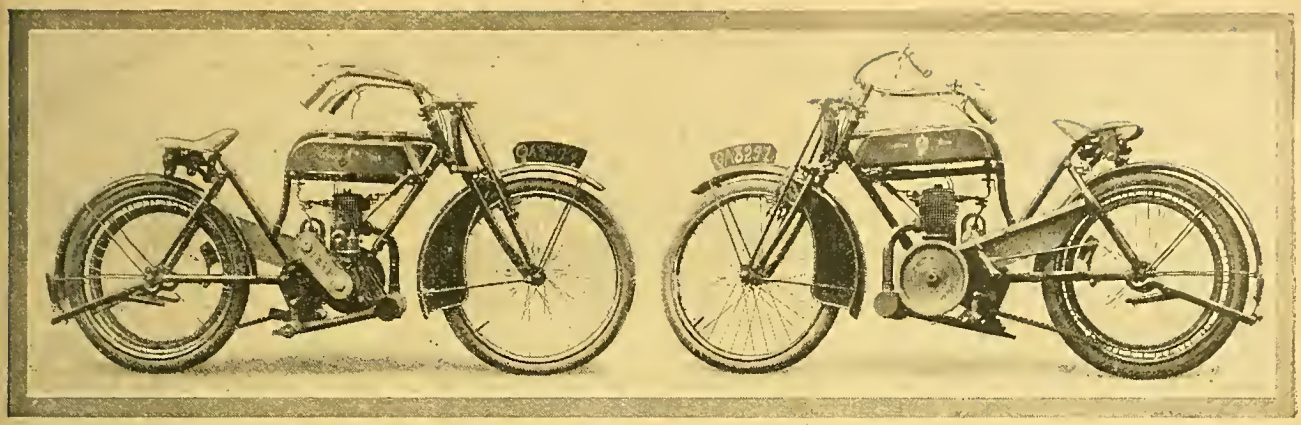


Position of combined magneto and dynamo, foot and hand-operated speed lever, and footrest on the American Thor machine.

On the Paddington Recreation Ground on Saturday, Harry Martin beat the track records for one mile and five miles (flying start). He covered the first distance in 1m. 17⅗s., thereby reducing the previous best track figures by 3⅕s. The five miles were covered in 6m. 46s., which beat record by 10⅗s. The meeting was mainly for push cycles, and was organised with the object of providing a fund for comforts for men of the 3rd City of London Royal Fusiliers.



8 h.p. twin-cylinder Thor engine, showing enclosed overhead valves, position of sparking plugs and "T" shaped induction pipe. The cylinder dimensions are 82·5 mm. × 92 mm., giving a cubical capacity of 976 c.c.



Ladies' model of the two-stroke Despatch Rider, particulars of which appear on this page.

NEAT CARBIDE CARRIER.

The Chemico carbide carrier is a neat fitment for the motor cycle made by the County Chemical Co., of Birmingham. It will be seen from the sketch that the carbide is carried in a leather case attached to the back down tube of the machine by a couple of straps. In this position the case is both accessible and not in the way. It is constructed to carry a ½ lb. tin of caroide, and the price complete is 2s. 2d.

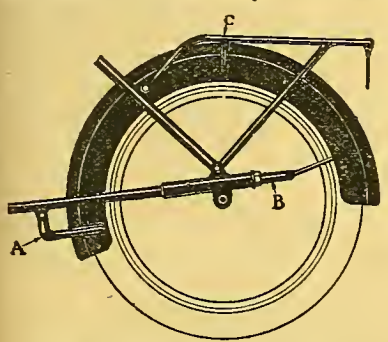
Chemico carbide carrier for attaching to seat tube of a motor cycle.

A SLIDING MUDGUARD.

AS is well-known, the back wheel of a Zenith is capable of moving backwards and forwards to maintain correct belt tension when the Gradua gear is operated; consequently, if the mudguard is attached to the frame of the machine the distance between it and the wheel will constantly vary. The illustration given herewith shows a mudguard which is designed to overcome this, and is the patent of Mr. R. E. Dicker.

Referring to the sketch, it will be seen that fixed to the chain stays is a fork A, in which steel plates on the sides of the valances slide, while the operating stays B, working with the sliding bushes in the chain stays pull and push the guard; a joint is made in the mudguard stays to eliminate the tendency to bend. At point C the guard swivels on a hardened bolt attached to one of the carrier tubes. A road test of the device shows that there is no rattle, the slides do not stick, and mud does not affect its working.

Another advantage is that by simply removing three nuts the mudguard may be detached from the machine.

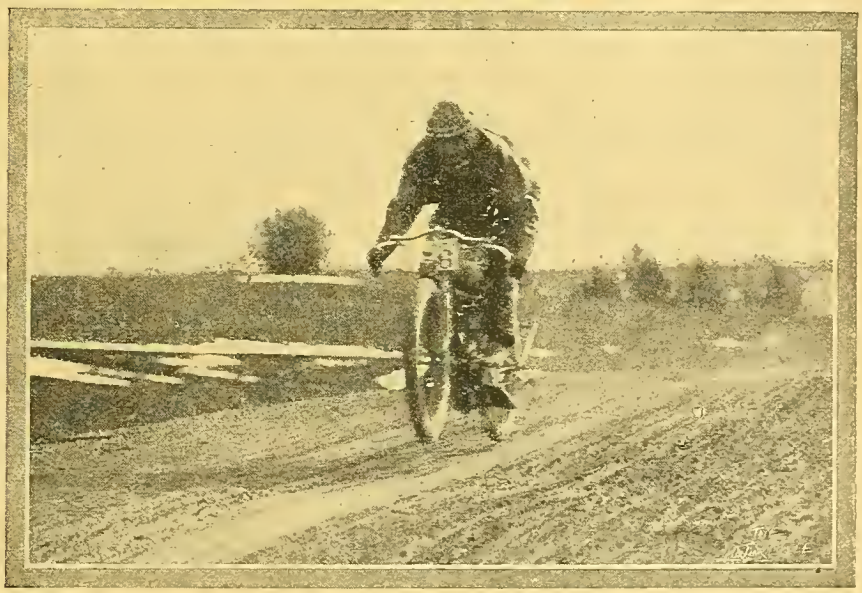


The sliding mudguard for fitting to Zenith machines. (See paragraph above.)

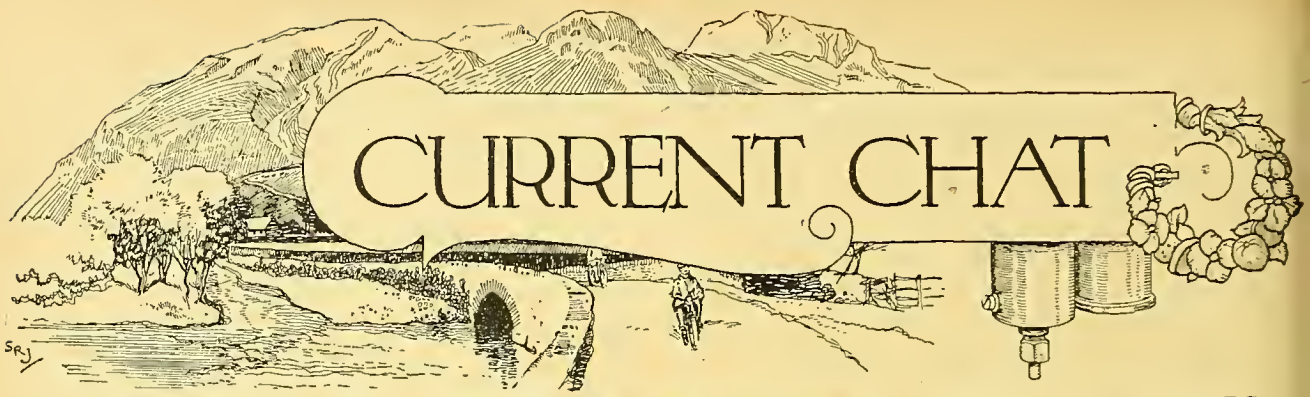
THE DESPATCH RIDER LIGHTWEIGHT.

A HANDY little machine is that made by Messrs. Dreng and Co., of Erdington, Birmingham, and known as the "Despatch Rider." It is made in both men's and ladies' models, the specification being the same for both, except that the latter has the top tube dropped to allow for the rider's skirt; it also has a belt guard fitted. The engine is a 2¼ h.p. two-stroke of only 211 c.c. Druid, Saxon, or Brampton forks are fitted, and either 26in. or 24in. wheels. The riding position is exceptionally low, being only 28in. from the ground. No change speed gear is fitted, the idea being to keep the machine as simple and light as possible. As will be seen from the illustrations, it has a neat appearance, while the khaki enamel gives a smart finish.

During a short trial run on the Despatch Rider we were struck by its handiness, ease of starting, and absence of vibration. The little engine also had a good turn of speed. It is a suitable mount for those requiring a light and simple machine.



W. Ousley (Indian), travelling at full speed in an Australian road race last June. It is a remarkable photograph, as not only are both wheels off the ground, but the rider's feet are several inches above the footboards. It may be a surprise to some people to see snow, but every kind of climate imaginable can be found in Australia, from the semi-tropical regions of the North to the snow-capped mountains of New South Wales, and in both Victoria and N.S.W. snow is not unknown, even on ordinary altitudes, in the winter months.



TIMES TO LIGHT LAMPS.

Aug.	26th	... ...	8.1 p.m.
,,	28th	... ...	7.57 ,,
,,	30th	... ...	7.53 ,,
Sept.	1st	... ...	7.48 ,,

In London half an hour earlier.

A.A. and M.U. Notes.

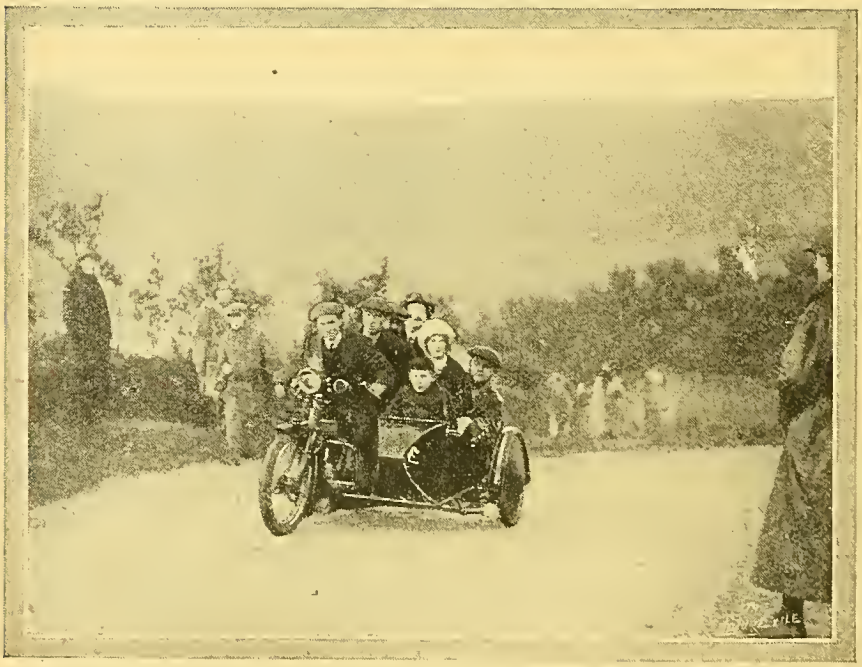
SPECIAL NOTICE TO A.A. MOTOR CYCLISTS.—Motor cycling members of the A.A. are notified that from now onwards they will not be entitled to receive roadside and other assistance from the road patrols if their machines do not carry the *red* token in the centre of the A.A. badge, denoting payment of subscription for the current year. Members who have changed their addresses since last year, and who may not therefore have received the usual annual intimation that their subscriptions have become due, and have in this way not obtained the necessary token, should communicate with the secretary without further delay.

Lord Kitchener Inspects Sidecar Machine Guns.

Whilst in France last week Lord Kitchener on two separate days inspected a complete battery of the Motor Machine Gun Service.

Officer Motor Cyclists.

Reckless riding on the part of a section of soldier motor cyclists, apparently on leave, we regret to notice, continues, and, as a result, accidents are being continually recorded in the local papers. At the week-end we had two experiences which bear out the utter carelessness of some military motor cyclists. Whilst approaching a dangerous cross road very cautiously, two officers on a sidecar suddenly shot across without warning. Had we been travelling at an equal pace, a bad collision would have been the result. In the second instance a soldier motor cyclist swung round a blind corner at such a pace that the footrests of his machine almost touched the ground.



A GOOD CLIMB. G. W. Wilkin, of Sheffield, driving a Norton "Big 4" sidecar outfit, with a total load of seven passengers (75 stone), up Sir William Hill at Grindleford. The hill will be remembered as having proved a stiff proposition to many competitors in the A.C.U. Spring Trial last year

SPECIAL FEATURES.

ELECTRIC LIGHT FROM A MAGNETO.

NEW MODELS (Illustrated).

THROUGH THE LENGTH AND BREADTH OF WALES.

Recruiting for M.M.G.S. Closed.

Recruiting for the Motor Machine Gun Service has temporarily ceased. The response of late has been excellent, and it is now a question of finding more accommodation.

Average Second-hand Prices.

We give below the average prices for the various second-hand models offered for sale in *The Motor Cycle*. We quote those models of which at least five weekly averages have appeared during the past two months. Where it is possible to obtain a sufficient number of each model we also give the average for the past week:

Make.	Year.	H.P.	Last week's average.	Average for past 8 weeks.
A.J.S.	1914	6 3-sp. sidecar	£77	£72
,,	1913	6 3-sp. sidecar	—	£53
,,	1914	2¾ 3-speed	—	£43
Ariel	1914	3½ 3-speed	—	£42
,,	1914	3½ 3-sp. sidecar	—	£53
,,	1914	6 3-sp. sidecar	—	£60
Bat	1914	8 3-sp. sidecar	—	£65
,,	1913	8 3-sp. sidecar	—	£52
Bradbury	1914	6 3-sp. sidecar	—	£61
,,	1914	4 3-sp. sidecar	£51	£45
B.S.A.	1914	4 3-speed	—	£46
,,	1914	4 3-sp. sidecar	£53	£57
Calthorpe	1914	2 2-speed	—	£18
Chater-Lea	1914	8 3-sp. sidecar	£54	£67
,,	1913	8 3-sp. sidecar	—	£52
Clyno	1913	6 3-sp. sidecar	£54	£55
,,	1914	2½ 2-speed	—	£30
Douglas	1914	2¾ kick start	£44	£43
,,	1914	2¾ 2-sp. T.T.	£38	£39
Enfield	1914	6 2-sp. sidecar	£64	£64
,,	1914	3 2-speed	£38	£39
Humber	1913	3½ 3-sp. sidecar	£40	£40
Indian	1914	7 2-sp. sidecar	£60	£67
James	1914	4½ 3-sp. sidecar	£52	£54
Lea-Francis	1914	3½ 3-speed	—	£60
Levis	1914	2½ 2-speed	—	£29
Matchless	1914	7 3-sp. sidecar	£78	£74
Norton	1914	4 3-speed	—	£50
New Hudson	1914	6 3-sp. sidecar	£65	£57
,,	1914	4 3-sp. sidecar	£57	£51
N.U.T.	1914	6 3-sp. sidecar	—	£60
Premier	1914	3½ 3-sp. sidecar	£51	£52
P. & M.	1914	3½ 3-sp. sidecar	£61	£53
Rex	1914	6 3-sp. sidecar	£59	£58
Rover	1914	3½ 3-speed	—	£46
,,	1914	3½ 3-sp. sidecar	—	£53
Royal Ruby	1914	3½ 2-speed	—	£44
Rudge	1914	3½ Multi sidecar	—	£50
,,	1914	3½ Multi	£37	£34
Scott	1913	3½ 2-sp. sidecar	£46	£50
,,	1914	3½ 2-speed	—	£47
Sunbeam	1914	6 3-sp. sidecar	—	£71
,,	1914	3½ 3-speed	—	£57
Triumph	1914	4 3-sp. sidecar	£52	£56
,, Junior	1915	2¾ 2-speed	£38	—
Williamson	1914	8 2-sp. sidecar	£66	£70
Zenith	1914	6 Gradua sidecar	£60	£55

Motor Cyclist Officer Married.

We offer our congratulations to Lieut. S. W. Carty, A.S.C., late of Liverpool and Newcastle, and a leader in Northern motor cycling circles, on his marriage to Miss Maude Eleanor Hedley.

Army v. Navy Motor Cyclists' Hill-climb.

Following upon the successful Army and Navy race meeting at Brooklands, brought about by *The Motor Cycle*, the suggestion has been made to hold a hill-climb at Kop Hill, Princes Risborough, between representatives of the Army and Navy.

The National War Funds.

On Tuesday morning last the principal war funds stood as follow:

	£	s.	d.
The Queen's Work for Women Fund	163,868	0	0
Belgian Relief Fund ...	767,000	0	0
"France's Day" Collection	21,000	0	0
Serbian Red Cross Fund ...	20,073	13	11

Uncontrolled Dogs.

At the inquest on a motor cyclist, who was killed by being thrown off his machine by a dog, held recently at Pickering, the coroner (Dr. Francis Porter) commented strongly on the danger of allowing dogs to run without control on the village streets. The animals ran out at motor cycles and cars, as well as push cycles, to the great danger of riders. The foreman of the jury (Mr. Trowsdale) demurred—although it was established that the deceased was a very steady rider—on the ground that, generally speaking, "motorists were addicted to rushing through the streets at such a speed that the public had to exercise care in dodging them to prevent being run over." How a presumably sensible man can reason in such a manner passes our comprehension.

Dutch Contest for the Eysink Cup.

On Sunday, August 15th, the Nederlandsche Motorwielryders Vereeniging organised a competition for the Eysink Cup, presented by Mr. A. Eysink, of Amersfoort. At 5 a.m. twenty-eight riders were started from Utrecht, the object being to cover 375 km. with an average speed of 35 km. per hour. The road to be followed was: First round—Utrecht, de Bilt, Amersfoort, Nykerk, Putten, Garderen, Uddelermeer, Aardhuis, Apeldoorn, Uchelen, Hoenderloo, Otterloo, Ede, Woudenberg, Amersfoort (134.1 km.); second round—Amersfoort, Nykerk, Putten, and same route as in the first round to Amersfoort again (113.2 km.); third round—Amersfoort, Putten, same route till Woudenberg, and by Zeist and de Bilt to Utrecht (128 km.). The weather being fine, the ride proved to be a success. Lunch was served at Apeldoorn, and the riders who arrived at Utrecht by 7 p.m. (twenty-six out of the twenty-eight) celebrated their success at a pleasant dinner, assisted by many friends. The prize-winners are: Extra, P. H. L. Maas (4-cyl. F.N., type 700); 1, W. van Kol (Vulkaan); 2, B. J. ten Dam (Excelsior); 3, Jac. Fonck (Dayton); 4, E. J. Veerman (Indian). Extra prizes were obtained by: 1, H. G. Dolk (Excelsior); 2, Ch. E. v. d. Bossche (Douglas); 3, P. A. Bos P.A.zn (Harley-Davidson); 4, C. Witteveen (James).

Lieut. F. A. McNab.

The many friends of F. A. McNab will be pleased to hear that he has obtained a commission in the Royal Naval Reserve, and hopes to compete at Brooklands in the United Services Meeting on September 4th.

Swivelling Head Lights.

A motor cyclist was recently stopped on the London-Birmingham road, near Woburn, by four policemen, who proceeded to remove his head light, which he was not using at the time, at the same time threatening him with a summons. The head light was of a type recently declared to be perfectly legal by a magistrate. It seems to us that the police acted in a very high-handed manner, and exceeded their duty.

Americans and British Trade.

The Thor motor cycle is the latest American arrival, and all the time the motor cycle press across the Atlantic is urging Yankee manufacturers to seize the opportunity for business while the British manufacturers are unable to supply. They quote the following figures in support: British imports from United States during the first six months of 1915 equalled $620,000,000, compared with $350,000,000 in the corresponding period of 1914, and $345,000,000 in 1913.

Motor Cycles in Botha's Campaign.

Motor cycles, in conjunction with armoured cars, played no small part in the operations under General Botha in what was formerly German South-West Africa. Twelve armoured Rolls-Royces with supply, ambulance, wireless, and repair cars were used in conjunction with twenty-eight Douglases, the whole contingent being perfectly self-contained with its own stores and petrol. An interesting feature is that of the original number of motor cycles twenty-five came through the campaign successfully, and were then shipped together with the cars from Cape Town. This is a very high percentage, especially when it is considered that the riders had work to perform of a most trying nature. The whole fleet was under the command of Commander Whittall, well-known in England as a keen motorist and writer

Roads to Avoid.

The Great North Road near Newcastle is in very bad condition, and the last eight miles into Edinburgh is bumpy.

There are many pot-holes between Alton and Bishop's Waltham, but a single-track machine can miss most of them; some of the worst holes have been repaired.

The main road from Bushey Heath to Watford is in a deplorable condition for about three miles. This can be avoided by turning to the right at the top of Clay Hill, and then taking the lane to the left.

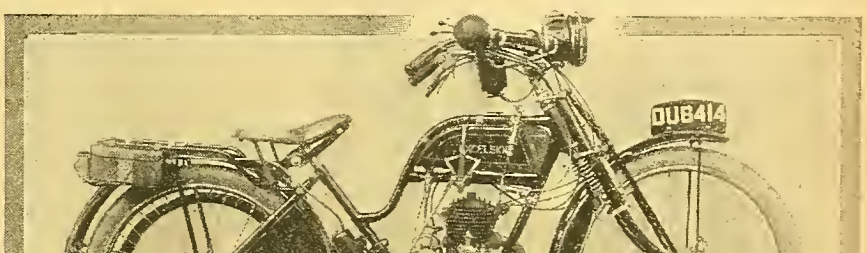
The London County Council

LOCAL TAXATION LICENCES AND REGISTRATION OF MOTOR CARS.—The growth of the work of the London County Council in connection with local taxation licences and registration of motor cars, particularly as regards applications under the Motor Car Act, has necessitated improved arrangements for the convenience of the public. New accommodation has therefore been provided at 19, Charing Cross Road, and on and after August 30th, 1915, all business of the above nature will be transacted at that address instead of at the County Hall, Spring Gardens, S.W., and 40, Craven Street, W.C., as hitherto.

Australian Grand Prix Races.

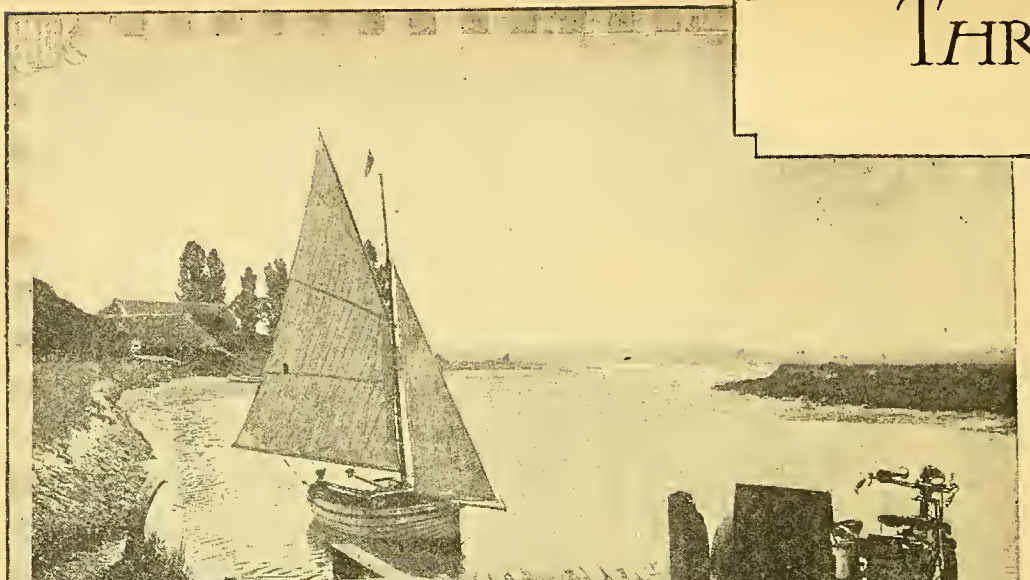
Reports are to hand from Australia of one hundred-mile races, held in New South Wales and Victoria respectively. The former provided twenty-eight starters, and the race was won by J. E. Mellor (6 h.p. Matchless), who, with a 12m. start, covered the 100 miles in 2h. 3m. 2s. H. Bartleet (6 h.p. Zenith) and W. J. Ousley (7 h.p. Indian) were second and third respectively, the latter making fastest time. A picture of Ousley at full speed appears on page 209 of this issue. Both he and Mellor, the winner, used Dunlop tyres.

The Victorian 100 miles race was run over a triangular course of thirty-three miles, three circuits having to be made. The winner was R. Finlay (7 h.p. American Excelsior), who had 13m. start over the scratch man. Second and third places were taken by E. Mayman (3½ h.p. J.A.P.) and E. Tyler (3½ h.p. Triumph). Finlay also made fastest time.



The 2¾ h.p. two-stroke ladies' model Excelsior. An Albion two-speed gear is fitted, in conjunction with chain and belt drive. Altogether a very suitable mount for a lady, and one which, if required, can take a sidecar.

Through Fe



A Trip with Sidec East Coast ma

A FEW days ago, d East Coast by n I put into practi stow away a camera or obtain some interesting

Leaving St. Albans be I was soon well on the to cover up all traces through towns which ga tion, and a broken d innocent of any of the camera, but then I cc trouble. The owner o positively panic-stricken know what I was doing, it took," and commande No doubt the stories of nerves, so that he was l

Very different from owner of a riverside bar fully consented to be photographed, and invited us to see the cosy interior of his home on the water. A most interesting character this, a man who, at the age of seventy years, having spent fifty-nine of them on the sea, found it impossible to live on dry land, so became the owner of this vessel, on which he has spent the last five years, winter and summer, only leaving his moorings occasionally to take a party on a ten days' trip into the North Sea. He evinced great interest in a machine controlled by "two girls," as he put it, questioning about the speed attainable and use of the levers. The kick starter was the part which called forth a good many questions. In spite of our avowals, I doubt if we convinced him of its merits, as when we made ready to restart he offered a "shove off." We were able to refuse the kindly help, knowing that with our engine still warm we could start up with little exertion. A few miles farther on I had a unique opportunity of photographing a barge laden with wheat, just running home alongside the Stambridge Flour Mills.

An Interesting Church.

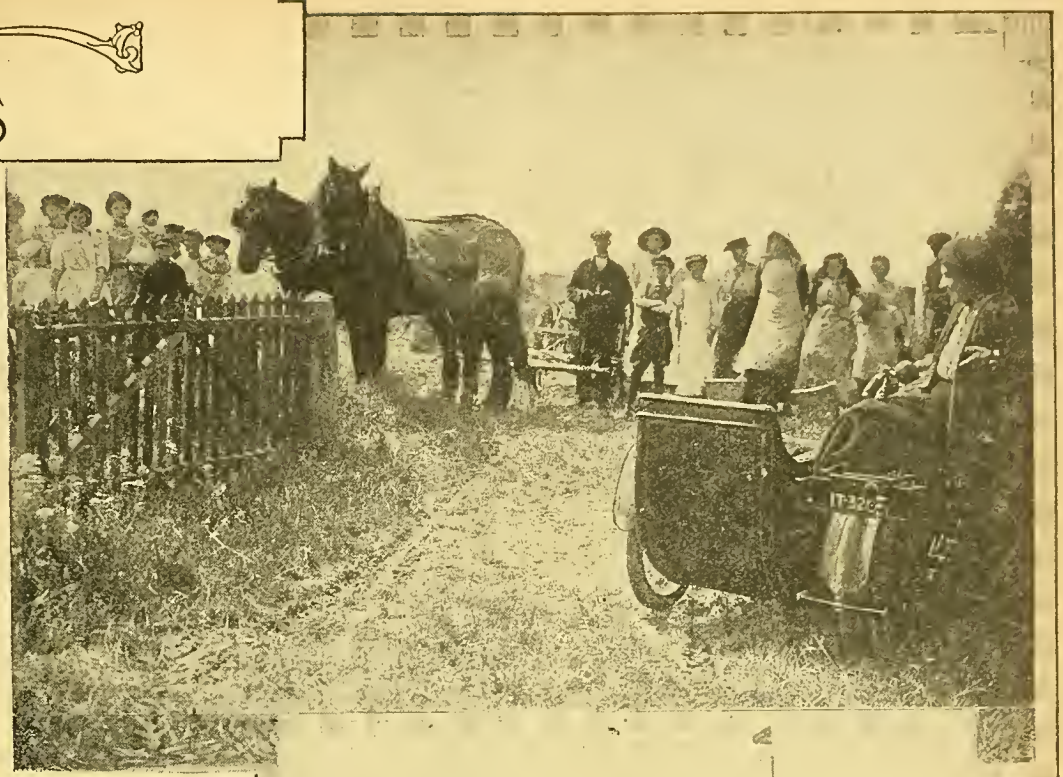
One generally meets with perfect courtesy from owners of buildings one wishes to inspect, and the rector of the historical church of Ashingdon was no exception to the rule. He made us acquainted with the ancient building, the tower of which was built nine hundred years ago, when

(Top left) Setting out for a sail. The sidecar
(Bottom left) The mill, the owner of which th
(Top right) A visit to the potato pickers.

MININE GOGGLES

and Camera to the by Two Ladies.

ing to reach a town on the
ıs of my sidecar machine,
my theory that one should
very trip, and managed to
rds.
d me in the early morning,
d, and I was most careful
the camera when passing
ny sign of military occupa-
windmill was the least
cts at which I erected the
not steer quite clear of
ıe mill came out with a
ntenance and demanded to
d he said he "didn't want
e to "clear off that road."
ale spies had got upon his
to all sense of reason.
was the conduct of the
ıear Rochford, who cheer-



in 1020 King Canute (Knut) and the Archbishop went to consecrate the church built on the spot where four years previously he had fought his battle against Edmund Ironsides, and—as the Anglo-Saxon chronicle hath it—"where all the English noblemen lay dead." Containing perfect specimens of windows of different centuries and other rare architectural beauties, this church on the hill is well worth a few miles run from the beaten track of motor cyclists.

Two Slight Troubles Soon Cured.

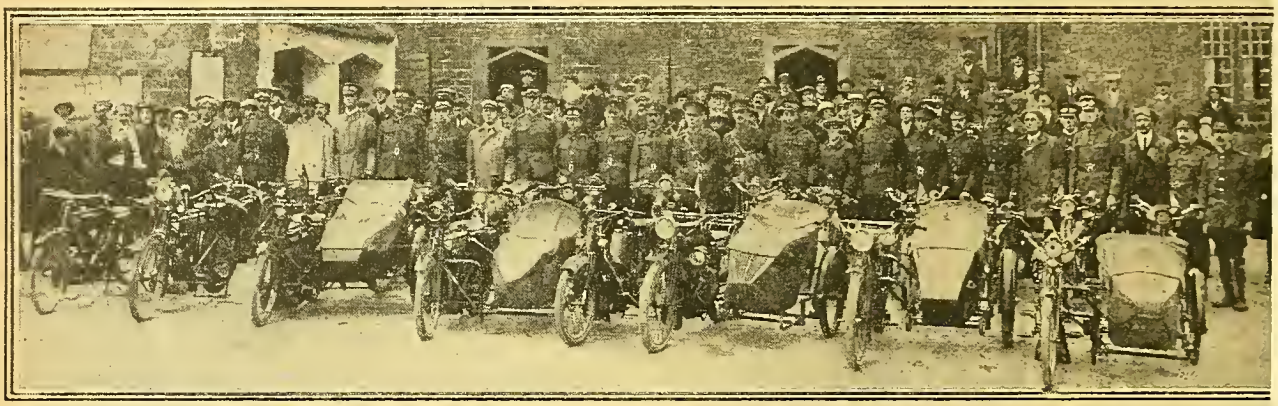
Our first taste of trouble was a broken clutch wire, so, passing through a village which boasted no garage, we halted outside a tiny blacksmith's shop. The smith pretended no knowledge of things motorish, so we carefully threaded the strands of wire through the hand control, and then called on him to bring his soldering iron to finish the job. Judge of our surprise when he requested that we turned the machine upside down so that he could get at it! However, he finished the work, although not particularly neatly, but after all neatness is not essential. A puncture in the sidecar tyre was our only other cause of delay, and, my passenger taking her share of the work, we soon effected a repair by the road-side. With a few good levers and a repair outfit no rider of a few months' experience should need assistance with a simple puncture.

MAY WALKER.

takes us direct to the river.
we were spies!
tom left) The barge at Stambridge Mills

A RECRUITING RALLY ON THE DERBYSHIRE MOORS.

OWLER BAR, a hamlet eight miles from Sheffield, on the fringe of the Derbyshire moors, witnessed a remarkable scene on Sunday last, when a great gathering of between seven hundred and eight hundred people assembled for a recruiting meeting. The object was to obtain recruits for both Regulars and the Sheffield Volunteer Training Corps, and we understand that this was successfully achieved. As Owler Bar is altogether inaccessible by rail, it followed that everyone present found his way by road, and consequently the number and variety motor vehicles present were very lar They ranged from big chars-à-bancs lightweight motor cycles. In the aft noon the Sheffield Volunteers, v have a motor cycle section, carried some instructive manœuvres.



MOTOR CYCLE SECTION OF THE SHEFFIELD VOLUNTEER TRAINING CORPS.

The photograph was taken on Sunday at Owler Bar, on the Derbyshire moors. A recruiting meeting for both Regulars and Volunteers was held, the entire concourse, estimated at between 700 and 800 people, being transported by motor vehicles.

THE UNITED SERVICES MOTOR CYCLE RACE MEETING.

AS announced in the last issue of *The Motor Cycle*, in view of the great success of the All-khaki race meeting, a further event of the same type will be run off at Brooklands on the afternoon of Saturday, September 4th, beginning at 2 p.m. It will bear the title of the "United Services" Motor Cycle Race Meeting, and will be open to any member of the British Navy, Army, or Allied Forces in uniform.

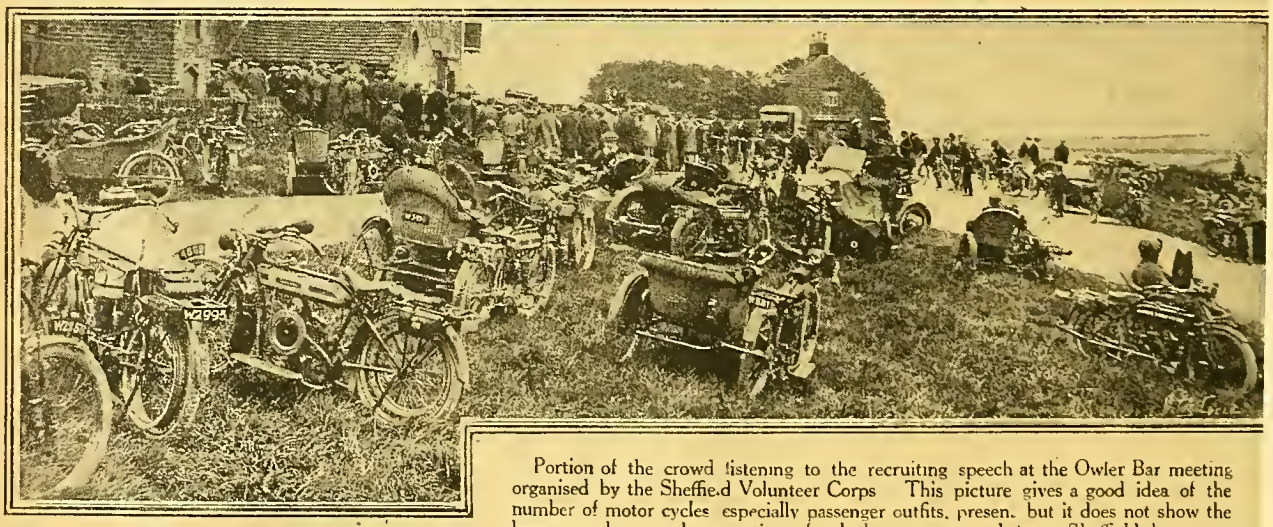
At the present time the Brooklands staff are making special efforts to get the finishing straight in good condition, and the fact of the finishing straight being available will greatly add to the success of the event. The following officers have consented to officiate as stewards: Col. H. C. Holden, Assistant Director of Mechanical Transport; Major D. F. Nicholl, D.S.O., D.A.A., Q.M.G.; and Dr. A. M. Low, Second Lieutenant R.F.C.

There is no reason why the "United Services" meeting should not be every whit as successful as its predecessor, provided the weather is fine. The programme (published on page 190 of our last issue) is a good one. The chief differences from the previous event are the introduction of the lightweight half-mile sprint for all makes of motor cycles with engines not exceeding 350 c.c.; the serpentine fast race, which will take the place of the successful slow race in the last meeting, and, finally, the separation of the sidecar and light car races.

Entries, which close at noon on Sat day, August 28th, should be forwar at once to the secretary of B.M.C.R.C., Mr. T. W. Loughborou c/o the Auto Cycle Union, 89, Pall M London, S.W.

At the time of going to press ent had been received from the following:

C. P. Marcell, Assistant-paymast R.N.R.
J. C. Branwell, Pte., Bradfield O.T.
R. A. Wallace, Pte., Oundle O.T.C.
S. H. G. Stockbell, Second Lieuten 3/1st Cambridgeshire Regiment.
H. Saunders, A.M., R.F.C.
F. H. McNab, Lieut. R.N.R.
C. G. Cardew, Lieut. R.E.
C. L. Scott, Second Lieutenant A.S.



Portion of the crowd listening to the recruiting speech at the Owler Bar meeting organised by the Sheffield Volunteer Corps. This picture gives a good idea of the number of motor cycles especially passenger outfits, presen. but it does not show the huge crowd, a good proportion of which was conveyed from Sheffield by motor chars-a-bancs.

The Editor does not hold himself responsible for the opinions of his correspondents.
All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Rear Springing.

Sir,—About a year since we were preparing to market a spring frame, the patented design of our Mr. H. S. Bilbe, who is now serving in the Motor Machine Gun Service. The design, which you have described and illustrated in *The Motor Cycle*, is a thoroughly sound and practical one, and has been fully tried out. The design admits of many variations to suit every type of motor cycle.

THE ENDRICK ENGINEERING CO.

The Holne Chase Corner.

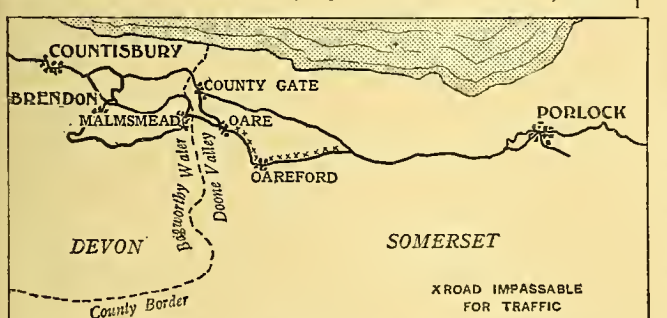
Sir,—When down in the West of England recently I found a new road being cut through Holne Chase, which will avoid the hairpin bend, so well known, and at one time so much dreaded by competition riders. The new road is quite an easy gradient throughout, and starts at Holne Bridge, partly traversing a private road that used to lead up to the Chase. It comes out at an easy angle into the old road about three-quarters of a mile from the hairpin. By the time the next Land's End run takes place the hairpin bend will be closed, and competition riders will know of it no more. Only a short time back a lady descending the hill in a car failed to negotiate the bend, and dashed into the wall, demolishing several feet of it. This apparently decided the authorities to construct the new road.

F. W. CHAPMAN.

Exmoor Roads.

Sir,—The first road down to Oare through Oareford is rough, with two unrideable hairpins with bad surface. The second road down to Oare by County Gate has a good surface and well engineered gradient. The road at the bottom through the fir wood requires caution; it is generally sticky over the narrow bridge. In Oare turn to the right, and so in a mile of high banked lane "EL 1969" will come to the little farms at Malmsmead. (See that you do not charge the stone bridge as you come in.)

Leave your mount in charge of "Old John," and strike up the Doone Valley immediately up the lane to the left, and



keep to the left. If not keen on footing it, you can hire ponies from the aforementioned ancient. On the return—though you will not want to return—the hill up to County Gate, by which you came down, will present no difficulties. A single-geared Triumph at 5¼ to 1 will take it without anxiety.

The first road by Oareford, with the tricky work at the hairpins, is delightful, but "EL 1969" would be well advised to tackle it on foot. Even with a big reserve of power, and special tyres for the loose surface, the anxieties of progress rob one of the proper appreciation of the scenery. It is advisable to take plenty of spare petrol, as it is not obtainable in these valleys.

In closing, I would remind your passenger that toby-jugs bought hereabout are not necessarily such good investment as War Loan.

W. R. BROCKWELL.

Two-stroke Petrol Consumption.

Sir,—Thanks to your interesting and delightful paper, I became a motor cyclist gradually, by two stepping-stones consisting of two different types of auxiliary. The last one, a £12 12s. J.E.S. of 1 h.p., mentioned recently by "Ixion" as a *rara avis*, proved remarkably efficient, even for long-distance touring, for I thrice rode from Scotland to England and back, once over the Grampians from Inverness to Perth, and once from Brechin (forty miles from Aberdeen) to Cardiff in S. Wales in four days, this latter run necessitating three successive day's runs of 150, 135, and 140 miles—not bad for 1 h.p. on an ordinary cycle. The valves and bearings have not been renewed, and do not require it, in spite of constant riding.

Recently I got a well-known two-stroke. Frequently I have noticed paragraphs in your paper showing various experiments and improvements made to get petrol consumption more satisfactory in two-strokes. But why is this left to the customer? Why don't makers do the experimenting? A letter from Mr. S. Wells some time back demonstrated this very pointedly. He tried three carburetters before he got satisfactory results with an Everest, and other riders have had to do similarly. It seems pretty hard that the customer should have to go to all the expense and trouble before getting good results, when the makers know that a better petrol consumption is possible, but do not take the trouble to fit machines with carburetters that do give satisfactory results. I have no doubt been spoiled by the consumption of my J.E.S., which on one occasion gave me 108 miles to slightly over half a gallon!

M.M.G.

Sidecars for Use with Spring Frames.

Sir,—In your description of the Bramble sidecar in the issue of August 19th there are one or two general remarks which I think ought not to pass unnoticed.

You say, "In the sidecars that have been used with spring frames up to the present, although they have allowed for the springing of the bicycle frame, the benefits have been considerably minimised by the fact that the sidecar chassis has been rigid, thus imparting road shocks."

In reply to this, I should like to point out that for the last six years I have produced a spring frame Montgomery sidecar which has steadily grown in popular favour until it is now one of our leading products, and the difficulty is to keep pace with the demand.

The semi-elliptical spring shown in the skeleton view of the Bramble sidecar is exactly similar to those used on the Montgomery sidecar six years ago, and only differing in essential detail from those used to-day.

I quite agree with your remarks *re* luxury of the usual Cee springs, and in my production referred to these Cee springs are used for the body springing, and the semi-elliptical type for the frame springing, and this arrangement gives very satisfactory results.

W. MONTGOMERY.

An Appreciation.

Sir,—I must apologise for the negligence on my part in not writing to thank you for the way in which you have sent me each week, without fail, the current copy of *The Motor Cycle*. You can hardly imagine how this journal is appreciated by all of us here.

I was glad to see the "All-khaki" meeting was a success, and good luck to *The Motor Cycle* for arranging such an interesting day's sport for those lucky enough to be able to participate in the events. E. HOOPER, Corpl. R.E.,
Despatch Rider, General Headquarters.

A Tour in Wales.

Sir,—I have often heard the question raised, Can a 3½ h.p. machine tour North Wales? So for the benefit of readers who, like myself, cannot afford more power, I will give an outline of my experience.

I have just completed a tour on my 3½ h.p. two-speed Triumph, with wife and two children, through some of the finest scenery in Wales. On one hill only did I have to shed my passengers. This was the well-known Sunrising Hill, just out of Stratford-on-Avon, on my homeward journey. The route, kindly supplied by you, took us through Chingford, Watford, Aylesbury, Banbury, Stratford-on-Avon, arriving at Kidderminster at tea-time. After tea we made our way to Bridgnorth, where we put up for the night. Next day we went on through the pretty town of Shrewsbury to Chirk.

After having struck the borders of Wales we began to notice the scenery getting finer and the language different. When we got to Llangollen the country appeared simply lovely, with its winding roads, and mountains covered with heather, etc., with sheep dotted over them. We soon reached Bala with its lovely natural lake, and then after several miles of down hill we came upon the town of Dolgelly nestling, as it were, at the foot of Cader Idris. Barmouth seemed pretty full of visitors as we passed through, stopping to get several good views. We reached the ancient town of Harlech just in time to put up for a thunderstorm, which did not last long, so we had a good look at its castle, built on a high rock, facing the sea, and historic in the Wars of the Roses. The views from the castle are unsurpassed.

We made Penrhyndeudraeth our headquarters for three days, during which we visited such places as Criccieth, Festiniog with its slate quarries, Shell Island with its lovely shells, and many other interesting places.

We altered the route for the homeward journey, taking a run round the north coast. After a long climb through winding roads, we came to the Aberglaslyn Pass, the grandeur and beauty of which were well worth seeing. We then passed through Carnarvon, getting a fine view of Anglesey and the Menai Straits, Bangor, Abergele, and Conway, with its castle and Suspension Bridge, similar to the Menai Bridge. When we got to Flint we struck inland and came to Wrexham, Whitchurch, and Wellington. The rest of the journey was by the same route as the outward one. Generally speaking, the Welsh roads were not at all bad. In all we completed about 700 miles, with no belt, tyre, or mechanical trouble. This machine has 30,000 miles to its credit. F 6219.

Motor Cycle Volunteers

Sir,—The carping critic would again crave some space in your columns to thank "A.G.M." (Capt. A.S.C.) and Ptes. Parker, Buck, and Drinkall for their support.

"Discouraging Patriotism" is the title of an article in a contemporary of yours. This article is a criticism of my previous letter to you.

Firstly, I can assure the writer, had he been waiting any time at the foot of Style Kop on the afternoon of Saturday, July 17th, he would have seen these young men "playing themselves" to the annoyance of spectators and competitors alike.

Secondly, "these attacks hardly deserve notice." I quote from the article in question. Of course, the writer knows best the value of his article, since he utilises a whole column of his paper for it.

Thirdly, no person criticised the United Arts Volunteer Rifles, Old Boys, or any similar officers' training corps organisations—organisations which are in a different street from the bulk of these motor cyclist volunteer bodies.

Lastly, amongst those seen at the hill-climb were many employed on Government work. Doubtless that is why the small coterie near the finishing line on Style Kop persisted in playing with a toy pistol. They must have been from some munition factory and had annexed some T.N.T. to advertise their interest in high explosives.

A good load for a Triumph and sidecar. See letter from F 6219 on this page. The photograph was taken at Penrhyndeudraeth during a Welsh tour.

I reiterate my opinion that these motor cycle volunteer corps are being used as a means of back-door enlistment by large numbers of fit men eligible for service.
M.B., Lieut. R.A.M.C.

Sir,—I have read the letters from Captain A.G.M. and three privates stationed at Burma, published in your issue of the 19th inst., and I feel that I must take exception to what I think is an unjustifiable criticism of a corps of men who are trying to do their bit for their country. The main objection your correspondents raise is that men of military age are wasting their time in Motor Cycle Volunteer Corps when they ought to be entering into the spirit of the sterner game. Speaking for my own corps, I may say that without exception the members are either above the military age or men with big responsibilities who, at the present time at any rate, cannot see their way to enlist, however much they might desire to do so, while one or two have been already rejected as medically unfit. Now, seeing that all members of military age have signed the form agreeing to enlist if specially called upon to do so, or in the event of a foreign invasion of these shores, I fail to see why they should be libelled for failing to do their duty. Can Captain A.G.M. deny that a large number of men who originally enlisted in Motor Cycle Volunteer Corps have since joined the Regular Army? Can he honestly say that those who are unable to do so are wasting their time in preparing themselves for military duties by learning, under competent instructors, signalling (Morse and semaphore), shooting, skirmishing tactics, despatch riding, etc.? If he thinks that a strenuous week-end comprised of the above

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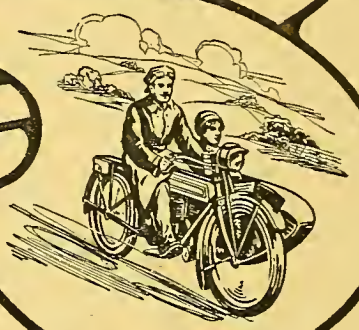
B19

QUADRANT



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"The Referee."

"If you want to have a heart to heart talk with our Tommies in the trenches, read 'Overheard at the Front.'"

"The Liverpool Weekly Post."

"Many of the incidents on which the stories are based create an immense amount of fun and laughter."

work and the usual squad drills is playing at the "childish travesty of war," as he puts it, and that the motor cycle volunteer is only fit to be made a laughing stock of, then it seems to me that it is high time that such corps were officially disbanded.

A.J.S., A Compy. (Surrey), 1st Motor Cycle Batt.

Sir,—In August 19th issue of *The Motor Cycle* two letters appear under the above heading, and as they apparently refer to the Midland Motor Volunteer Corps, we trust you will grant space for reply.

The letter from "M.B." was not replied to through the press, but there now having been a second attack, it is only right and fair to present and intending members that a reply should be made.

Taking the first letter, that from "A.G.M.," who signs as a Captain in the A.S.C., he is candid enough to state that he has seen little of the movement itself, and a reasonable deduction may therefore be made that he knows very little about the subject matter. How a captain, therefore, with such an admittance can bring himself to stand by the erratic epistle of "M.B." is past comprehension. "A.G.M." gives no facts which can be tackled in a manly way, but at the same time his remarks take such a sweeping course that they are apt to convey a depth of meaning at first glance that is non-existent, and possibly if he had known the following, he would have refrained from putting pen to paper on the subject chosen. Many of our members—hale, healthy men, who are playing at this childish travesty of war—have one and two sons giving of their best in the fighting line. Other members, too old for military service, yet well preserved, *plus* maybe a dozen of service age are engaged in important positions turning out shells, fuses, bayonets, grenades, castings, motors, chemicals, etc. These men are indispensable in their various positions, and whether they wish to join the Army or not, they are informed that they are more valuable to the war at home than in the ranks as a soldier. These are the sort of men "A.G.M." urges to give up their fooling, men above the average calibre; men who are taking the war most seriously, straining every effort to increase the output of war munitions, and who give up their short leisure to learn something of matters military, in case it may be necessary for them to form a last line.

What these men have also done as members of the M.M.V.C. may be of interest. When the Corps was first formed, there were members whose circumstances did not then permit of them joining H.M. Forces, and they trained for the time when they could. These men have since joined the Army, many of them having already seen a little of the "great grim tragedy." They have gained positions as officers or N.C.O.'s in such regiments as the Warwickshire, Sutherland Highlanders, Motor Machine Gun Section, Motor Transport, Royal Engineers, and Royal Flying Corps. Several of the men have passed examinations which they say would have been impossible but for their training with this Corps. Most of the remaining members are sworn in as a special police patrol in case of air raids, etc.

The following will also give some idea of the standard of training: A well-known Major-General has informed us that we are training on sound successful lines. A short time back the Adjutant of a Motor Machine Gun Section wrote us asking that particulars of our lectures should be sent him, as the O.C. desired them to be read to his men. Two officers in H.M. Forces have become honorary members, wishing to be associated with a Corps doing such excellent work. Apart from the Corps members, many recruits have been found for the Army. For instance, on Friday last, six motor mechanics were required for France at once. Our Commandant, assisted by several members, searched the town, and succeeded in obtaining them for the officer, who had come specially from London. This Corps offers no protection for men who ought to be in the Army, and has done excellent work, letters from officers of high rank giving testimony to this.

The letter from the three Privates of Burma is practically answered in the foregoing.

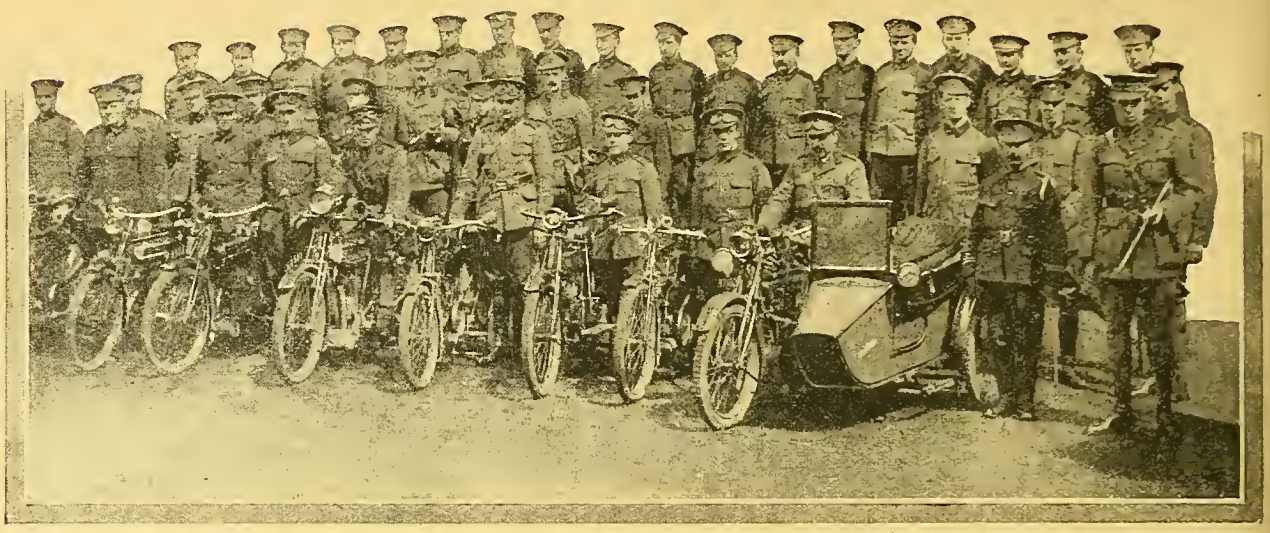
THE MIDLAND MOTOR VOLUNTEER CORPS.

Wear in Inclined Engines.

Sir,—Replying to "Spanner" *re* the rapid wear of engines in inclined positions, I must ask him to consider whether the trouble was entirely due to the fact of the engine being inclined. Personally, I do not think so. Has he examined the oiling arrangement for the cylinder? I think the trouble with the particular machines he had was that there was insufficient clearance between the crank case where the connecting rod works, and a couple of ¼in. holes would have saved reboring. A friend of mine has an inclined 4 h.p. tricar, air-cooled, of about 1904, which has all the original bearings and two of the original rings; and again, are the many different makes of inclined cylinder machines (twins) useless after 2,000 miles unless rebored? J. E. RAY.

A gathering of Harley-Davidson owners at Shakespeare's birthplace, Stratford-on-Avon. The meet was organised by the Premier Motor Company, of Birmingham, with the object of securing some cinematograph records of Harley-Davidsons (one of the latest American importations) in Shakespeare's country.

Midland Motor Cyclists' Volunteer Corps.



Despatch riders attached to the Mechanical Transport Section of the Liverpool National Volunteers.

ON Thursday the M.M.V.C. paraded at headquarters for lecture by Section Leader Richards on the subject of "Eye Sketching." Mr. Richards also dealt with a report on a village, explaining the necessary formulæ for obtaining information useful to the O.C. On Thursday next Q.M.S. Court will give a lecture at headquarters on "The Field Book and Plotting." Motor cyclists are invited.

Map Reading Tests.

On Sunday the men paraded at Castle Bromwich for a test of map reading and mobility. The corps was divided into patrols under section leaders. Each man was given a card with the name of his destination. No other information was shown. The men did not know whether their destination lay N., S., E., or W. There were five places selected: Gannaway Gate, Myton, Wedgnock, Bannor Moor Green, and Woodloes. Although the men were sent out in parties from the moment they had their card given them, they separated, owing to their destinations being different, but on reaching their destination they were joined by the members of their own patrol, that is, if each man were successful. The places selected were practically unknown, some of them not being marked at all on the ordnance map. In one instance the policeman patrolling the country was asked by one of the men for his destination; the reply was "he never heard of it." The scout afterwards found that the very spot where he had asked the policeman was his destination.

Commandant Silver had timed each man to reach his destination at a certain time, and had sent out despatch riders to reach the same place and time the men in, then hand them a despatch to bring in to the main body, information being given that they must expect an ambush. Again, the name of the place only was given; this time it turned out to be Asps. The men quickly located it, and now commenced the corps' usual work of reconnaissance.

Many of the men got through; in fact, 75% succeeded, which may be considered a satisfactory result.

Revolver Shooting.

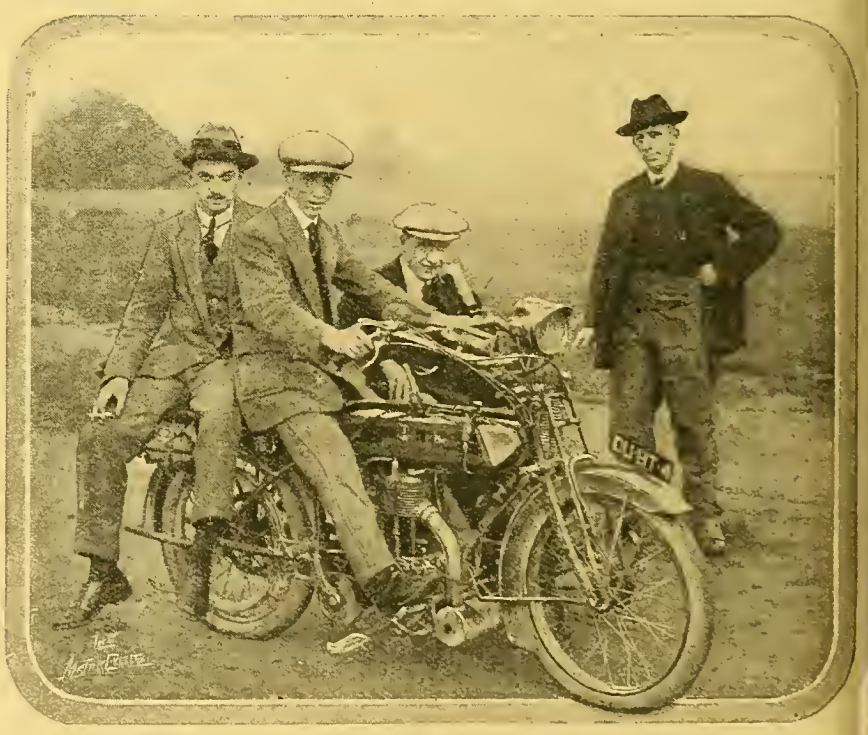
The day's manœuvres ended, the corps marched to the old camp at Wasperton. Here a small target was set up for revolver practice, and the men are provided with Colts—not toys—but Service revolvers.

Revolvers, unless understood, are more dangerous to the owner than the enemy; but the corps, before firing a shot, had instruction. Consequently, some good shooting at a small target from a distance of twenty yards was done.

New members are wanted to replace those who have joined the Colours.

The corps was the first in Birmingham to enrol as a police patrol, and it is now suggested that all other volunteer training corps should also form a special police section.

The members can read a map, make out a road report, and, if needed, show any military officer a short cut across country.



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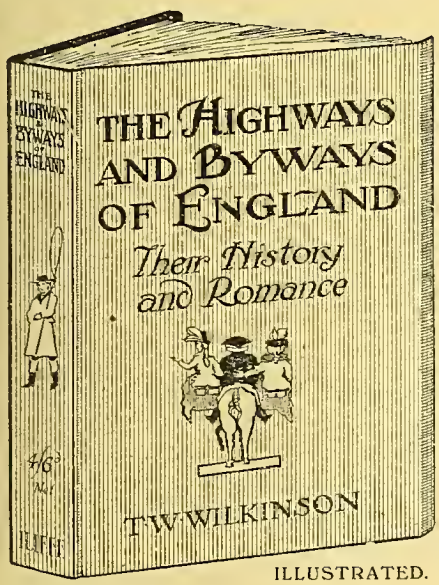

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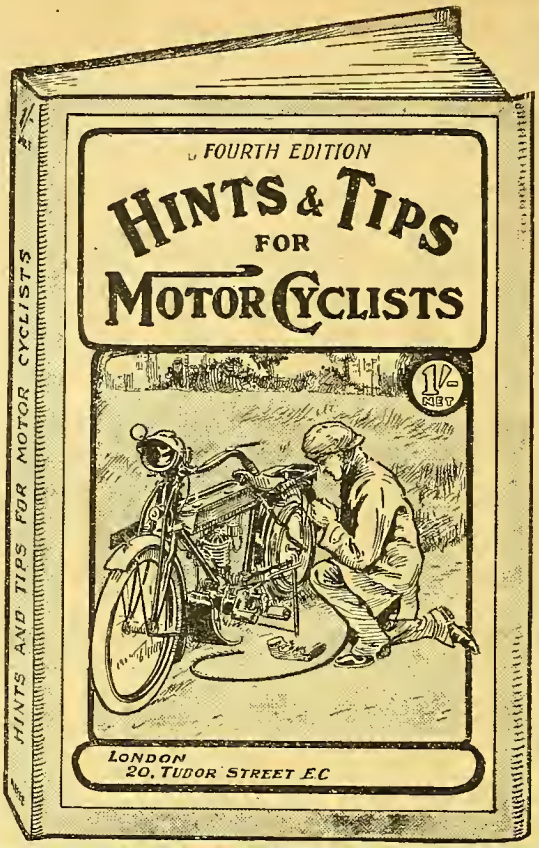

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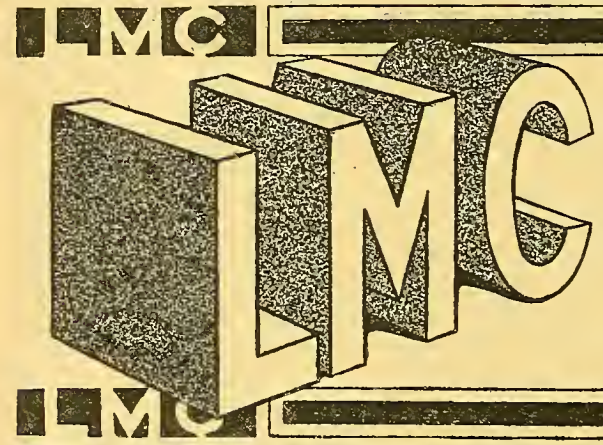

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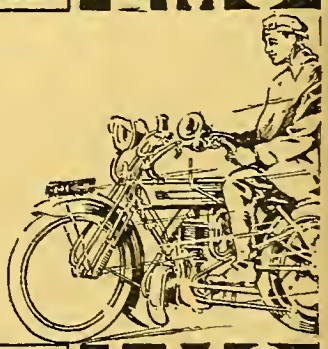

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QUESTIONS & REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Timing the Magneto.

I should esteem it a favour if you would tell me as simply as possible how to time the magneto on a 1914 4 h.p. single-cylinder motor cycle.—C.M

The timing of the magneto should be as foliows: Place the piston exactly on top of the compression stroke, and connect up the magneto with the points just about to break, and the ignition lever two-thirds retarded. This will mean that the explosion when fully retarded will take place when the piston has travelled about 3 mm. down the firing stroke.

Sidecar and Solo Riding.

For several months I have ridden successfully a 6 h.p. A.J.S. motor cycle and sidecar. I am anxious now to ride the motor bicycle as a solo machine, and shall be obliged if you will kindly indicate what precautions I should observe in the change. Is it safe to attempt solo riding with a cycle of this weight and power?—J.A.S

If you are used to riding a motor bicycle and sidecar, or even a pedal cycle, after the first few minutes there should be no difficulty whatever in riding the machine, especially if the roads are good. You soon get used to the weight, which is only really appreciably noticeable when wheeling the machine about before starting.

Pre-ignition.

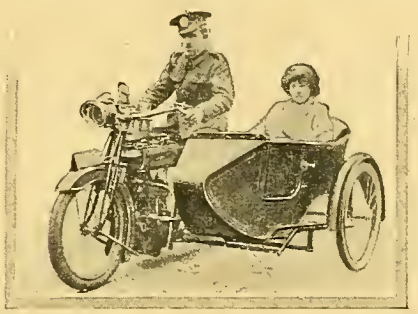
My machine is a 1914 4 h.p. single-cylinder with three-speed hub gear. After running well for, say, twenty-five miles at 15-20 m.p.h., it suddenly seems to lose all its power, and a strange rapid rattling and whistling noise becomes apparent, which no altering of the gear, gas, or air levers will cure. After crawling home, the machine will run quite well the next time it is taken out. It is a very stiff engine to start, and needs paraffin injection after an hour's stop on the road in the hottest weather. The rattling is like a very quick tapping on a mudguard, and I cannot locate it. Could you give me any idea of the possible cause of the trouble?—F.C

The trouble might well be caused by pre-ignition, due to your using a plug of unsuitable design. A broken or tight-fitting piston ring would also cause trouble of this description. It is practically impossible for us to diagnose the trouble accurately without seeing the machine, and the only cure is to take the engine down and carefully examine it.

Flooding Carburetter.

I should be much obliged if you would give me the reason for the following: Machine, 4½ h.p., 1915, chain belt drive. After a run I turn off tank petrol tap and milled screw which regulates the jet opening. On turning the tank tap next day, petrol flows from all parts of carburetter freely, but finally stops. On one occasion I tapped the carburetter while this was happening, and whether a coincidence or not, flooding ceased. Might I also ask you about a 1914 twin I had? When running on the level I had to keep playing with controls continually, as the machine seemed to gain speed without alteration of controls. The machine started very easily at all times.—S.A.D.

The trouble you experience is due to the needle valve on the carburetter sticking. During the night the petrol in the float chamber evaporates, leaving the needle valve in the open position. Upon your turning the petrol on the next morning the carburetter fills up, but owing to the needle sticking it is not shut off when it reaches the correct level; the result is that it overflows. Your tapping it, or the engine starting, moves the valve and stops the trouble. You should clean the float chamber out and see that nothing is causing the needle, float, or the little toggle arms to stick. The milled screw need not be altered; to do this upsets the jet adjustment. The trouble with the 1914 twin was probably due to the vibration causing the petrol level to vary



The quickest and most pleasant way from convalescence to fitness. Private Hugh Smith, A. and S. Highlanders, who was wounded at Neuve Chapelle, is now at home and enjoying runs on the Campion sidecar outfit shown above.

Fitting a Silencer.

Can I fit a silencer direct to the exhaust port and then attach an exhaust pipe to this, without interfering with engine efficiency?—W.J.

You certainly could fit the silencer direct on to the exhaust port, but it should not be so placed that it keeps the cooling draught from the exhaust port. Silencers have been fitted in this manner on some machines.

The Local Taxation Licence.

Early this year I registered a motor cycle, paying 5s. and local taxation licence £1. About a month since I sold to a friend, transferring registration (1s.) The new owner also paid the £1 local taxation licence. I have now bought another motor cycle. Will the £1 I paid cover the second machine till the end of this year?—D.B

Yes; the local taxation licence enables you to keep one machine at a time from the date on which you took out the licence until December 31st of the same year.

Piston Trouble.

I recently purchased a new lightweight two-stroke motor cycle, and had only ridden it a little when I noticed a knocking noise in the crank case. On taking the engine down I discovered that there was only one piston ring fitted and a piece cracked off the bottom of the piston. This piece had got into the crank case, and was causing the knocking. I have fitted a new piston, and I find the engine does not now pull as well as before, especially on hills. I have run it about sixty miles, so the piston should be run in. I think I have the magneto timed about right. Would you please tell me what you think may be wrong? Ought the machine to pull better with two rings than with one, and do you think that only having one ring was the cause of cracking the piston?—LIGHTWEIGHT.

It is no uncommon thing for a machine to run badly after a new piston has been fitted. The new piston and rings have to be properly run in before the old tune will return, but after about 200 miles the machine should be running as well as ever. With two rings you will retain the compression better, but perhaps there will not be quite so much speed. The fact of having only one ring would not account for the piston getting cracked.

Oversize Tyres.

I have an 8 h.p. sidecar combination with 650 mm. × 65 mm. voiturette-rimmed wheels, fitted with tyres of that size. These tyres, I find, are not nearly heavy enough for the back wheel, and wear unduly. What sizes of tyres will fit 650×65 mm. rims, and what size and tread would you advise me to fit on the back wheel?—J.T.J.

700 mm. × 80 mm. tyres will fit 650×65 mm. voiturette-rims. You can either fit these all round, or fit one for the driving wheel. The tread may be a combination pattern like the Rom, grooved like the Dunlop, or ribbed like the Palmer.

Pitted Platina.

Can you tell me why it is that the platinum points on my Ruthardt magneto keep on getting burnt up? I have just had two new points put on, and these are the third set, and they are going in the same way in less than three months, and it is becoming expensive. I shall be much obliged if you can tell me the cause.—J.H.C.

The trouble is undoubtedly due to the condenser connections being at fault, or to the condenser having broken down altogether. The condenser is carried at the end of the armature, and is connected direct to the primary winding. We think it would be best for you to send the magneto to Messrs. C. A. Vandervell and Co., Ltd., and let them overhaul it for you.

Lubrication.

Could you give the reason why no oil gets to the piston of my Triumph? No matter how much oil I pump into the crank case I cannot get it to smoke, and when I take the valve cap off I find the top of the piston quite dry and a rusty colour. The bottoms of the valve caps are the same colour as well. The engine keeps running all right but does not develop its proper power. I may say there are four ¼in. holes drilled in the piston, which I have had made on purpose to get more oil in the cylinder. —J.E.J.

It would appear that you have an engine with an unusually tight piston and rings. This would account for the fact that the oil does not pass into the combustion chamber, which is in itself an advantage, but too tight a piston causes loss of power and may lead to seizure. The ends of the piston rings should not quite touch when tested cold in the cylinder.

READER'S REPLY.

Belt Adjustments.

I have had considerable trouble with belt twisting in pulley, as described by "E.V.W." (August 12th issue). I at first had the same idea as "E.V.W." has, and when out for a run had only gone about ten miles when the trouble started. Another motor cyclist came along, and he advised me to reverse the belt and let it run in the opposite direction to that which it had been doing. This I did, with the result that I have not since seen any sign of the belt twisting or turning over as it did before.—F.T.C.

EXPERIENCES WANTED.

"D.R." (Pretoria).—Binks carburetter as fitted to 2¾ h.p. Douglas.

"A.B." (Bristol).—Aluminium sidecar bodies. Will makers send details?

"R.J." (Trawsfynydd).—3½ h.p. 1915 Rover and sidecar. Hill-climbing, ease of starting, and general reliability.

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"A.A.S." (Pretoria).—Scott 1914 or 1915, and A.B.C. 1915. Reliability, durability, petrol consumption, and accessibility of cylinders.

ROUTES.

BEAMINSTER (DORSET) TO FENTON (STAFFS).—W.J.B.

Beaminster, Crewkerne, Yeovil, Castle Cary, Bruton, Frome, Beckington, Bath, Swainswick, Nailsworth, Stroud, Gloucester, Tewkesbury, Worcester, Kidderminster, Wombourne, Wolverhampton, Penkridge, Stafford, Stone, Fenton.

PLYMOUTH TO LONDON; distance secondary consideration provided roads are good.—A.B.

Plymouth, Ivybridge, Ashburton, Chudleigh, Exeter, Lyme Regis, Bridport, Dorchester, Wimborne, Ringwood, Cadnam, Totton, Botley, Bishop's Waltham, West Meon, East Tisted, Alton, Farnham, Hog's Back, Guildford, Ripley, Cobham, Kingston, London. Approximately 220 miles.

ABERDARE TO DULVERTON (SOMERSET).—W.N.E.

Aberdare, Caerphilly, Newport, Severn Tunnel Junction, Pilning, Clifton Downs, Long Ashton, Congresbury, Churchill, Cross, Highbridge, Bridgwater, Taunton, Milverton, Bampton, Dulverton.

NEWARK TO LUDLOW, avoiding big towns, and distance.—C.W.M.

Newark, Fosse Way to Leicester, Narborough, Sharnford, Coventry, Warwick, Stratford-on-Avon, Alcester, Droitwich, Great Witley, Tenbury, Ludlow. Approximately 140 miles.

HEREFORD TO RICHMOND (SURREY); also alternative route for return journey.—R.F.A.

Hereford, Ledbury, Tewkesbury, Cheltenham, Northleach, Burford, Witney, Oxford, Dorchester, Henley, Maidenhead, Windsor, Staines, Twickenham, Richmond; approximately 140 miles. Richmond, Twickenham, Staines, Virginia Water, Ascot, Wokingham, Reading, Pangbourne, Wantage, Faringdon, Lechlade, Cirencester, Gloucester, Ross, Hereford; approximately 150 miles.

MELTON MOWBRAY TO COLWYN BAY.—C.J.B.

Melton Mowbray, Six Hills Inn, Longhborongh, Derby, Ashbourne, Leek, Congleton, Holmes Chapel, Northwich, Chester, Hawarden, Holywell, Rhuddlan, Abergele, Old Colwyn.

HEMEL HEMPSTEAD TO BRIGHTON; avoiding London traffic.—W.H.

Hemel Hempstead, Watford, Rickmansworth, Denham, Uxbridge, Colnbrook (outskirts of), Staines, Chertsey, Pyrford, Ripley, Guildford, Cranleigh, Horsham, Cowfold, Henfield, Brighton.

NUNEATON TO YARMOUTH.—W.A.T.

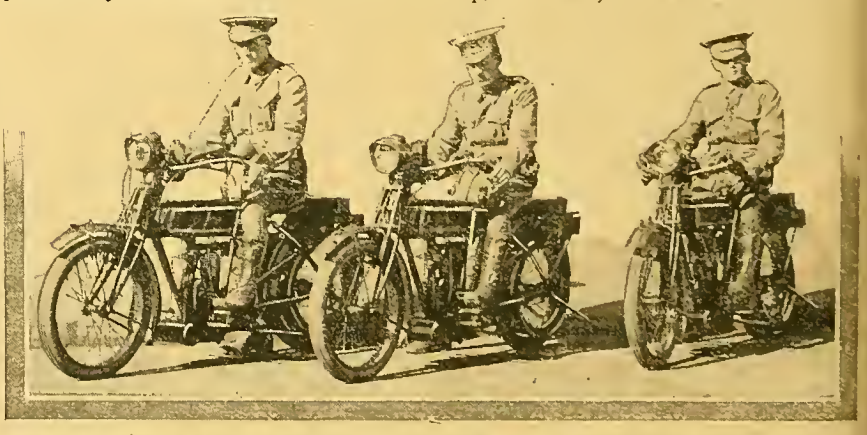
Nuneaton, Watling Street, Ullesthorpe, Lutterworth, Market Harborough, Weldon, Oundle, Peterborough, Wisbech, King's Lynn, Swaffham, Dereham, Norwich, Acle, Yarmouth.

KINGSTON (LONDON) TO EXETER; avoiding bad roads.—H.G.J

Kingston, Esher, Guildford, Farnham, Alton, Itchen Abbas, Winchester, Bassett, Totton, Cadnam, Ringwood, Wimborne, Dorchester, Bridport, Lyme Regis, Colyford, Exeter.

BRIGHTON TO HUDDERSFIELD; avoiding heavy traffic.—J.W.L.

Brighton, Cowfold, Horsham, Cranleigh, Guildford, Farnham, Odiham, Reading, Pangbourne, Wallingford, Oxford, Woodstock, Long Compton, Shipston-on-Stour, Halford, Warwick, Kenilworth, Stonebridge, Coleshill, Lichfield, Abbots Bromley, Uttoxeter, Cheadle, Leek, Buxton, Chapel-en-le-Frith, Glossop, Holmfirth, Huddersfield.



Three New South Wales despatch riders photographed prior to departure from Sydney. Their mounts are Rudge-Multis.

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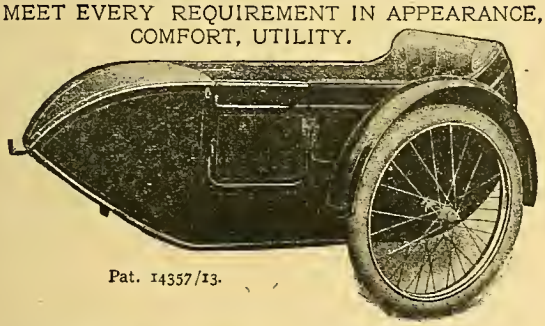

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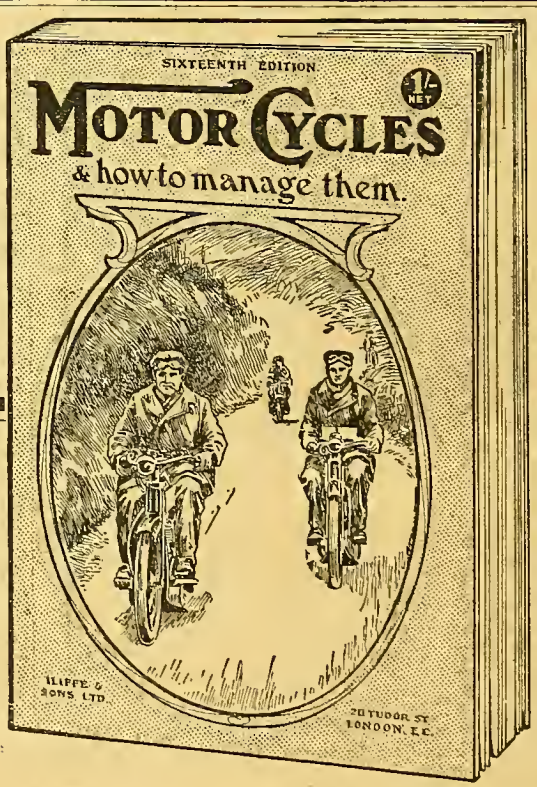

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BAT-J.A.P., 1912, 1915 N.S.U. 2-speed, free engine, coach sidecar, new belt and tyres, perfect; £27.—68, Arthurdon Rd., Brockley. [1377

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BAT-J.A.P., 6h.p., spring frame, front and rear lamps, horn, condition good as new, fast, powerful machine; £40.—Fuller, 10, Epsom Rd., Croydon. [1319

1915 6h.p. Bat-Jap Motor Cycle, spring frame, 2-speed gear, clutch, fitted with Lucas lamp and generator, condition as new; £57; property of officer shortly leaving for the front.—Lieut. Stuart, c/o Moore, Motors, Andover [1607

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1915 Bradbury.—Immediate delivery from stock of 6h.p. sidecar combination.—Alexander's, 115, Lothian Rd., Edinburgh. [1246

1913¾ Bradbury, 4h.p., 3-speed, new lightweight coachbuilt sidecar; £40; trial.—Firrell, Loriston, St. Aubyn's Rd., Easthourne. [X4734

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BRADBURY, 1913, 4h.p., countershaft 2-speed, clutch, chain-cum-belt drive, recently overhauled by makers.—Maddock, Rosslyn Rd., Wellington, Salop [X4848

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B.S.A. Model K. Actually in stock, £59/15.—Lamb's, 151, High St., Walthamstow. [1396

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B.S.A., 3½h.p., 1912, accessories, perfect condition; £27.—Auto Mart, 133, Hammersmith Rd., W. [1498

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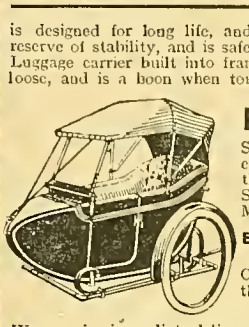

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1915 B.S.A., model K., and Premier coach sidecar, little used, condition as new; £65.—The Castle Motor Co., Ltd., Showroom, Kidderminster. [X4864

B.S.A., 3½h.p., 1914, 3-speed, chain belt, little used, new condition; price £44, with speedometer.—Box No. 9,127, *The Motor Cycle* Offices, Coventry. [X4689

1915 B.S.A., 3-speed, Lucas lamp, horn, speedometer, Palmer tyres, equal to new; £57/10, bargain.—J. B. Johnson, 35, High Row, Darlington. [X4686

B.S.A., 1914½, 4½h.p., 3-speed countershaft, chain drive, B.S.A. 16 gn. sidecar, 3 lamps, Cowey speedometer; cost over £90; any trial; £65; after 6.—39, Oakfield Rd., Southgate, N. [1571

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CHATER-J.A.P., 4h.p., and sidecar, fast, powerful; 18 gns., bargain.—16, Upper Hall St., Peckham. [X4918

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CHATER-LEA No. 7 Combination; £60.—Seen after 7, 22, Old Park Villas, Palmer's Green, N. [1547

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NO. 7 Chater-Lea Combination, 8h.p., new July, 1915; £80, no offers; or exchange lower power and cash.—26, Howley Place, Lambeth, S.E. [1338

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CLYNO 1914 Combination, 3-speed, Lucas lamps, horn, Low generator, Stewart, spare wheel, hood, screen, tools, new condition; £75.—248, Bethnal Green Rd. [1576

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CLYNO 6h.p. Combination, bought 1913, 2-speed countershaft, kick starter, lamps, speedometer, watch, tyres good, spare cover, tube, valves, perfect condition; £44.—Osborne, 177, New Park Rd., Brixton. [1592

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1915 Douglas, 2¾h.p., W, in stock, new; £54.—Moffat, Douglas Agent, Yeovil. Tel.: 50. [9203

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1913 Douglas, 2-speed, footboards, spare chains, belt, tyre, tubes; £34.—Delmar, 45, Copthall Gardens, Twickenham. [1610

DOUGLAS, the world's best and British.—Write us your requirements. — Gibb, Gongh, Douglas Specialists, Gloucester. [X3538

DOUGLAS.—All models from stock from sole wholesale and retail Midland agents, Colmore Depot, 31, Colmore Row, Birmingham. [X3036

DOUGLAS, 1911, fixed engine, beautiful machine; price £17/10; seen evenings. — Speechley, 45, Church Rd., Acton, London. [1482

DOUGLAS, 2¾h.p., 1914, 2 speeds, accessories, new tyres, very little used; £46.—Auto Mart, 133, Hammersmith Rd., W. [1496

DOUGLAS, 2¾h.p., 1914, 2-speed, T.T., new tyres, spare belt; £41; exchange Brough.—"Claremont," Headlands, Kettering. [1502

DOUGLAS, 2¾h.p., 2 speeds, clutch, free engine, Whittle, T.T. bars, in excellent condition; £24; after 7.—41, Flaxman Terrace, W.C. [1421

DOUGLAS, 1915 models U and V., 2-speed and 3-speed, in stock.—Tel.: 388. T.A.: Bicycles.—Robinson's Garage, Green St., Cambridge. [6866

DOUGLAS 1914 2¾h.p. T.T. 2-speed, all accessories, little used and well kept, most thorough order; £42.—Gill, 11, Westcroit Sq., Hammersmith, W. [1480

DOUGLAS, 1915, T.T., 2-speed, 2 belts, lamp; £47; only done 400 miles; owner bought car.—Lieut. A. B. Hall, 11th East Yorks Regt., South Camp, Ripon. [1334

DOUGLAS, 1914, 2¾h.p., T.T. model, almost new condition throughout, complete with lamp, horn; £43.—Layton's Garage, Bicester, Oxon. 'Phone: 35. [X4881

1915½ Douglas, 3-speed, model U, lamps, horn, mirror, long exhaust, etc., only used 4 weeks; £52, or very near offer.—Motor Mart, Eastbourne. [1443

DOUGLAS 1915 T.T., 2-speed, 2 new covers, spare belt, lamps, complete, perfect condition; £46.—Letters, P. Johnson, 12, Powerscroft Rd., Clapton, N.E [1228

DOUGLAS, late 1914, 2-speed, splendid accessories, little used, not scratched, something exceptional; £43.—6, St. James Rd., Kingston-on-Thames. 'Phone 1701. [1489

DOUGLAS, 1914. 2¾h.p., T.T. model, lamp set, horn, Watford speedometer, knee grips, excellent condition; private owner; £40.—The Morris Garages, Oxford. [1623

1915 Douglas, 2¾h.p., model U, 3 speeds, only run 3 weeks, full kit, accessories and spares; best offer £50.—Wardingley, 21, Glynde Av., Eastbourne. [1638

1915 Model U Douglas, T.T., 2¾h.p., little used, new condition, all accessories, like new; £48/10, bargain.—23, Market Place, Kingston-on-Thames. [1546

DOUGLAS, 1915½, 2¾h.p., 3-speed, U model, with new light sidecar and accessories; £54; London district.—Box L1,188. *The Motor Cycle* Offices, 20, Tudor St., E.C. [1325

1915 Douglas, 2¾h.p. Colonial model, 2-speed, only done 300 miles, as new, very fast; owner enlisting; offers.—Box L1,212, *The Motor Cycle* Offices, 20, Tudor St., E.C. [1657

DOUGLAS, 1913, 2¾h.p., T.T., 2-speed, accessories, tools, spare chain and valves, hot little bike, splendid condition; £38.—Porter, 120, Stamford Hill, N. Tel.: London Wall 3900. [X4773

DOUGLAS, 1915½, 2-speed, clutch, lamp, horn, speedometer, nearly new Avon combination and Stelastic, all accessories, excellent condition; £38.—2, Pember Rd., Kensal Rise. [X4856

1914 Douglas, 2¾h.p., 2-speed, clutch, kick starter, Amac carburetter, head light, generator, speedometer, horn; £45.—Write, Rex Mundy, 19, Grafton Mews, Warren St., W. [2500

DOUGLAS, War Office model actually in stock, special features; write for further particulars and illustrated pamphlet.—T.A.: Bicycles. Tel.: 388.—Robinson's Garage, Green St., Cambridge. [6864

DOUGLAS. Douglas.—Prompt delivery of all the latest models. Get right away into touch with the sole wholesale and retail district agents.—The Colmore Depot, 31, Renshaw St., Liverpool. [1640

DOUGLAS, 2¾h.p., in splendid condition, lamps, tools, etc., property of officer now serving at the Front; seen any time; £24, or offer.—Apply, Mrs. Makins, 28, Ellerby St., Fulham Palace Rd., Fulham. [X4841

1914¾ Douglas, T.T., 2-speed, free engine, Bosch mag., B. and B. carburetter, unpunctured, heavy Dunlops, speedometer, accessories, spare belt, do 50 m.p.h.; £44, or nearest offer.—141, Plumstead Rd., Plumstead. [1545

Enfield.

1915 6h.p. Enfield Combination, actually in stock; £84.—Celtic Motor Works, East Hill, Wandsworth. [1474

ENFIELD 3h.p. Twin, cost with Lucas lamp £55 on August 2nd; accept £44.—The Walsall Garage, Walsall. [X4909

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Indian.

1914 7h.p. Indian, 2-speed, complete with dynamo electric lighting set, electric horn, and speedometer, smart Indian coachbuilt sidecar, whole outfit in very good condition, and thoroughly overhauled; 58 gns.—Julian, Broad St., Reading. 'Phone: 1024. [X4835

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Ivy.

IVY De Luxe Latest Pattern 2-stroke in stock.—Sole district agents, The Walsall Garage, Walsall. [X4910

Ixion.

1915 Ixion, 2½h.p., 2-stroke, only done 500 miles, splendid condition, perfect, all accessories; £21, bargain.—18, Maidman's St., Burdett Rd., Bow, E. [1506

James.

JAMES 1915 Combination, just arrived, 73 gns.—Lamb's, 151, High St., Walthamstow. [1389

JAMES Combination, Lucas accessories, speedometer, ran 3,000; £60.—Leighton's, opp. Wood Green Station. [1356

JAMES 4h.p. Coach Combination, 1913, kick start, clutch, speeds, etc.; 37 gns.—Auctiou Rooms, New Rd., Brighton. [1313

JAMES, 1915, 4¼h.p. big single, Millford family sidecar, new, fine combination; £72.—Fielder, 19, Worple Rd., Wimbledon. [X4893

1915 James, 4¼h.p., 3-speed countershaft, clutch, kick-starter, fitted with James Canoelet sidecar, complete; 73 gns.—Parker and Son.

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JAMES, 1915, 2¼h.p., 2-speed, 2-stroke, new June, perfect condition, lamps, and new horn; £30.—Lieut. Lewis, R.E., Haynes Park, Bedford. [X4698

JAMES, 4½h.p., 3-speed combination, 1914, new gear and engine bearings, good condition; £46; exchange Zenith.—Lovick, Victoria Rd., Whitchurch, Glam. [X4791

JAMES 1914 4¼h.p. 3-speed Combination, coach body, excellent condition, horn, lamp set, etc., powerful combination; £54.—The Morris Garages, Oxford. [1621

JAMES, 4¼h.p., 1913¾, chain drive, countershaft, 3 speeds, clutch, kick start, coachbuilt sidecar, accessories, splendid condition; £42.—100, London Rd., S.E. [1566

JAMES, 4¼h.p., 2-speed, free engine, kick starter, Canoelet sidecar, hood, wind screen, Lucas lamps horn, complete, excellent condition; £42.—Westley, 12, Rectory Rd., Barnes. [1596

JAMES, 4¼h.p., in fine order, 3-speed countershaft and clutch, Brooks pan seat, spring footboards, 2 lamps, with cane sidecar and apron; lowest £45.—Collyer, 313, High Rd., Wood Green. [X4738

4¼h.p. James, 1914, with Canoelet sidecar, 3-speed chain drive, complete with lamps, Stewart speedometer, and all accessories; price £45.—The Unbreakable Pulley Co., West Gorton, Manchester. [X4769

JAMES, 1915, 4¼h.p., 3-speed counter-shaft gear, clutch and kick starter, chain drive, Canoelet sidecar, with Lucas electric lighting outfit, Lucas electric horn; £90/15.—Colmore Depot, 261, Deansgate, Manchester. [0674

JAMES, 1915, 4¼h.p., 3-speed countershaft gear, clutch, and kick starter, chain drive, Canoelet sidecar, Lucas lamps, wind screen, and apron, speedometer, mechanical horn, only ridden 400 miles; owner buying car; £75.—Dutfield, 8, Albert Grove, Morpeth Rd. South Hackney. [1322

1915 James, 4¼h.p., 3-speed combination, just received from works, with extra silencer, electric lamps, luggage grid, horn, apron, and mat, insurance and registration can be transferred; price £70; can be seen by appointment.—Address, J.R.S., 30, Kirkstall Rd., Streatham Hill, S.W. [X4740

J.A.P.

£30.—3½h.p. J.A.P., 2-speed, condition as new, side door.—152, Albion Rd., Stoke Newington. [1412

1913 4h.p. J.A.P. Motor Cycle, gear, coach sidecar; offers.—T. Winter, 24 Mount Pleasant, Louth. [X4896

1915 6h.p. J.A.P. 3-speed and Clutch Combination, complete; £65.—Leighton's, opp. Wood Green Station. [1357

J.A.P., 3½h.p., mechanical overhead valve, exhaust pipe, adjustable pulley, mag. table and mag., complete; £10; not been ridden 1,000 miles.—Leighton's, opp. Wood Green Station. [1363

J.E.S.

J.E.S. Motorcyclette, order and condition almost equal new; cost 25 gns., £13/5.—A. Shilton, Stoke Golding, Nuneaton. [X4794

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2¾h.p. Kerry, perfect condition, nearly new tyres; £7/10.—Sibley, 106, Market Place, Romford. [1468

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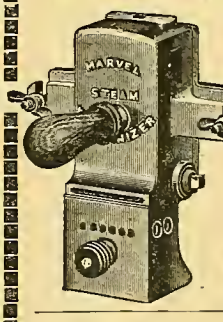

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Lagonda.

NEW 1915 Lagonda Coupe, just delivered fresh from works; price £165, cash, or exchange.—Wunchope's, 9, Shoe Lane, London. [X4797

Lea-Francis.

LEA-FRANCIS, 1913, 3½h.p., just overhauled, excellent condition; seen by appointment; £35.—Mr. Leapingwell, Osmaston Rd., Derby. [X4772

Levis.

LEVIS Popular Models actually in stock.—Sole district agents, Walsall Garage, Walsall. [X4908

IMMEDIATE Delivery of Popular Levis 2-stroke lightweights.—Wunchope's, 9, Shoe Lane, London. [X4798

LEVIS, 2¼h.p., excellent condition; £18, or near offer.—H. Jones, 57, Grange Rd., West Bromwich. [X4899

LEVIS Popular, 2¼h.p., just arrived; exchanges or cash; £28/1.—South Eastern Garage, Herne Hill, S.E. [1183

LEVIS, hardly used, not scratched, real good; £27, with accessories.—8, St. James Rd., Kingston-on-Thames. [1490

LEVIS Popular; £28/1 cash, or fifth down, 2½% on balance.—Referee Cycle Co., 332, High Holborn, W.C. [2773

LEVIS, 2½h.p., late 1913, in perfect condition; £22/10, or nearest offer.—Cooper, 3, Mersey Rd., S.S., Blackpool. [1336

LEVIS, 1915, delivery of one 2¼h.p. Popular model, £28/1, from stock.—Layton's Garage, Bicester, Oxon. 'Phone: 35. [X4883

1915 Levis, 2½h.p., 2-speed, Lucas head light, horn, splendid condition; £35, no offers; owner bought car.—Durose, Marchington, Staffs. [X4780

1915 Levis, 2½h.p., Popular model, absolutely in stock; £28/1; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6410

LEVIS, 2½h.p., late 1914, 2-speed, Lucas lamp and horn, etc., ridden 500 miles only; £38/10.—Box 9,138, *The Motor Cycle* Offices, Coventry. [X4741

LEVIS 1915 Popular Model, 2¼h.p., just arrived from works; immediate delivery; £28/1.—Wilkins, Simpson and Co., 11, Hammersmith Rd., London. [9613

LEVIS Popular, 2½h.p. single, and 2-speed, and De Luxe models.—Sole Midland distributing agents, Colmore Depot, 31, Colmore Row, Birmingham. [X3034

1915 Levis Popular, practically new condition, F.R.S. head, Lucas rear lamps, Enots drip, Xl'all saddle, footboards, tools, spares; £25, no offers.—F. Sale, Bulwell, Nottingham. [1505

LEVIS 2-stroke Motor Cycles, latest 1915 models.—Sole London and district agents, Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent. [0711

LEVIS, 1915, 2¼h.p., nearly new condition, guaranteed in perfect order, semi T.T. bars, lamps, horn, etc.; £18/10; can be seen any time.—Kelson, 79, Rochester Row, Westminster, S.W. [1372

Lincoln-Elk.

LINCOLN Elk, 1912, and Sidecar, adjustable pulley, Whittle belt, excellent condition; bargain, £21.—Clinch, 20, Ennott St., Mile End. [1665

1912 Lincoln-Elk, 2-speed, free engine, belt and chain drive, good tyres, and new tubes, Druids, B B., Bosch, with wicker sidecar; £27/10.—Estate Office, Bounces Rd., Edmonton. [X4860

Little Giant.

LITTLE Giant, 1915, 2½h.p. Precision engine, 2-speed, 2 weeks old, not done 100 miles; owner gone on active service; cost £32, accept £26.—Morgan, Marsham St., Westminster, S.W. [X4422

Lurquin-Coudert.

6h.p. Lurquin-Coudert, sidecar, 2-speed countershaft, just been overhauled and re-bushed, 3 new tyres; bargain, £36.—Allitt, 108, Barkworth Rd., South Bermondsey, S.E. [1364

M.A.G.

M.A.G. 3½h.p. Twin, T.T., single speed, Bosch mag., Amac carburetter, very fast and reliable solo mount; £32/10.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0552

Martin.

MARTIN, 6h.p., new, been 150 miles; photo; list price £57, take £35; just off to France.—Lieut. Young, c/o 65a, Rosendale Rd., West Dulwich. [X4966

Matchless.

7h.p. 1915 Matchless Combination, as good as new; cost over £100; fitted up complete; accept £90, no offers.—Soper, Andover, Hants. [X4733

MATCHLESS Combination, 1913, 6h.p., 2 speeds, kick starter, all accessories, excellent condition throughout; £50.—3, Lushington Rd., Harlesden, N.W. [1378

MATCHLESS, 8h.p., and nearly new Millford Empress sidecar, B. and B., 1915 Pilot jet, drip feed, just overhauled, smart lot; £48, bargain.—482, Cable St., E. [1324

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Matchless.

MATCHLESS 1913 3½h.p. Twin, 70×76 mm., J.A.P. engine, 3-speed gear, chain and belt drive, light Millford coachbuilt sidecar; £45.—The Premier Motor Co., Aston Rd., Birmingham. [1648

MATCHLESS, 1912, 2-speed, coachbuilt sidecar, splendid condition, complete, accessories; £44, or exchange Triumph, B.S.A., Rover.—Stonehanks, 4, Stormont Rd., Clapham Common. [1420

MATCHLESS 3½h.p. Twin, 3-speed gear, kick starter, lamps, horn, speedometer, only run 2,200 miles, with torpedo de luxe cane sidecar, complete; £48.—Motor Mart, Easthourne. [1445

MATCHLESS 1914 8h.p. Combination, complete equipment, including lamps, horn, speedometer, spares, etc., spleadid condition, unused since last summer; owner at Front; £75.—Branksome, Church Lane, Cheshunt. [X4920

Midget Bicar.

1908 Midget Bicar, 3-3½h.p. Fafnir engine, battery ignition, low frame, new tyre, tube, and piston rings; £9.—Butler, Bootmaker, Bracknell. [X4747

Minerva.

MINERVA, 3½h.p., with sidecar, £10/10; 2¾h.p. £5.—87, New Park Rd., Brixton. [1557

MINERVA, 3½h.p., coil ignition, B. and B., good running order and condition, with strong sidecar; £14.—95a, Wakefield St., East Ham. [1561

3½h.p. Minerva, 2-speed, handle etarter, new lamp, horn, tyre, splendid condition, Paragon cane folding sidecar, practically new; hargain for quick sale, £22/10.—Hazeldene, Woodstock Rd., Carshalton, Surrey. [X4826

Moto-Reve.

MOTO-REVE, twin, lightweight, perfect; £14; or exchange, with cash, for clutch Triumph.—5, Bonheur Rd., Bedford Park. [X4967

Motosacoche

1913½ Motosacoche, 2½h.p., mag., Druid, variable, good throughout; £15/10.—Thomas, Pemberton, Llanelly. [1493

2½h.p. Motosacoche, in fine order, Bosch mag., good tyres, all perfect, and a reliable machine; £9/10 —Fearn, Nottingham Rd., Alfreton. [1521

MOTOSACOCHE, 1914, 3½h.p. M.A.G. engine, 2-speed countershaft gear, chain drive, kick-starter, sound mechanical order; £36.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0492

New Comet.

1915 New Comet, 2¼h.p., 2-stroke, open frame, little used; £17, carriage paid.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [1331

New Hudson.

NEW Hudson, 4h.p., 1913, 3 speeds, clutch; 31 gns. —Auction Rooms, New Rd., Brighton. [1315

NEW Hudson, late 1913, 3½h.p., 3-speed, and sidecar, perfect; £33.—Stocks, Thurlstone, Penistone. [X4843a

3½h.p. New Hudson, 1913¾, coach combination, 3-speed, like new; £39/10.—P. Longden, 17, Cooper St., Manchester. [X4810

6h.p. 1915 New Hudson Combination, complete, done 1,000 miles; cost £96; what offers.—Box L1,214, *The Motor Cycle* Offices, 20, Tudor St., E.C. [1661

NEW Hudson, 2-stroke, from £36; all models from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0603

NEW Hudson, 4h.p., late 1913, 3-speed, kick starter, just been overhauled by makers, just like new, complete; £36, or offer.—White, Cosheston, Martyr Rd., Guildford. [1469

NEW Hudson, 1914, 6h.p., coachbuilt combination, engine, etc., in perfect condition, but Armstrong gears want repairing; £40.—Smith, 33, Kensington Gardens, Brighton. [1433

1913 New Hudson, 4h.p., countershaft drive, 3-speed gear, coachbuilt sidecar, splendid engine, take any hill; £40 lowest.—Bell, Chatsworth, Station Rd., New Southgate, London. [1438

NEW Hudson Model E Semi-racer, 2-stroke, dark grey finish, £31; model C, 2-speed, 2-stroke (two) in stock, £36; big six combination, £92/8.—Lamb's, 151, High St., Walthamstow. [1401

NEW Hudson, 3½h.p., countershaft 3-speed gear; £63; delivery from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0570

6h.p. 1914 New Hudson and coachbuilt sidecar, 3-speed gear and free engine, 4-point fixing, kick start, accessories, and tools; any severe demonstration given; price £65, very lowest.—Seen Wanchope's, 9, Shoe Lane, London. [X4801

New Imperial.

NEW Imperial J.A.P. Light Tourist, 2½h.p.; £34/3/6 cash, or on easy terms.—Referee Cycle Co., 332, High Holborn, W.C. [2774

NEW Imperial Lightweights, 2 speeds, actually in stock; £34/3/6; exchanges considered.—City Motor Co., 125, London Rd., Manchester. [0718

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1915 2¾h.p. New Imperial-J.A.P., 2-speed, actually in stock; price 35 gns.; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6408

NEW Imperials, the best value in English motor cycles, fitted with the famous J.A.P. engines and reliable countershaft 2-speed gears. Prices from 35 gns. Models No. 1, 2, and 5 in stock.—The Colmore Depot, 31, Renshaw St., Liverpool. [1641

Norton.

NORTON, T.T. bars, 3-speed gear, only used few weeks, £52; similar machine, with touring bars and footboards, £52.—Parker and Son, St. Ives, Hunts. [1625

NORTON, 1915 Brooklands road racer, with certificate guaranteeing over 65 miles per hour, only used about 300 miles, and like new; £50.—Alexander's, 115, Lothian Rd., Edinburgh. [1244

N.S.U.

3½h.p. Twin N.S.U., very fast, in splendid order; £17.—102, Lyon Rd., Wisbech. [X4992

N.S.U. 3h.p. Twin, 1914, 2-speed, clutch, kick starter, as new; £35.—51, Elliott Rd., Chiswick. [1523

£12/10.—N.S.U.-J.A.P., new, 2½-3h.p. engine, Senspray, Bosch, accessories.—31, Nursery Row, Walworth, S.E. [X4829

1913 N.S.U., 6½h.p., 2-speed, coachbuilt sidecar, accessories, speedometer, new condition throughout; £40.—Greenwood, St. Michael's Rd., Croydon. [1591

N.U.T.

N.U.T., 6h.p. twin, J.A.P. engine, 3-speed gear, coachbuilt sidecar, hood, screen, speedometer, clock head light set, luggage grid, and petrol carrier, etc.; cost £100 in August, 1914, unused since December; owner Dardanelles; bargain, £65, no offers.—Smith, High Rd., Chadwell Heath. [X4651

O.K.

O.K. Mark 4 Junior, 31 gns.—Lamb's, 151, High St., Walthamstow. [1405

2½h.p. 1915 O.K., 2-speed, F.E., done 200 miles; £30.—25, Dallas St., Mansfield. [X4842

O.K. Junior, 2h.p., 2-speed; £33.—Immediate delivery at Alexander's, 115, Lothian Rd., Edinburgh. [1242

1915 O.K. Junior, 2h.p.; price £33/1/6; actually in stock.—Julian, Broad St., Reading. 'Phone: 1024. [X3123

O.K. Junior, immediate delivery, stock, Mark III., 2h.p., 2-speed, Druid forks.—Meeten, Motors, Dorking. [1525

1915 O.K., Mark III., 2-speed, semi-T.T. bars, in stock, for immediate delivery; £33/1/6.—Motor Mart, Eastbourne. [1441

2½h.p. O.K., countershaft 2-speed, new July, including Lucas 3 gn. lamp, and Lucas horn, not ridden 100 miles; cost £38, accept £30, lowest.—H. Fletcher, Craigruie, Pleckgate Rd., Blackburn. [X4858

Omega.

OMEGA, 3h.p., 2-stroke, 2-speed; 36 gns.; in stock. —W. P. Edwards, Taunton. [X4322

P. and M.

P. and M., 1911, 3½h.p., 2 speeds, good tyres, perfect; trial; £24.—Stocks, Thurlstone, Penistone. [X4843

1913 P. and M., Millford coach sidecar, all new tyres, perfect condition; £45, or offer.—Cave, Decorator, Windsor. [1558

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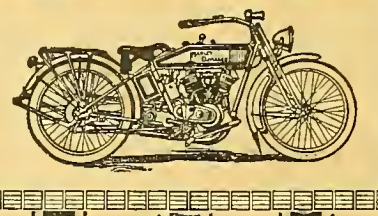

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NEW ZEALAND.—Gordon and Gotch, Ltd., Wellington, Auckland, Christchurch, and Dunedin. INDIA.—A. H. Wheeler & Co., Bombay, Allahabad, and Calcutta.
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Volunteer Bodies and the Critics.

ONE or two correspondents lately have criticised rather harshly the Volunteer bodies which are now so common in this country. The Volunteer movement, which was started with much promise and developed at an extremely rapid rate, has undoubtedly fallen very considerably in the estimation of the public during the last few months, and in our opinion the members have largely themselves to thank for the decline of the respect in which they are held. Last November, after the War Office was so frequently exhorted to recognise Volunteer Corps, a letter was forwarded to Lord Desborough, laying down the conditions upon which the Army Council was prepared to grant recognition to the Central Association Volunteer Corps. One rule was that only the names of those could be registered who are not eligible through age to serve in the Regular or Territorial Army; another, that there might be uniformity of dress among members, provided that the dress was distinguishable from that of Regular and Territorial units. It was also stated that the accepted military ranks and titles would not be allowed nor recognised, and that no uniform was to be worn except during actual training or while going to and from such training. This was always the accepted practice amongst Volunteers (afterwards Territorials) before the war. The terms of this letter are still the only conditions under which the Volunteer movement is recognised.

It would be interesting to know how many Volunteer bodies have acted up to the spirit of these regulations. Several times lately cases have been brought to light where members of Volunteer Corps clad in uniform closely resembling that of an officer in His Majesty's Forces, and minus the "G.R." red Volunteer armlet, have been saluted by soldiers, who imagined them to be commissioned officers; and, further, of Volunteers still clad in this striking dress disporting themselves in public places when not training. Such actions have confirmed the lurking suspicion of many people antagonistic to the Volunteer movement that it was a method of avoiding the real thing and yet being outwardly patriotic. This opinion is supported by the fact that Lord Kitchener, in his most recent appeal for recruits, asked members of Volunteer Corps to act up to their obligations to the best of their ability as recruits were badly wanted. Just how far this appeal penetrated it is not easy to say, but proof that it did not reach far enough is provided by the number of able-bodied men in the Volunteer movement still to be seen careering about our roads.

Our opinion of the Volunteer movement was outlined in our issue of April 8th. We pointed out then that so long as Volunteers fulfilled the requirements of the War Office letter nothing but good could come of the training received in a properly organised Volunteer body. We have in the interim had ocular proof of the extremely useful training many men had received prior to joining the Forces—a completeness of preparation which recruits in certain sections of the Army, who are hurried to the Front, could not hope to receive in the brief period of official training. It is, therefore, unfair to throw cold water on all the efforts of the enthusiasts who work whole-heartedly in endeavouring to make every man an efficient soldier. After all, there are many men engaged on munitions who choose to spend an occasional half-day with the Volunteers, and again there are many motor cyclists on the waiting lists of various sections who could not do better than employ their time undergoing training while waiting to be called up. We sympathise sincerely with the work of these men, but it appears likely that there will continue to be occasional more or less serious outbursts against the Volunteer bodies until they are taken over by the Government. When that time comes, and the corps is recognised, those who sneer at the Volunteers' efforts will treat the movement more seriously and with greater respect.

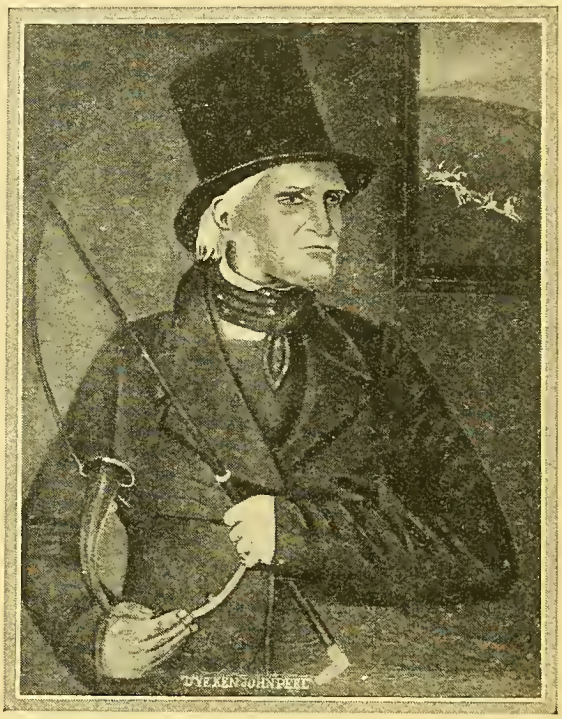
An index to the advertisements in this issue will be found on the page facing the back cover.

Wanderings in Peel-land with a Lady Driver.

By GEORGE D. ABRAHAM,
Author of "Motor Ways in Lakeland," "The Complete Mountaineer," "Mountain Adventures at Home and Abroad," etc.

"D'YE ken John Peel?" How often, the world over, has the question been asked and answered in the lusty chorus of the immortal song! Yet few "ken" the inner meaning and romance of the magical music until they have roamed that region of mountain and moor where the Northern Nimrod hunted, lived and died. The strange incomprehensible inappreciation of this fascinating northerly stretch of the Lake country suggests the thought that Peel is honoured more in imagination than reality. Yet probably this neglect is only due to lack of knowledge of "how to go and what to see." The motor, especially a sturdy sidecar outfit, provides the ideal means of settling these matters, and should one be driven by an enthusiast who revels in hills, a very sporting day's wandering may be enjoyed.

Comfortably ensconced in a Royal Enfield sidecar with Mrs. Mary Riley as driver, and her husband as optimist of the party when typical August dampness asserted itself so frequently, one felt that one was learning pleasantly much that might be useful to future explorers in Peel-land. Moreover, when these warring times are over Lakeland trials will be revived, and new hill discoveries were always in mind. This has been a record season for motors in Lakeland, and on the busy highway there was time to realise the fact as we sped northwards from Keswick, with Skiddaw's purple heights cloud-wreathed above us, and Bassenthwaite Lake sombre and still below on the left.



A portrait of John Peel, from the old original oil painting in the possession of the writer of the accompanying article.

Nearly six miles from the Lakeland metropolis we left the main road at High Side Farm. The way, ever rising gently, was narrow and rough, but altogether delightful. A wealth of wayside flowers, with hare-bells and Canterbury bells vying in colour with the distant blue horizon, greeted the eye and nose pleasantly. A sudden dip over into the depths of a wooded gorge and a rugged climb on its farther side up a gradient steeper than 1 in 4 tested driver and machine alike.

Wayside Gooseberries.

The clouds had now cleared, and up on the right the silvery streak on Skiddaw's northerly front showed the Dash Falls, which, had time permitted, would have been well worth the *détour* for a closer view. Instead of this the rich supply of gooseberries on the roadside by a mountain farm attracted attention. We were busy with these when the man of the place appeared in apparently friendly mood. "Wadn't ye like to coom into th' garden?" he said smilingly. It rested with the writer to recognise the Cumbrian sarcasm and suggest an onward move.

A motor cyclists' camp in John Peel's country. Bassenthwaite Lake is in sight.

The small and pretty but little-known lake of Overwater gleamed below on the left. At four important road ends we swung away to the left, with the Dash behind and the dam in front which holds back the flood waters of the lake. Two capital hills had to be climbed ere the village of Uldale was passed through on the way to Ireby. Here we were in real touch with Peel-land, and in touch, also, with a surprising and decep-

Wanderings in Peel-land with a Lady Driver.—

tively deep water-splash, which cooled the driver's ardour slightly. Upon the left was the grey hamlet of Ruthwaite, where the famous huntsman lived in the height of his hunting career. A most interesting and almost unknown treat was found in Ireby. At the Sun Inn the landlord, Robinson Bell, the genial grandson of Peel, showed us some curious relics of his famous relation. The horn, hunting crop, stirrups, and bit were amongst the collection, which is still intact despite, as Bell said, "many a temptatious offer fra America and nearer hame." It was pleasing to learn that a well-known lover of Peel-land has a promise of the refusal of the priceless relics, and if they leave the little village they will go to London as national property.

In due course we were bound for Caldbeck over Aughtertree Fell, high up "ower t' trees" and amongst the gorse and bracken, where sly Reynard finds evening cover even to-day ere he dodges down to the valley farms. The road which runs from Uldale to Caldbeck was shortly joined, and there came a delightful run over the lonely moorlands of Uldale Common. The spirit of the great huntsman seemed in the breeze, which swept heather-scented over the foothills. Shapely Skiddaw kept distant sentinel over the wilds, where few signs of human endeavour were visible. At the first house on the right and within about fifty yards from the road we came into practical touch with John Peel once more.

Greenrigg, near Caldbeck, where John Peel was born in 1776.

This was at Greenrigg, where, according to the present tenant, who is also a descendant of the family, the huntsman was born in 1776. He went to Ruthwaite in early manhood, but returned late in life. In his own words he came here "because folk nivver dee at Ruthet." He said, "I'se gaen to Greenrigg to be handy for t' kirkyard." It was here he passed to the happy hunting-grounds in 1854.

A visit to the little, grey dwelling, with its tiny peep-hole windows placed with peculiar irregularity, proved most fascinating. The problem of rearing the family of fifteen young Peels in such diminutive space seemed insoluble. How could the two small bedrooms, where to swing a fox would have been impossible, suffice for so many? Lack of space forbids the story of all we saw and heard at Greenrigg. Perhaps the most impressive thing was to sit silently in the oaken inglenook in the kitchen and remember that here on a wild winter's night the famous song was brought into the world by John Woodcock Graves. Success came soon. It became the slogan of the Border Regiment, and, in the Crimea and the Boer War, Peel's "view-halloo"

A characteristic mountain road under Saddleback, on the return journey from Peel-land, by the old road from Penrith to Keswick.

echoed through the trenches. News had just come of the terrific Border onslaught in the Dardanelles—of how to the tune of "John Peel" the Northern hunters of death had leapt fiercely from the trenches, the weird music rising in mad roar above the noise of the guns. Small wonder the Turks ran—it seemed more wonderful they ever stopped running. But alas! many a huntsman will never return to his home on the hill.

Then we set forth from the open moor and gained the flowery hedgerows once more near Caldbeck. At the top of the steep descent into the village, a turning on the left gives access to the "Howk," a wonderful water-worn gorge, where caves and cascades hide amidst the foliaged depths. Though little known, it is one of the sights of Peel-land that certainly should not be missed. In Caldbeck itself a visit to the huntsman's grave in the picturesque old churchyard was made, and a "crack" or two with some of the natives brought forth many a story of the great man of the district.

Peel's Marriage.

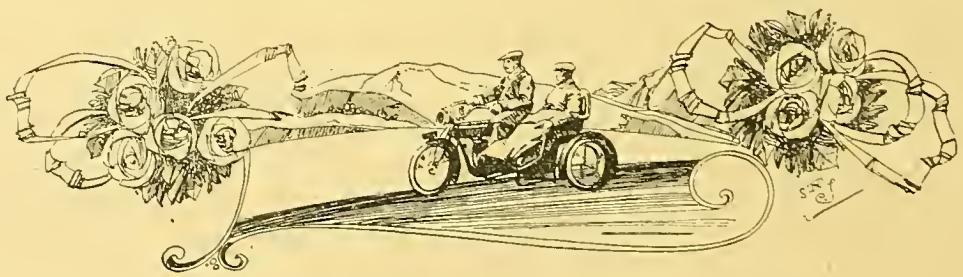
As we travelled over the splendid road to Hesket Newmarket a backward glance showed a little white cottage amongst the trees on the westerly hill. The sight recalled the typical story of Peel's marriage to Mary White who lived up there. His fondness for Mary was unknown even to his parents until the banns were called in Caldbeck Church. Then Mary's mother stood up at once and forbade them saying, "She's far ower young!" But John was not so easily beaten. He appropriated Mary and set off to Gretna Green on Binsey, his favourite horse. There the pair were married, and on their return the mother had so far relented as to allow the orthodox service to go forward.

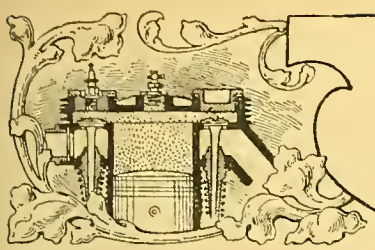
At Hesket Newmarket, with its quaint town hall, ancient covered well, and rusty bull-baiting rings let into the ground close by, much could be learnt of Peel's adventurous time. Once out of the village we followed the road on the right which led back to civilisation under the dark crags of Carrock and through Mosedale and Mungrisdale. The sight of Saddleback's serrated crest high up on the right betokened the approach to the main road eight miles from Keswick.

To add a sporting finish to the outing the old road was entered upon by branching to the right just beyond Threlkeld village. Past the kennels of the Blencathra Hounds, which now hunt much of Peel-land with dogs descended from the famous pack, we mounted over a good road until, bearing sharply to the left, a long hill led downwards steeply. From the beautiful glen of the Glenderaterra river an impressive hill sprang upwards on the mountain's front. The sight roused our driver. The Enfield roared forward up

A typical scene in Peel-land—at the crest of Uldale Hill. Skiddaw is seen on the left, with Overwater below on the right—Mrs. Riley's 6 h.p. Enfield sidecar in the foreground.

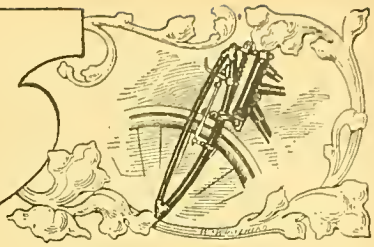
the slope to where some bushy trees masked a hidden corner. This surprised everybody, for it swung round in the curliest of hairpins on a gradient approaching 1 in 3. Our speed was excessive, the pillion rider sprang off with a startled cry in record time, and the machine dashed sideways round the slippery bend. For an instant there was danger of sliding bodily over the precipitous edge, but with astonishing skill in the gentle use of the clutch our driver recovered directness. She was worthily proud of a non-stop climb, for this Brundholme Hill, nearly a mile in length, must prove a problem to any expert, and the unprotected precipitous downward prospect added to its impressiveness, especially in the gloom of evening. The homeward way was followed around the wooded slopes of Latrigg by a hill route which will doubtless have practical use in future trials.





PISTON RINGS.

Their Treatment.



WHEN taking down an engine for cleaning or overhauling, it is rare that the pistons and rings receive that attention which their importance warrants. Consider the work which they perform with the engine turning over at 1,800 r.p.m., *i.e.*, thirty revs. per second, when the piston has to commence work, travel the length of the stroke, and stop in one-sixtieth part of a second! The wear we should expect to be tremendous, yet, thanks to a more or less efficient method of lubrication, this wear is scarcely noticeable to the naked eye even after a season's running. There are, however, certain signs of hard work which should be observed and heeded if the engine is to maintain its efficiency.

Vertical Fit.

Examine the rings first for vertical fit in the piston groove. The grooves and rings should be thoroughly cleared free of burnt carbon. It will be found that when there are three rings the top ring is distinctly slack, the centre ring slightly better, and the bottom

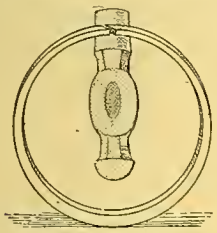


Fig. 1.—Spreading ring to fit the groove.

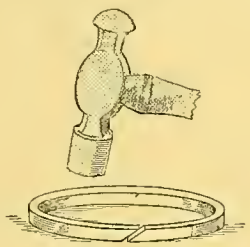


Fig. 2.—Improving the fit in the cylinder.

ring practically perfect. We can find no explanation for this except on the ground of unsatisfactory lubrication. It is worth while to remedy this fault, at any rate in so far as the top ring is concerned, and it can be done either by fitting a new ring or doctoring the old one. On no account should a new ring be taken in a haphazard fashion, cut or split diagonally at the thinest portion for the slot, and then passed as satisfactory. Such a ring is not true, and, even if it were originally a dead true fit in the cylinder, after slotting it becomes oval and will probably wear the cylinder oval before it becomes a good working fit. The correct plan is to cut the slot, then compress the ring until the slot is closed, and turn it in the lathe a true fit for the cylinder.

Hammering the Rings.

If the wear is slight it is quite possible to spread the metal by hammering it while poised on an anvil. The position is shown in the sketch (fig. 1). A very light riveting hammer with a narrow head is used. The ring is rested firmly on the anvil, and the inner portion of the circumference is tapped smartly with the hammer on the spot where it is balanced on the anvil. The metal will be gradually spread, and the ring must be slowly revolved until the whole of the inner circumference has been dealt with. The greatest of care must be exercised in using the hammer, for if any unsupported portion of the ring be struck it will snap like a carrot. Hammering seems to have a good effect upon the metal, for rings undoubtedly wear better and hold the compression longer when thus treated. One well-known concern uses a ring which depends entirely upon the hammering action for obtaining the necessary spring. In this case, the rings are parallel in thickness all round. The force of the hammer blows is graduated, being greatest opposite the joint and least just at the joint. The spring is thus of a uniform nature, and as the rings are of the same thickness all round they fill the groove better and afford fewer opportunities for gas leakage.

We must now examine the rings for slackness in the cylinder. If the fit has been good the rings will have become polished to a uniform brightness all round. Any signs of blowing past caused by the rings not being in contact with the cylinder wall will be indicated by that portion being of a dull and brownish colour. The metal can again be spread by judicious hammering. This time (fig. 2) the ring is rested flat on the anvil or iron plate and held down firmly by the hand while the hammer taps the non-fitting part. From time to time it should be tested in the cylinder bore, and only passed as being satisfactory when a cigarette paper is held tightly at every portion of the circumference.

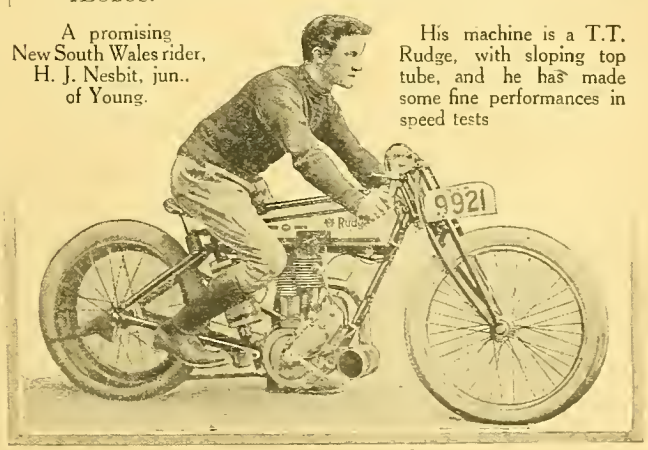
Cylinder Wear.

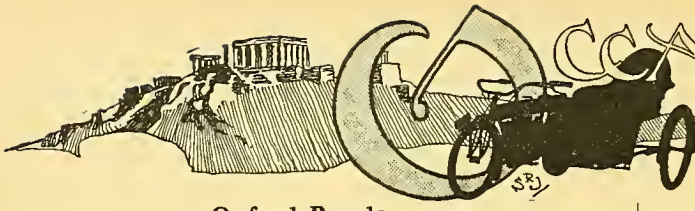
In course of time the cylinder will become worn unevenly, and as little can then be done with it it is as well to send it up to the makers to be re-ground and have a new piston fitted. As a palliative, in order to put off the evil day when a thorough overhaul becomes essential, it is possible to obtain a certain amount of improvement by fitting new piston rings.

—ÆOLUS.

A promising New South Wales rider, H. J. Nesbit, jun., of Young.

His machine is a T.T. Rudge, with sloping top tube, and he has made some fine performances in speed tests





OCCASIONAL COMMENTS

BY 'IXION'

Oxford Roads.

I can assure Mr. Vulliamy that if it had not been for the urgent need of municipal economies in war time, Oxford—and one or two other towns—would have been black-listed long since in every progressive motor journal. There are not a few districts where the local authorities have encouraged or organised motor 'bus services without the least idea of the radical road reforms necessitated by the advent of fast heavy traffic. Most of the suburban road surfaces round Oxford are the absolute limit; they present the semblance of corrugated iron, and are calculated to break up any car or cycle regularly traversing their iniquities. Such neglect is only pardonable in view of the Government prohibition of large outlays on every avoidable purpose. We can regard frightful roads with more indulgence when the locality concerned is an obscure provincial district; but when places like Oxford and North Devon, attractive to every sight-seer, home or foreign, become practically dangerous to wheeled traffic, it is time to protest; and as soon as war is over, and expenditure again becomes possible, there will be some frightful rows.

A Safe Lamp Position.

Some while ago I remarked on the fact that the head lamp usually gets more or less crumpled when a machine sustains a fall, and that, if the trade regards this rather unnecessary expense with equanimity, the private owner detests it. My strictures were mild, because the head lamps of that era were extremely bulky contraptions, and I could devise no less vulnerable position for them. However, I return to the subject because I am riding a mount which would almost have to be pulped in a steam press before its lamp received injury. Its handle-bars extend laterally for about 6in. on each side before they bend round towards me, and a small Ward and Goldstone electric lamp is centrally mounted just before the steering head. I have made experiments, and have satisfied myself that this lamp will outlast a hundred tumbles in its present position without suffering so much as a broken glass, and, if it is too small for a 7 h.p. speed merchant's twin, it is big enough for a legal limit average in inky darkness, and there is sufficient clearance for the remarks to hold good of such lamps as are fitted to the electrically equipped Indian or Harley-Davidson. The point is one fraught with real economy to solo riders of the semi-reckless type, who count on two or three purlers per season. I well remember how I was despatched some years ago to report a Six Day Trial on a very inefficient mount; and, what with frequent repair stoppages, the lack of sufficient colleagues, and the number of hill-climbs, I spent the entire week blinding at top speed over atrocious roads. I took seven different tosses, each of which affected the head lamp. On three occasions I was able to buy, beg, or borrow a new lamp, so that the week cost me four head lamps; on four of the tosses a lamp already reduced to the similitude of a concertina bore further injuries with resignation. So I plead for compact electric lamps, fixed slightly in front of the steering pillar, in conjunction with handle-bars which do not curve backwards too hurriedly.

Two Falling Tricks.

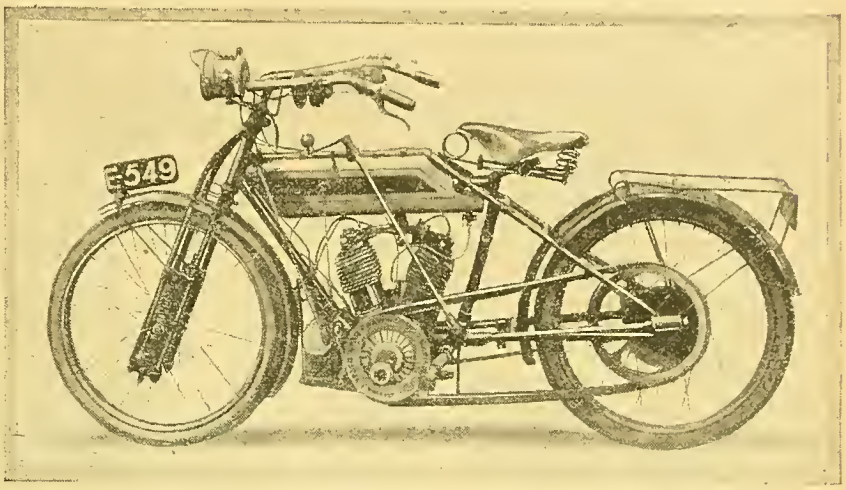
The other day some of us were discussing tumbles which we had experienced, and a well-known competition rider there and then gave an exhibition of methods which he alleged had more than once saved him from serious injury. His first trick consisted of seating himself on a chair, facing its back, with one leg on each side of the chair, and his head tucked down towards his stomach over the back of the chair. He then allowed us to tilt the chair over backwards, as often as we wished, and, maintaining his position, took the weight of the fall on his shoulders quite harmlessly. He alleges that whenever he takes a bad toss at speed he tucks his head into his stomach, and that his shoulders will take the impact with anything except a traction engine or a stone wall. The second trick showed how to accept a head on fall, *i.e.*, if he were jerked over the handle-bars. He knelt down on the hearthrug, threw his chest out, and his head back, with his hands tucked into the small of his back, and then overbalanced forwards, without slackening the rigidity of his body, taking the impact on the swell of his thrown-out chest. Most of us baulked on the first attempt to imitate him, but we soon learned that we could not possibly hurt ourselves if we maintained the rigidity of the body. He asserts that a very heavy frontwise fall can be taken in this way without other injury than a bruised chest; but that if a rider loses his presence of mind, and attempts to save himself instinctively in such a fall, he will break an arm and scrape along the road on his face and chin, not to mention the chance of a fractured skull or jawbone. The first trick struck me as especially valuable, and likely to protect all the most vulnerable points of the anatomy. He further asserted that on two occasions when he had been thrown over his handle-bars he had escaped unhurt by throwing his head backwards and landing on his feet, afterwards running off the impetus, but when we invited him to demonstrate the method, by charging a log laid on the road, he not unnaturally changed the subject! His conversation reminded me of a very neat save I once witnessed when pacing a road-racing pedal cyclist. We ran round a bend to discover some cows so close on us that I saw no hope of pulling up in time, and the whole width of the road-way was blocked. I chose a softish-looking place in the hedge, and took it at an acute angle. The cyclist leapt off his saddle on to the road, and as he ran off his impetus swung his machine clean off the road into the air, pulling up just short of the foremost cattle. I never saw a smarter exhibition of coolness, for he was well inside the time record which he was trying to beat, and desired to safeguard his machine, and finish inside the record, which we ultimately did, as my place in the hedgerow proved even softer than it looked.

The Bamford Variable Speed Gear.

AN INTERESTING DEVICE, EMBODYING AN UNDER-GEARED BELT RIM.

A NEW speed gear of the infinitely variable type, the design of which makes possible the employment of a 9in. expanding pulley and a range of gears from 4-1 to 12-1, together with a simple and ingenious belt-tensioning device, will, we have no doubt, open up a further field of utility for this type of gear. The principal novelty of this consists in the undergeared rear belt rim which maintains correct belt tension.

From the illustrations on this page the working and construction of the Bamford gear may be easily followed. The rear road axle is formed with a cranked portion towards the belt pulley end. On the central part of this axle the road wheel is mounted. The hub of this wheel carries an internally toothed ring. Meshing with this is the belt rim pinion, which rotates on the cranked portion of the road wheel axle. This axle is so arranged that through the medium of suitable hand or foot levers it may be turned in either direction, thus rocking the eccentrically placed belt pulley aronnd the internal gear and causing it to approach nearer to or move further away from the engine pulley, so that the belt can he maintained at an even tension on all gears. In this operation it should be noted that the road wheel, being centrally disposed on the axle, does not move. The gearing down of the driven belt pulley, which on the experimental model is in the ratio of 3 to 1, is an important feature, as it makes for what may be considered ideal conditions for a belt drive, viz., a 9in. engine pulley on to a 12in. rear pulley, an increased belt speed in feet per minute, with a corresponding redncton in the strain on the belt. This is very noticeable when travelling at a slow speed on a 4 to 1 gear, all traces of the usual belt snatch being eliminated. The drive is also of reasonable length.



An old pattern Rex machine fitted with the Bamford variable gear.

A Test on the Road.

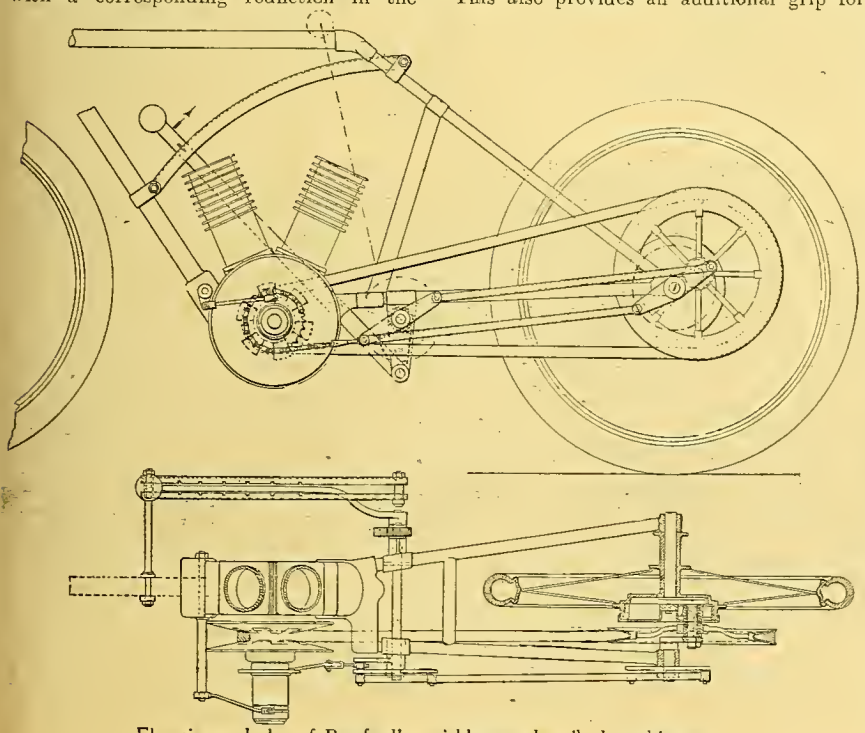
The machine fitted with this gear is a 5 h.p. twin Rex, which has been tested now for some 800 miles, a goodly portion of this being covered in the Peak District of Derbyshire.

The engine pulley, it will be noticed, has flanges which intersect at a point where the gear ratio drops to 7 to 1. This also provides an additional grip for the lower gear drives. The movable pulley flange on this machine is controlled by a spiral spring. For solo work this has proved satisfactory, and it has undoubtedly the merit of extreme simplicity.

The appended table will give an idea of the pulley diameters and the range of gear:

Variable engine pulley.	Rear belt rim.	Gear ratio.
9in.	12in. plus 3 to 1 reducing gear	4 to 1
7in.	12in. plus 3 to 1 reducing gear	5 to 1
5in.	12in. plus 3 to 1 reducing gear	7 to 1
3in.	12in. plus 3 to 1 reducing gear	12 to 1

The internal reduction gear is fitted with a dnstproof cover and rnns in grease; thns the inventor claims that it is silent in action, very efficient, and, as the whole forms a unit with the road wheel, the latter can be instantly detached. Furthermore, he states that this design of variable gear readily lends itself to the springing of the rear wheel. Mr. Bamford is desirous of getting into touch with manufacturers with a view to placing the gear on the market.



Elevation and plan of Bamford's variable gear described on this page.

AUSTRALIAN MOTOR CYCLISTS AND THE ARMY.

Perth (West Anstralian) motor cyclists have suggested to the Australian Minister for Defence the formation of a motor cycle and sidecar machine gun battery for an Oversea contingent, enclosing in support of the offer cuttings from *The Motor Cycle* showing the success of the Army motor cyclist sections. The West Australian Motor Cycle Club, through its hon. secretary, Mr. J. W. Armstrong, subsequently offered to purchase from its funds a motor cycle and sidecar snitable for a machine gun. We are told that there are at least 1,000 experienced motor cyclists in Australia anxious to enlist in a section of which they know something. Already a few have left for England, and others are thinking of doing the same, paying their own fares.

The Service 2¾ h.p. Two-stroke Sidecar Outfit.

THE Service Co., of 292, High Holborn, have now in their showrooms a new production in the way of a moderate-priced sidecar, which should help considerably towards filling the demand for a low-priced outfit which needs to be at the same time inexpensive to run.

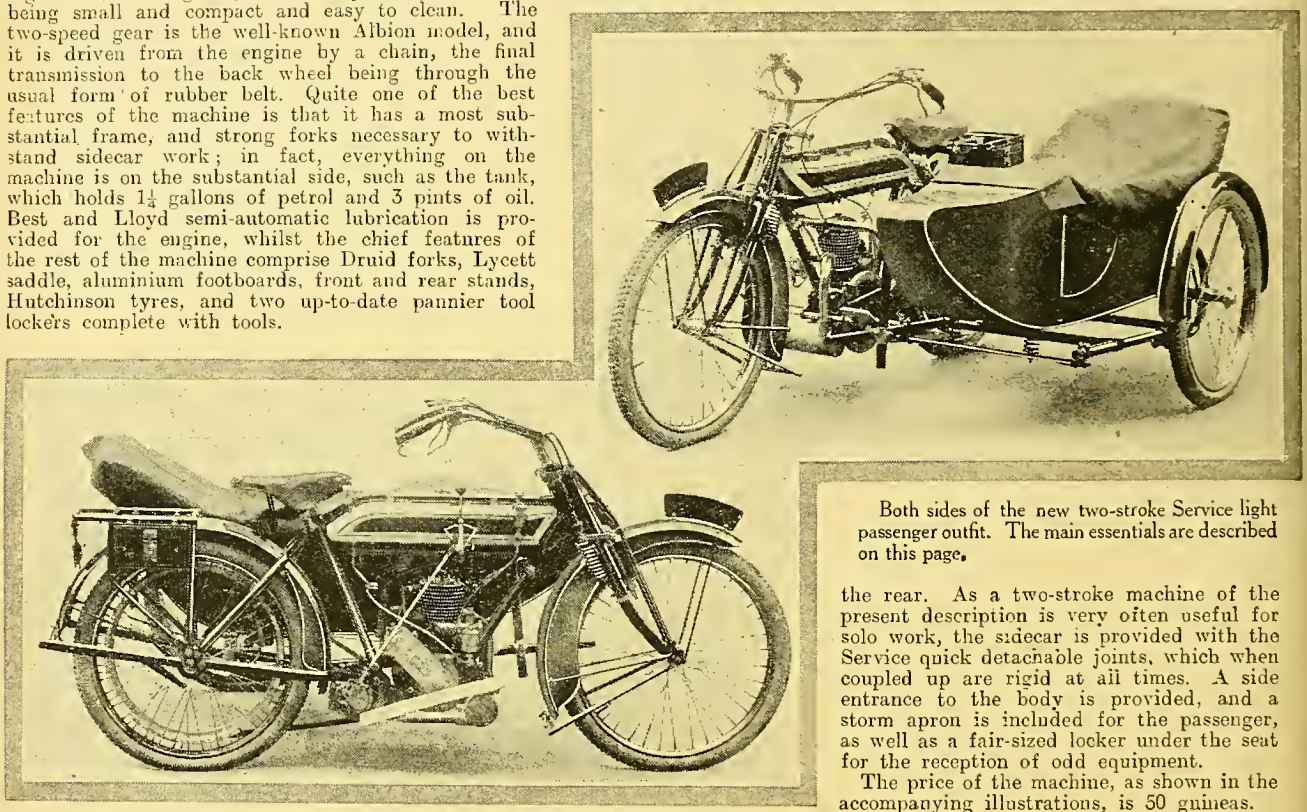
Dealing first with the machine by itself, the engine is a 2¾ h.p. two-stroke Peco, which has an original and highly satisfactory form of lubrication. The carburetter fitted is an Amac, whilst the ignition is operated by a high-tension magneto, the complete power unit being small and compact and easy to clean. The two-speed gear is the well-known Albion model, and it is driven from the engine by a chain, the final transmission to the back wheel being through the usual form of rubber belt. Quite one of the best features of the machine is that it has a most substantial frame, and strong forks necessary to withstand sidecar work; in fact, everything on the machine is on the substantial side, such as the tank, which holds 1¼ gallons of petrol and 3 pints of oil. Best and Lloyd semi-automatic lubrication is provided for the engine, whilst the chief features of the rest of the machine comprise Druid forks, Lycett saddle, aluminium footboards, front and rear stands, Hutchinson tyres, and two up-to-date pannier tool lockers complete with tools.

One little point we noticed about the new Service machine was the provision of a locking thumb lever for the rear stand, which, as most motor cyclists know, is wanted sooner or later to prevent rattle of the stand.

A Coachbuilt Sidecar.

The sidecar fitted to the new Service machine is a Royal Leicester, having a coachbuilt body enamelled in dark green, and the frame is of the underslung type, the suspension of the body being by coil springs in front and leaf springs at the rear. As a two-stroke machine of the present description is very often useful for solo work, the sidecar is provided with the Service quick detachable joints, which when coupled up are rigid at all times. A side entrance to the body is provided, and a storm apron is included for the passenger, as well as a fair-sized locker under the seat for the reception of odd equipment.

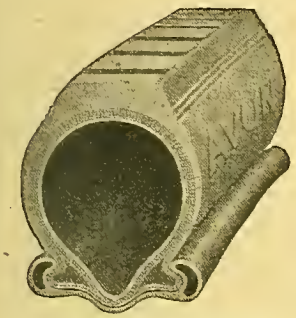
The price of the machine, as shown in the accompanying illustrations, is 50 guineas.



Both sides of the new two-stroke Service light passenger outfit. The main essentials are described on this page.

Eight of the sixteen despatch riders attached to the 2/6th Batt. Suffolk Regiment. Reading from left to right: Lance-Corporals A. Cant, S. Woods, B Gates, Corporal W Beales, Lance-Corporals L. Potter, S Townsend, Pells, and Read. All the despatch riders attached to this regiment are mounted on three-speed Triumphs.

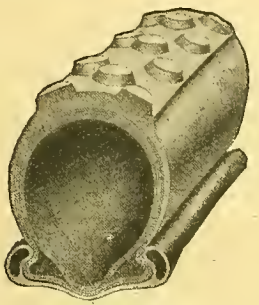
AVON TYRES



"SUNSTONE"

for machines up to 8 h.p. A good anti-skid and unrivalled for heavy work.

26×2¼in. Cover	44/-
26×2½in. Cover	49/6
26×3in. Cover	60/6

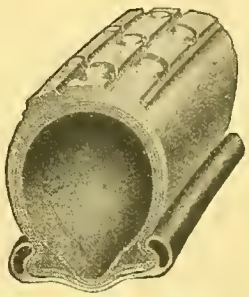


"TRICAR"

for tricars and machines up to 5-6 h.p. Rubber studs.

24, 26, and 28×2¼in ..	38/6
24, 26, and 28×2½in. ..	41/3
26×2½in., to fit 2¼in. rim	44/-
26×3in.	49/6

All 26 × 3in. Covers will fit 2½in. rims.



"STONEHENGE"

Clean cut rubber bars and rubber studs. For machines up to 4 h.p.

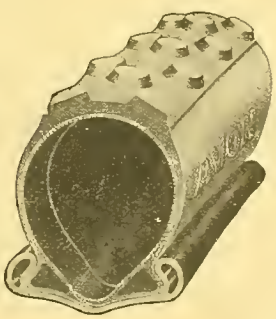
26×2in. 22/9, 26×2¼in. ..	24/9
26×2½in.	26/9
26×2⅝in. to fit 2¼in. rim..	29/6
26×3in. (will fit 2½in.) ..	31/4

"Avon Lightweight 3-ribbed."

26 × 1¾in.	12/-
26 × 2in.	14/7
26 × 2¼in.	16/9
24 × 2in.	12/-

"Avon Lightweight Studded."

26×1¾in.	14/10
26×2in.	16/6
26×2¼in.	18/2
24×2in.	14/10



MOTOR CYCLE TUBES.

	26×1¾	26×2	26×2¼	26×2½	26×3
Endless	6/11	7/2	8/3	9/4	10/2
Dome-ends	9/1	9/4	10/6	11/7	12/5

MOTOR CYCLE BELTING.

Made any length up to 9 feet	¾in.	⅞in.	1in.	1⅛in.
	1/8	1/11	2/2	2/9

AVON SERVICE DEPOTS:—

19, Newman Street, Oxford Street. W.
55, Queen Street, Glasgow.
106, Union Street, Aberdeen.
38, King Street W., Manchester.
119, Victoria Street, Bristol.
Mansfield Road, Nottingham.
Broad Street Chambers, Birmingham.
5, Gallowgate, Newcastle.
Fisher Street, Swansea.

Works: MELKSHAM, WILTS.

ZENITH

5 PRIZES—including 4 FIRSTS, at the ALL-KHAKI MEETING

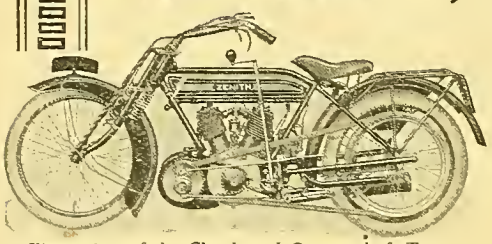


Illustration of he Clutch and Countershaft Type.

indicate that this popular mount is still ready to meet all comers, and to uphold its prestige in open contest, as it does in the hands of its owners in all parts of the world.

LATEST MODELS.

STANDARD.
TWIN-CYLINDER.
A. 3½ h.p. 70 x 64½ mm.
C. 4-5 h.p. 70 x 85 mm.
E. 6 h.p. 76 x 85.
G. 8 h.p. 85½ x 85 mm.

COUNTERSHAFT.
TWIN-CYLINDER
B. 3½ h.p. 70 x 64½ mm.
D. 4-5 h.p. 70 x 85 mm.
F. 6 h.p. 76 x 85 mm.
H. 8 h.p. 85½ x 85 mm.

Model W., 3½ h.p., 85½ x 85 mm., single-cyl.

All models embody the renowned Gradua Gear, giving infinitely variable ratios between "high" and "low." In all models the cylinders can be "taken down" without removing the engine from the frame.

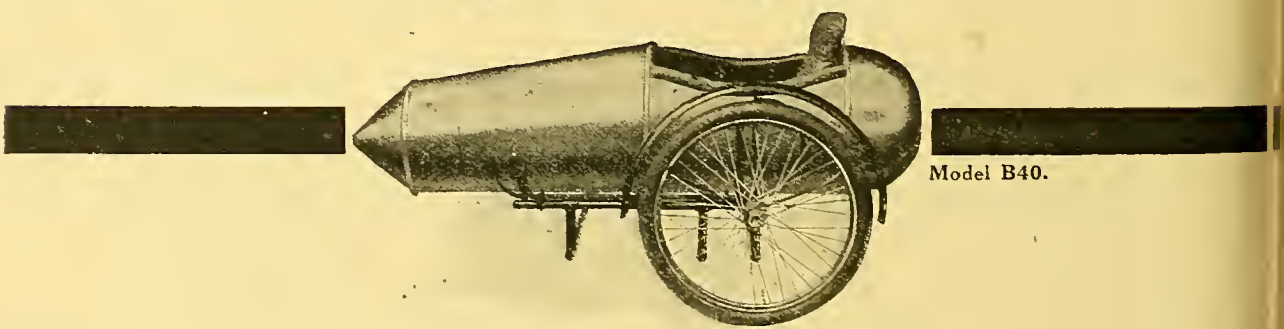
FOR our friends overseas we give a list of AGENTS, from whom full particulars can be obtained.

SOLE AGENTS FOR SOUTH AFRICA: Buttery and Hattoo, Durban and Natal. Puzey and Payne, Bulawayo and Salisbury (Rhodesia). The Cycle and Motor Trade Supply Co., Cape Town. NEW ZEALAND: The British Import Agency, Christchurch, Canterbury, and Westland. AUSTRALIA: T. W. Henderson, Sydney and New South Wales. Hesselmann & Co., Pty., Ltd., Melbourne, Victoria, and Tasmania. Mr. J. Bullock, Adelaide. CEYLON: C. Jinasena & Co., 7, Hunupitiya Road, Slave Island, Colombo. ITALY: Seymour Bingham and Co., Via Lazzaro Palazzi 24 Milan. FEDERATED MALAY STATES. Aylesbury and Garland, Ipoh, Perak. TRANSVAAL, JOHANNESBURG, DURBAN, AND NATAL: Kuhner Henderson & Co., P.O. Box 6,682, Johannesburg. INDIA. BANGOON: McKenzie & Co., 41, Sule Pagoda Road, Rangoon. RAWAL PINDI: Fray's Motor Works. Edwardes Road, Rawal Pindi. BELGIUM: Gh. Aronstein & Co., 14, Avenue Lonise, Brussels. SPAIN: R. Alexander, Calle Ginebra. 43, Barcelonetta, Barcelona.

ZENITH MOTORS, LIMITED, HAMPTON COURT, ENGLAND.

Latest Lists, detailing the above Models, await your request.

DUNHILLS SIDECARS



Model B40.

ALTHOUGH the prettiest and most sporting looking model on the road, the construction has not in any way been sacrificed for the sake of appearance. The body is of the very best polished aluminium, is particularly suitable for a 3½ h.p. motor cycle; and the chassis is built with the strength and quality always associated with the name of Dunhill.

Price of Body .. .. **£6 - 6 - 0**
Ditto of Chassis complete with tyre **£8 - 2 - 6**

Plus 20 % War Increase.

Write for our Sidecar List.

MANCHESTER: 90-92, Cross Street.

359-361, EUSTON ROAD, LONDON, N.W.

GLASGOW 72, St. Vincent Street

In answering these advertisements it is desirable to mention "The Motor Cycle."

"THE MOTOR CYCLE" RECRUITING SECTION.

WITH last week's inspection of recruits for the Motor Machine Gun Service recruiting for the ranks was brought to a close for a short time. As soon as motor cyclists are wanted for the formation of new batteries, an announcement to that effect will appear in these columns. In the meantime, those who found it impossible to attend last week's inspection are asked to return at once the railway warrants which were issued. A number of these warrants are outstanding.

There are vacancies for a limited number of experienced motor cycle mechanics and car drivers for the A.S.C. In each of these sections the pay is 6s. per day. Qualified men should enclose two references when applying. There will be an inspection of men of this class at the Coventry Recruiting Office, Masonic Buildings, Little Park Street, on Wednesday next (the 8th inst.) from 2.30 to 4 p.m. On the same day those motor cyclists in Warwickshire, Worcestershire, Gloucestershire, Buckinghamshire, and Berkshire, who wish to be placed on the Royal Engineers waiting list of despatch riders, will be tested in riding and running adjustments. Experienced riders only will be accepted, and candidates must bring their own machines.

The following were accepted last week for the M.M.G.S.:

Baxter, A. G.	Macfarlane, J.	Summers, J.
Broadhurst, E.	Marrison, J. W.	Thomas, K.
Broadhurst, J.	Meakins, W. A.	Tidman, I.
Byway, C.	Newport, J. A., jun.	Turner, A.
Davis, A.	Sarsons, B. J.	Vieira, C.
Franks, B.	Simpson, E. G.	Webb, T.
Franks, P.	Smith, E.	Wheeler, N. F.
Guest, G. J.	Snape, H.	Wilson, L.
Hampton, C. M.	Stevens, J.	Wilson, D.
Higham, A.	Stone, C. W.	Wroot, A.
Kiff, P. J.		

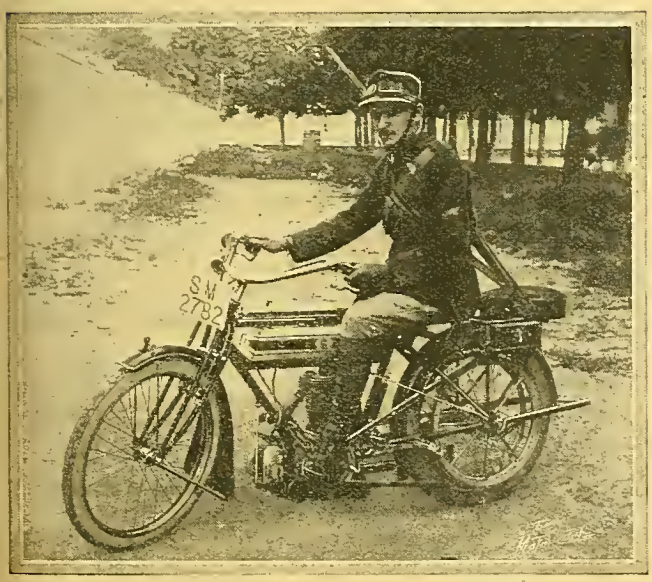
MILITARY NOTES.

ITALIAN MILITARY MOTOR CYCLISTS.

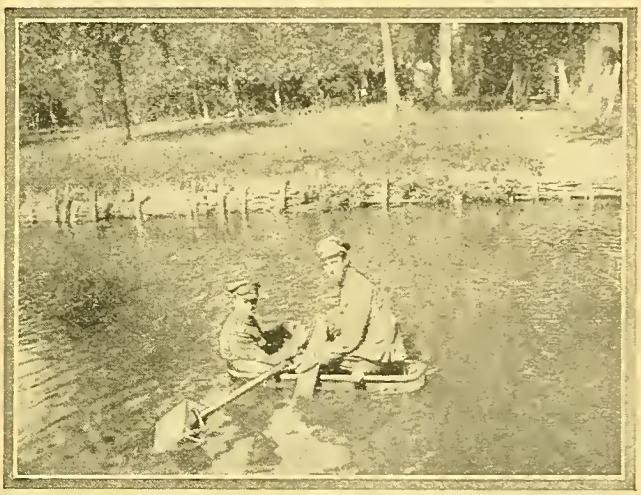
ITALIAN motor cyclist volunteers, illustrations of whom appeared in a recent issue of *The Motor Cycle*, are doing good work. They have been distributed in several of the towns near the fighting line now occupied by the Italian Army, and they are doing continuous service as despatch riders. As in England, the majority of the well-known competition riders are on active service, such names as Baj Badino (Douglas), Frinzi (Rudge), Malvisi (Ariel), and many others whose names will be familiar to our readers by reason of their appearing as winners in Italian motor cycle competitions, are now on much more serious work. Maffeis, holder of the Italian kilometre record, is now in the Flying Corps, also Borgotti, another Douglas competition rider.

His Majesty the King of Italy, who has been at the Front continuously since the commencement of the war, often makes use of a motor cycle and sidecar. Of course, the greater part of the time he is travelling in a car, but there are certain inaccessible places which can be better reached in a light three-wheeler than a big high-powered car.

Lieut A. M. C. Scott, late of the Premier and Daimler companies, is now at the Front in the No. 10 Squadron of the Royal Flying Corps, a section which is becoming increasingly popular among sportsmen who have passed their novitiate on a motor cycle.



Zan Ambrogio an Italian despatch rider, and his Triumph.



A bath used as a boat, with a couple of petrol cans as floats. The photograph was taken within ten miles of the firing line in France, and shows a couple of despatch riders enjoying an hour's relaxation. Corporal Woodroofe, who sends us the particulars on this page, is on the left.

A NEW USE FOR PETROL TINS.

"I AM sending you a photograph taken 'Somewhere in France' by one of our staff officers, who thought it was rather a novelty that we had made a boat out of a bath. To make it more stable we used petrol tins as floats. The photograph was taken ten miles from the firing line. We get lots of runs to the trenches, and get in rather warm areas at times, but I am getting used to the guns now."—From Corporal B. Woodroofe, despatch rider attached to the 19th Div. Sig. Co., R.E.

PROMOTION FOR MOTOR CYCLIST OFFICERS.

WE quote the following extract from *The London Gazette*: Special Reserve of Officers, reserve units Royal Engineers (Motor Cyclist Section). Temporary second-lieutenants to be temporary lieutenants: H. H. Berlandina, C. L. Mason, A. G. Marshall, A. J. Harris, and J. C. Warrington.

A. R. Courtenay (late acting manager of the General Electric Co., Publication Department), who was for three years the secretary of the Tunbridge Wells M.C.C., and two years on the A.C.U. Committee, was gazetted recently sub-lieutenant in the Royal Naval Air Service, Armoured Car Aeroplane Support (Royal Naval Volunteer Reserve).

FITTING A SPEEDOMETER.

By ROAD RIDER.

QUITE half the purchasers of speedometers arrange for the fitting to be done either by the makers of the machine, before delivery (when a fitting fee is often charged), or by the local agent supplying the instrument (when the work is usually done gratis). These methods are advisable when the owner is not fond of tinkering, as the job is often a very fiddly business, and the parts seldom fit with exact accuracy, and even if they are precisely made and designed, some care and skill are essential to get the drive in dead register, so that it will run silently. However, numbers of riders order speedometers as afterthoughts, and live at some distance from a garage, whilst others like to do their own work, and to save professional fees, so the following hints may be of service.

The first difficulty is to get the large gear wheel attached to the front wheel spokes so that it is truly concentric with the hub flange. Various authors have often remarked that perfect centring is best attained with the aid of a lathe, in which to spin the parts, and many an amateur endorses the counsel after numerous failures to get the gear wheel true. It is certainly difficult to mount it truly on the lines pursued by many eager buyers. They attach all the clips, get the screws about finger-tight, and then clump the wheel this way and that with a mallet until it looks approximately central; then they tighten up, and fit the gear box and small pinion. On spinning the bicycle wheel to test the adjustment, the outraged gears utter an intermittent squeal full of alternate crescendos and diminuendos, plainly proving that the gear wheel is running out of truth, and that the teeth are meshed to different depths at different arcs of the circumference. Here is a simple dodge for fitting the wheel in absolute truth without the aid of a lathe, and at the first attempt.

Before commencing to fit any parts at all, take a pair of compasses, and a piece of paper. Inscribe a circle on the paper of the same diameter as the internal circle A B of the large gear wheel. Inside this circle, and with the same centre, inscribe a second circle C D equal in diameter to the hub flange. The clearance between these two circles is the clearance required between the outer edge of the hub flange and the inner edge of the large gear wheel; and this clearance must be equal all the way round. Take any odd bit of hardish wood, and cut its end with a penknife to the exact width of the clearance A C; it will then serve as a fitting gauge.

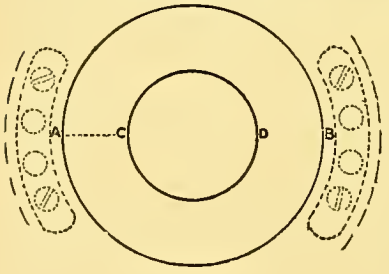


Fig. 1

Fitting the Large Wheel to the Spokes.

Now take the large gear wheel, and commence fitting it. Note the number of screw holes drilled in it —probably twenty; *i.e.*, there are four clips (intended to go on the far side of the wheel spokes); each clip covers four screw holes (giving a choice of positions for the screws, so that any distribution of the spokes may be dodged, if they foul or cover screwholes); and one screwhole is intended to be left vacant between the ends of each clip. Fit one clip, with its two screws, inserting the screws so as to avoid spoke-crossings, which would prevent the clip being slid towards or away from the hub in any future adjustments. Fit a second clip exactly opposite the first; *i.e.*, if the centre of one clip comes at three o'clock on a clockface, fit the second clip with its centre at nine o'clock. Ignore the two remaining clips entirely for the moment. Having made the two clips now in position not more than finger-tight, take the wood gauge and measure the clearance between the inner ring of the large gear wheel, and the hub flange along the two arcs covered by the two clips. If this clearance is right, it will be right all the way round. Having got this correct, which is very easily done, tighten up the screws of these two clips, and then add the other two clips, which can be done in the most matter of fact way, as they cannot possibly disturb the adjustment. The gear wheel will thus be concentric at the first attempt, and the rider may now go ahead with the attachment of the small gear wheel.

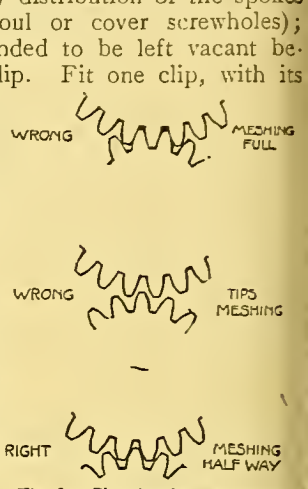


Fig. 2. Showing how the teeth should mesh.

Attaching the Small Wheel.

Whether this job will be easy or not depends on the conscientiousness of the speedometer maker, whose parts are seldom as accurate as they should be, though the cycle manufacturer is often to blame for any errors. There are two points to be watched, namely:

(1.) The depth to which the pinions mesh. If they mesh shallowly, the teeth will rattle; if they mesh deeply, the teeth will grind and bind. Each tooth should mesh about halfway down its corresponding depression in the opposite gear wheel, and the first job is to arrange for this meshing. It may be necessary to file the slots in the bracket carrying the gear box; if so, frequent experiments should be made, for, if the filing is overdone, or if the filed holes are cut out of line, the bolts will

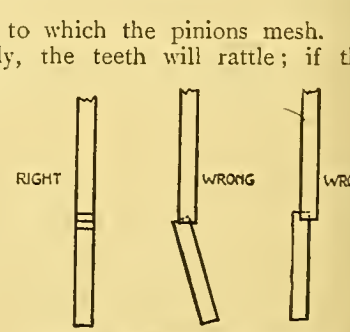


Fig. 3. Elevation end of pinions.

Put *Your* Advertisement

in

THE MOTOR CYCLE

—and be *sure* of speedy and satisfactory results.

"Must be Hard to Beat."

"I may say your paper as an advertising medium must be hard to beat, as a single advertisement brought me thirteen replies for a free-engine wheel, which I disposed of. You may use this if you desire." HAROLD E. MONTEITH.
12, Gladstone Place, Stirling.

'Sold within half-an-hour."

"I should like to mention that a few weeks ago I advertised a second-hand machine in *The Motor Cycle* and had eighteen enquiries, and sold the motor within half-an-hour of the issue of your paper." F. J. MAW.
47, Skelton Road,
Forest Gate, London.

'A Shoal of Replies."

"One insertion in Miscellaneous column of *The Motor Cycle* brought a shoal of replies, and every article sold. We are unable to answer every one."
BARKER & CO.
Automobile Engineers,
Bradford Road, Huddersfield.

'Could have Sold Gear 40 times over."

"I deeply regret to disappoint Mr. —, but through the advert. (in *The Motor Cycle*) I could have sold gear about forty times over. Several wire money orders received, also cheques."
A. G. GARTON.
140, Porter Street, Hull.

'Each advert. a Great Success."

"I have had several advertisements in your paper, and each has been a great success. A short time ago I advertised an F.N. engine, and as a result spent quite a small fortune returning postal orders. It was sold by wire the day *The Motor Cycle* was published, and about six weeks afterwards I had an enquiry from India. One advertisement in *The Motor Cycle* is worth half-a-dozen in any other paper." JOHN W. WALKER.
Buchlyvie, Stirlingshire.

"Forty Answers."

"I was very pleased with the advert. in your paper, having had about forty answers." (Miss) D. JACKSON.
Fairfield, Birchington, Kent.

There is
NO DOUBT
as to the
SUPERIORITY
of
THE MOTOR CYCLE
for
Miscellaneous Advertisements

It is proved week by week that quicker and better results are obtained through this journal than any other medium. :: ::

Read
THE EVIDENCE
of
ADVERTISERS

¶ This remarkable success of "The Motor Cycle" is attributable to the fact that it has the largest circulation of any paper of its kind and is read by the right sort of people.

"Results of ad. Excellent."

"*Re* my advt. in *The Motor Cycle* of the 10th inst., No. 6839. Although the machine was sold before issue, I received through your paper thirty replies—some of these from York, Derby, Wilts, Hants, Dorset, Sheffield, Cardigan, etc. — and several callers, two of which arrived at the same time, and were willing to bargain. I consider the results of advt. excellent." E. H. COLE.
4, De Castro Terrace, Canterbury.

"Undoubtedly IT."

"A fortnight ago I advertised a sidecar, which I sold the same morning as your paper came out; also a B.S.A. motor cycle, which I sold directly afterwards. I could have sold it five times over again. Your paper is undoubtedly IT." F. MERRIMAN.
"Highbury," Beech Tree Lane,
Cannock, Staffs.

"The Usual Success."

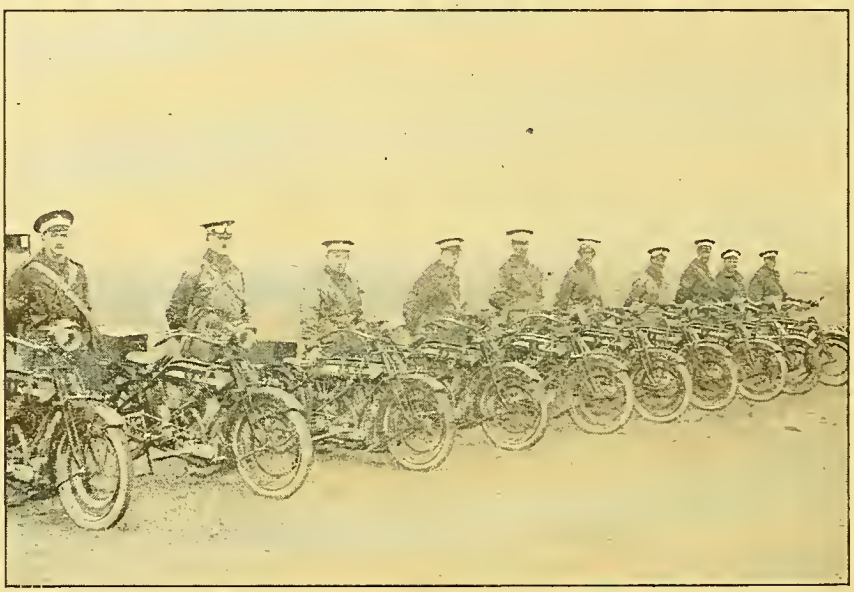
"Following the sale of my B.S.A. combination through the medium of your valuable paper, I advertised a cover and tube, and am pleased to say that the *usual success* was attained, same being sold next morning following day of issue. I was compelled to return several cheques and money orders." F. MERRIMAN.
Beech Tree Lane, Cannock, Staffs.

"Very pleased with result."

"I thought I would like to acquaint you with the success of my advertisement appearing in *The Motor Cycle*.
The same evening I received several calls; the second caller purchased machine at quite a satisfactory figure! You can guess I am very pleased with such a result, and more so as it is the second machine I have sold through your paper with similar dispatch."
EDWIN T. DEACON.
"Falconhurst," Blagdon Road,
New Malden.

N.B.—The rates for paragraph advertisements are given on page 26

B.S.A. on War Service



Despatch Riders of the Royal Sussex Regt. with their B.S.A. Motor Bicycles.

By being absolutely dependable in any emergency B.S.A. Motor Bicycles are earning the highest praise from riders at the Front. When the utmost urgency is needed B.S.A. reliability never falters; it relieves the rider from anxiety and minimises the possibility of a dangerous delay.

RIDE A

B.S.A. Motor Bicycle

Fitted with

B.S.A. COUNTERSHAFT THREE-SPEED GEAR.

Write for Latest B.S.A. Catalogue

showing all models in colours.

The Birmingham Small Arms Co. Ltd , 13, Small Heath, Birmingham.

Special Souvenir Booklet, "On War Service," sent post free for 1d. stamp.

Fitting a Speedometer.—

need very heavy tightening to enable them to maintain the adjustment under the strains of driving, particularly when grit and mud get into the teeth.

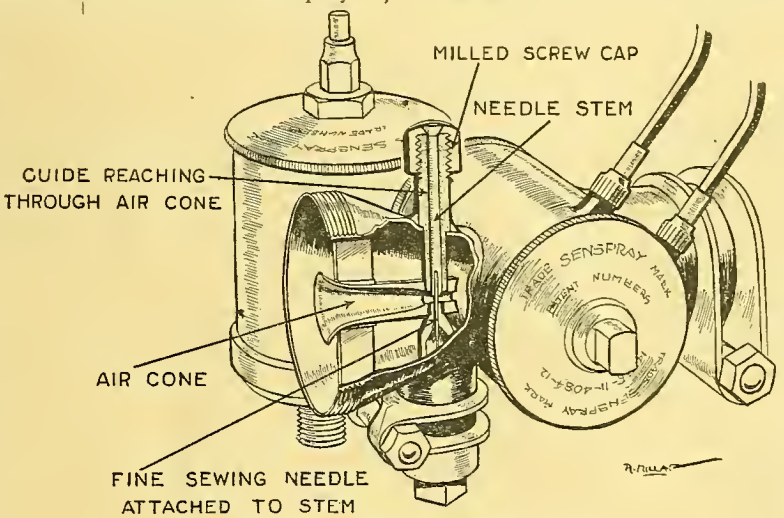
(2.) After the meshing has been set to the correct depth, a silent and practically frictionless drive is assured if the two pinions are set to run in the same vertical plane, which can be verified either by eye from the end-on piston, or by laying a true straight-edge across the flats of both pinions, when the surfaces of both must be in uniform and continuous contact with the ruler. To obtain this result, it may be necessary to bend the bracket or to pack it out by using an oblique washer. As it is an awkward matter to file a washer at any time, and a more awkward matter to file it to a given bevel, it is always best to take a big spanner and bend the bracket plate to the required angle. [Note: the correction of the pinion plane should be made wholly by working from the small pinion on the gear box, after ascertaining that the cycle wheel carrying the large pinion is mounted truly in the forks.]

A Home-made Variable Jet Attachment.

Improving Consumption with Senspray Carburetters.

WE have received several enquiries recently from readers for details of the ingenious variable jet attachment fitted to a Senspray carburetter by "E.A.H.," and described in our issue for April 15th last.

The attachment consists of sundry parts from a tyre valve and a domestic sewing needle. Directly above the jet a hole is drilled in the carburetter body to receive the tyre valve piece, which is soldered vertically in position. The milled cap at the top is soldered to a slender piece of rod which passes down the centre of the valve piece, and the lower extremity of the rod is drilled to receive a fine sewing needle, which passes down into the jet, the orifice of which is regulated by simply screwing the milled valve cap. The needle is raised for starting, and screwed down when a weaker mixture is required, and the jet used is the standard 30.



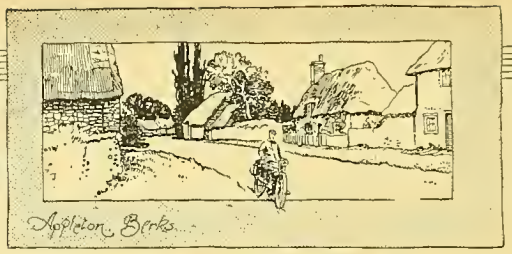
Variable jet attachment for Senspray carburetter.

Several correspondents have stated that this device gives excellent results in economy and amply repays for fitting.

"N.B." in our issue of July 15th, who owns a 1914 pattern two-stroke, asserts that, whereas his consumption with petroil mixture was originally about 60 m.p.g., a consumption of about 120 m.p.g. is possible with the variable needle fitted. Moreover, the engine is said to run more sweetly, from which it is obvious that the mixture must be decidedly improved.

Despatch riders attached to headquarters, Northern Command. Reading from left to right: Lance-Corporal R. F. Walker (B.S.A.), Sergeant B. Whitehead (Sunbeam), Lance-Corporals G. H. Exley and R. S. Gregory (P. and M. and sidecar), R. H. Harlow (B.S.A.), W. H. Bates (B.S.A.), and H Walton (Triumph).

CURRENT CHAT



TIMES TO LIGHT LAMPS.

Sept.	2nd	... ...	7.45 p.m.
,,	4th	... ...	7.41 ,,
,,	6th	... ...	7.37 ,,
,,	8th	... ...	7.32 ,,

In London half an hour earlier.

Mr. W. W. Douglas.

We are glad to hear that Mr. Douglas is now making rapid strides towards recovery. A month ago he met with an accident which injured his eyesight, all the more serious in his case as three or four years ago he completely injured the sight of one eye.

The Rear Lighting Order.

Motorists are complaining that the police regulation which is in force in London and most parts of England, that all vehicles should show a rear red light after dark, is being ignored. Cyclists are the chief offenders, and the police in some districts appear to neglect this road user altogether. Some of the trouble is due to the somewhat loose way in which the regulation has been framed. According to a police official, "The intention was that an extra red lamp should be carried, but the wording permits the use of an ordinary side lamp which shows a red light to the rear, while some cyclists have a combination red and white lamp low down on the front wheel forks with the red light showing to the rear."

Lieutenant F. A. McNab.

The paragraph appearing in our issue of August 26th rather gave the impression that Lieut. F. A. McNab had only just received a commission in the R.N.V.R. This is not the case, as he was granted his commission as sub-lieutenant last November, and has recently been promoted to full lieutenant.

Motor Cycle Trials in Spain.

In the recent International Motor Cycle Trials held in Spain, King Alphonso's cup was won on a 3 h.p. Enfield. The winner's time for 95 km. was 1h. 52m. 31s., giving an average speed of approximately 31½ m.p.h. The rider of a Motosacoche took second place. The course was, we understand, a severe one.

The Munguia Cup Road Race, organised by the Bilbao Sports Club, took place a little later over four circuits, the total distance being 122 km. Result:

1. P. Sorriguietta (3½ h.p. Rudge).
2. L. de Arana (2⅜ h.p. Douglas).
3. I. Znbiaga (3 Enfield).

The winner's time was 2h. 1m. 20s., and average speed nearly 37½ m.p.h. Arana was very successful, and won the Munguia cup for the best performance on formula, the Enderica cup for the 350 c.c. class, the Ibarra cup for fastest lap in the 350 c.c. class, the Serrano medal for fastest lap in the 500 c.c. class, and the Clavileno and Vacuum Oil cups. The time of the fastest circuit was 25m. 28s. for 27 km, just over 39½ m.p.h.

Lieut. Vernon Busby and his latest mount, a Harley-Davidson sidecar outfit. Busby started his military career as a despatch rider, returned from France in the autumn, when he obtained a commission, and supervised the training of despatch riders. He has now been transferred from the Royal Engineers to the Royal Flying Corps.

SPECIAL FEATURES.

IN PEEL-LAND WITH A MOTOR CYCLE.

FITTING A SPEEDOMETER.

COMPLETE ENTRY LIST FOR THE UNITED SERVICES MEETING.

A 200 Miles Trial in Natal.

The Maritzburg M.C.C. at the end of June last held a one day reliability trial over a distance of 206 miles. The roads were fairly good, and the average speed that had to be maintained was 24 m.p.h. This is a high average for Colonial roads, especially when it is considered that the route—a circular one—was hilly. There were sixteen entries, and first three places were secured by the following:

1. T. S. Taylor (6 h.p. A.J.S.).
2. H. B. Morcom (3½ h.p. A.B.C.).
3. L. Hammond (4 h.p. James).

Average Prices.

We give below the average prices for the various second-hand models offered for sale in *The Motor Cycle*. We quote those models of which at least five weekly averages have appeared during the past two months. Where it is possible to obtain a sufficient number of each model we also give the average for the past week:

Make.	Year.	H.P.	Last week's average.	Average for past 8 weeks.
A.J.S.	1914	6 3-sp. sidecar	£79	£73
,,	1913	6 3-sp. sidecar	—	£53
,,	1914	2¾ 3-speed	£48	£43
Ariel	1914	3½ 3-speed	—	£42
,,	1914	3½ 3-sp. sidecar	—	£53
,,	1914	6 3-sp. sidecar	—	£60
Bat	1914	8 3-sp. sidecar	—	£65
,,	1913	8 3-sp. sidecar	—	£52
Bradbury	1914	6 3-sp. sidecar	—	£61
,,	1914	4 3-sp. sidecar	£43	£43
B.S.A.	1914	4 3-speed	—	£46
,,	1914	4 3-sp. sidecar	—	£60
,,	1915	4 3-sp. sidecar	£61	—
Calthorpe	1914	2 2-speed	£20	£18
Chater-Lea	1914	8 3-sp. sidecar	£56	£67
,,	1913	8 3-sp. sidecar	—	£52
Clyno	1914	6 3-sp. sidecar	£72	£68
,,	1913	6 3-sp. sidecar	£53	£55
,,	1914	2½ 2-speed	£31	£30
Douglas	1914	2¾ 2-sp. T.T.	£41	£41
,,	1914	2¾ 2-sp. kick start	£44	£43
,,	1914	4 2-sp. sidecar	—	£55
,,	1915	2¾ 3-speed	£48	—
Enfield	1914	6 2-sp. sidecar	£66	£64
,,	1914	3 2-speed	—	£39
Humber	1913	3½ 3-sp. sidecar	—	£40
Indian	1914	7 2-sp. sidecar	£65	£62
,,	1914	7 T.T. free engine	—	£44
James	1914	4½ 3-sp. sidecar	£47	£56
Lea-Francis	1914	3½ 3-speed	—	£60
Levis	1914	2½ 2-speed	—	£29
Matchless	1914	7 3-sp. sidecar	—	£73
Norton	1914	4 3-speed	—	£50
New Hudson	1914	6 3-sp. sidecar	£52	£57
,,	1914	4 3-sp. sidecar	—	£50
N.U.T.	1914	6 3-sp. sidecar	—	£60
Premier	1914	3½ 3-sp. sidecar	£46	£53
P. & M.	1914	3½ 2-sp. sidecar	—	£59
Rex	1914	6 3-sp. sidecar	—	£57
Rover	1914	3½ 3-speed	£46	£46
,,	1914	3½ 3-sp. sidecar	£53	£53
Royal Ruby	1914	3½ 2-speed	£42	£44
Rudge	1014	3½ multi sidecar	—	£50
,,	1914	3½ multi	—	£40
,,	1914	5 multi sidecar	£51	—
Scott	1913	8¾ 2-sp. sidecar	£45	£44
,,	1914	3¾ 2-speed	—	£45
Sunbeam	1914	6 3-sp. sidecar	£80	£71
,,	1914	3½ 3-speed	£54	£57
Triumph	1914	4 3-sp. sidecar	£56	£56
,,	1914	4 3-speed	£43	—
Williamson	1914	8 2-sp. sidecar	£81	£74
Zenith	1914	6 Gradua sidecar	—	£64
,,	1914	6 Gradua	£51	—

At Brooklands Next Saturday.

The complete list of entries for the United Services race meeting appears on page 235. As the total is 174, it will be seen that there is every promise of the great success attending the All-khaki meeting being repeated.

Flight Lieut. Watson's Douglas.

It will be remembered that Flight-Lieutenant Watson was killed while flying near Eastbourne a short time ago. His motor cycle, a Douglas, No. SR 423, was left at a London garage a few days previously. The proprietor of the garage is asked to communicate with Mrs. Watson, The Retreat, Dundee.

Experienced Car Drivers Wanted.

Drivers are wanted for the A.S.C. Motor Transport. At least two years' driving experience is necessary to qualify candidates for acceptance. The pay is 6s. a day, all found, and the usual separation and dependents' allowance. Vacancies also exist for experienced motor fitters and turners—pay as above stated. Applicants should apply to Captain Kay, Recruiting Office, Coventry, stating qualifications and enclosing two references. Will contemporary journals desirous of repeating these particulars in the national interest refrain from doing so more than two days after the publication of this issue.

The Plague of Eyam.

There are few more delightful spots to be found than Eyam, in Derbyshire, where the plague that wiped out nearly all its inhabitants appeared 250 years ago. The anniversary last Sunday was made the occasion of a great pilgrimage, and nearly 2,000 people listened to Bishop Hoskyn's sermon. The majority came from Sheffield, and as Eyam is inaccessible by rail a great number came by road, there being quite a good selection of motor cycles, especially side-car outfits.

Roads to Avoid.

YORKSHIRE.—The latter part of the road from Scarborough to Whitby. Selby to Doncaster.

WILTS.—Wilton to Shaftesbury. Wilton to Hindon.

Despatch Riders Wanted.

Motor cyclists are wanted for the new squadron Royal Engineers' Signal Service. Intending recruits are asked to apply to the depot of the London Army Troop Signal Company, R.E., 12, Palmer Street, Westminster, S.W.

Admission to Brooklands.

New regulations governing the admission of members and the public to Brooklands have been issued. The latter are now admitted on payment, as before the war, to all parts except the fenced off portion surrounding the barracks on the members' hill and the flying ground. The track is open from 9 a.m. till 6 p.m.

The Proposed Inter-service Hill-climb.

There is every probability that the suggested Navy *v.* Army hill-climb will be carried out by the Streatham and District M.C.C. The A.C.U., while regarding the project sympathetically, will not organise the event, but it is quite willing to grant a permit to a responsible club for the holding of such a competition.

The National War Funds.

At the week-end the principal war funds stood as follow:

	£	s.	d.
The Queen's Work for Women Fund	163,933	3	6
The Weekly Dispatch Tobacco Fund ...	81;790	7	8
Belgian Relief Fund (exceeds)	781,100	0	0
The Indian Soldiers' Fund	146,978	0	0
The Times Fund for the Sick and Wounded ...	1.641.896	11	9

Medal Winners Wanted.

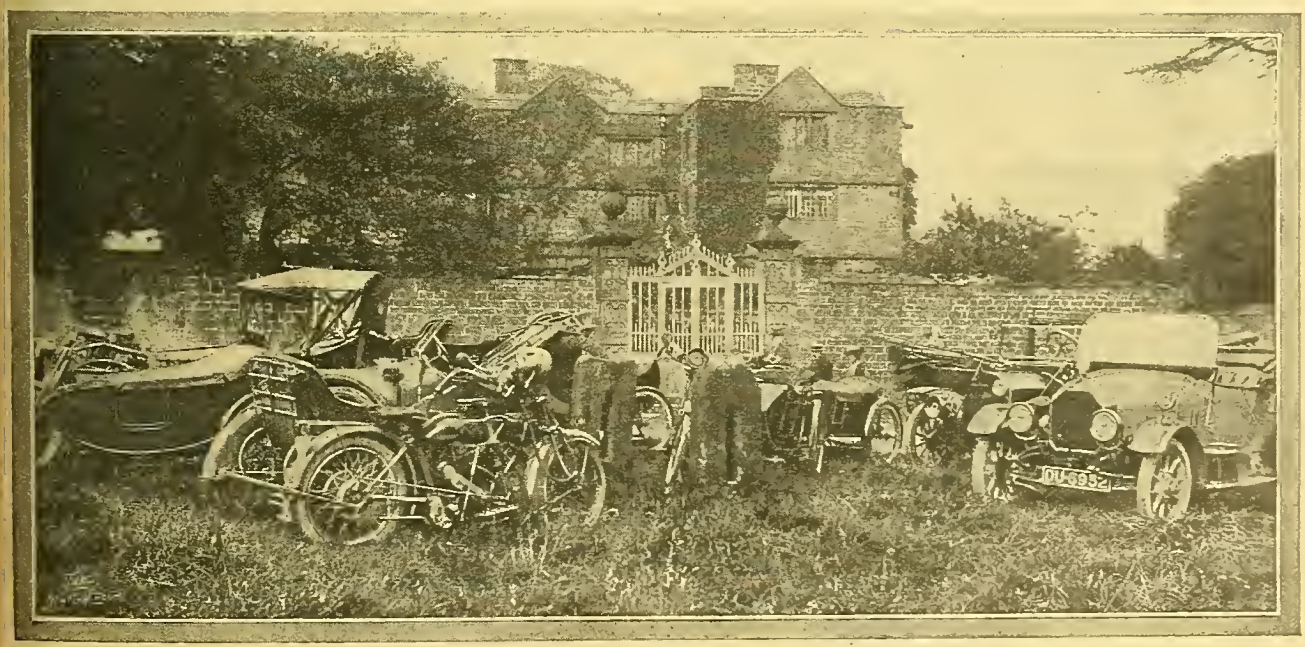
The hon. secretary of the Nottingham and District M.C.C. has a number of medals won in 1914 that cannot be forwarded to the owners, their whereabouts not being known. Winners in Notts trials who have not received their prizes should write to Mr. H. Weldon, Devonshire Road, Sherwood, Nottingham.

'Ware Walsall.

Motor cyclists who have to pass through Walsall (for their sins) are advised to exercise extreme caution. Summonses have been issued for driving at a speed dangerous to the public, and an unfortunate rider was recently fined 40s. for an alleged speed of 21 m.p.h. (his own estimate was 10-11 m.p.h.) The police apparently used separate watches, which they compared at intervals, so it is plain that the possibilities of error in the timing are considerable.

Motor Cyclists' Controlling Bodies Overseas.

It appears that the only Overseas Dominion which possesses a ruling body is South Africa, and in this country the pastime is looked after by the Motor Cycle Union of South Africa. Australia has no such organisation, and as motor cycling is going ahead by leaps and bounds in the Commonwealth, it would appear that both from the point of view of sport and touring, and to help the movement generally, a parental body of some sort is very desirable. The various States have their clubs, also the principal towns in each State, but the huge size of the country has something to do with the non-formation of a controlling body for the whole of the continent. The English Auto Cycle Union would be glad to advise interested Overseas readers who feel that such an institution is needed in the country in which they reside.



Sidecars and light cars outside the old hall at Eyam, Derbyshire. The photograph was taken on Sunday last, when many motorists visited the picturesque village on the occasion of the 250th anniversary of the plague.

Open Hill-climb at Pen-y-Ball.

Another Contest in Aid of the War Charities.

AS already announced in *The Motor Cycle*, the Liverpool Motor Club intends running an open hill-climb in aid of war charities on Saturday, September 18th. The event will be held on Pen-y-Ball Hill, Holywell. The following are the classes:

CLASS 1.—Solo machines up to 250 c.c.
CLASS 2.—Solo machines up to 350 c.c.
CLASS 3.—Solo machines up to 500 c.c.
CLASS 4.—Solo machines up to 750 c.c.
CLASS 5.—Solo machines up to 1,000 c.c.
CLASS 6.—Three-wheeled passenger machines up to 500 c.c.
CLASS 7.—Three-wheeled passenger machines up to 750 c.c.
CLASS 8.—Three-wheeled passenger machines up to 1,000 c.c.
CLASS 9.—Light cars up to 1,500 c.c.

All the events will be decided on time only. There are three prizes in each class. The prizes will consist of War Loan vouchers, and their value will be arranged according to the amount of entrance money received. The entire profits of the hill-climb will be handed over to war charities, and it is not intended to give expensive awards. There will be two distinct sets of prizes in each class, one set for riders defined by the A.C.U. as "General" and one for "Experts." There will also be a special prize for the fastest ascent made by a member of H.M. Forces, and for the fastest time of the day, irrespective of class.

Entries close on September 11th, and they should be addressed to the secretary, Mr. W. H. Bullock, 5, Red Cross Street, Liverpool.

Thirteen Competitors in Irish One Day Trial.

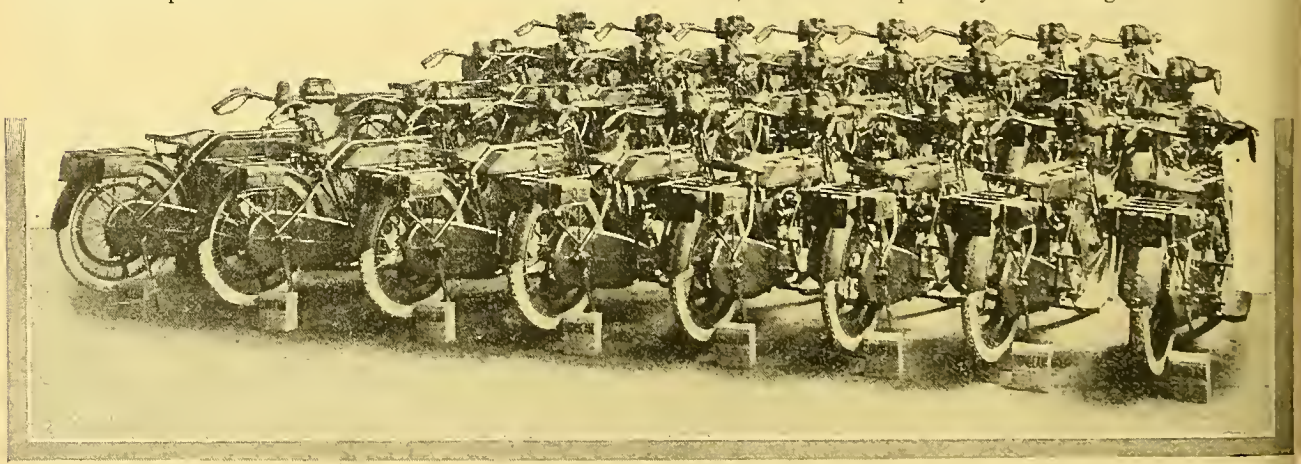
A ONE-DAY trial, under the auspices of the Dublin and District Motor Cycle Club, was held on Saturday last, the route being from Dublin to Newcastle, County Down. It was not a particularly severe affair, as, with the exception of the non-stop section from Kilkeel to Hilltown, the course did not include any country that was calculated to give trouble to the modern machine. The section referred to took the competitors from the coast line of County Down to a point about 1,200 feet above sea level in the Mourne Mountains; but the seven-mile ascent was for the most part nicely graded, albeit of poor surface, and only here and there was there any of it that approached a single figure gradient. The start was from the Tolma Bridge at Drumcondra.

Over the Mourne Mountains.

The ascent from the valley of the Boyne and over Tullyesker Hill was found in splendid condition, and at Dunleer, at the foot of the hill, the first open check was taken. The long hill between Dundalk and Newry gave little trouble, and at the level crossing the second open check was found. Afterwards the route followed the coast line of the County Down by Warrenpoint and Rostrevor to Kilkeel, where the non-stop section over the Mourne mountains was entered upon. The descent from the highest point of the road to Hilltown called for the exercise of great care. From Hilltown an undulating road followed to Bryansford to a descent to the coast at Newcastle, where the trial ended at the Slieve Donard Hotel. The following competitors completed the course, and amongst them should be found a fair number with full marks to qualify for the silver souvenirs offered:

G. Mayne (10 Calthorpe l.c.)
R. W. Stevens (2½ Sun)
G. Curtis (7-9 Indian sc.)
D. Allen (2¼ Sun)
P. H. Hurse (4¼ B.S.A.)
V. J. "Farren" (5 Indian)
W. J. Henderson (7-9 Harley-Davidson sc.)
S. Allen (3½ James)
A. W. Mooney (6 Bradbury sc.)
J. Greene (6 Bradbury sc.)

The non-finishers were: O. S. Baker (10 h.p. Calthorpe light car), stopped near Newcastle with timing gear trouble; T. Woods (4¼ h.p. B.S.A.), stopped after Newry; G. Roche (3½ h.p. Rover), broke belt in non-stop section. Mooney was the only one of the finishers who was not able to report a no-trouble run; he had a stop to adjust his magneto.



Twenty-five 3½ h.p. Sunbeams, a small portion of a large order for the Russian Government. The photograph was taken when the machines were lined up for the Russian inspector. The small boxes by the side of each machine contain spare parts.

Entries for the United Services Meeting.

IT only remains for the good weather to continue to make the United Services Meeting at Brooklands on Saturday quite as successful as its forerunner, the "All-khaki" meeting of a month ago.

Racing starts at 2 p.m., and the last event should be over about 5.30 p.m. As regards admission to the track, the public is now admitted as before the war. Entries, which total 174, are as follow:

EVENT 1.—TWO-STROKE HALF-MILE SPRINT.
Private J. C. Bramwell (Bradfield O.T.C.), Calthope, 245 c.c., 1 cyl.
Flight Sub.-Lieut. G. E. V. Leather (R.N.), 2¾ Triumph.
Flight Sub.-Lieut. R. J. Slade (R.N.), 2½ Villiers.
Lieut. G. G. Barnard (R.E.)
Sergt. A. Milner (R.E.)
1st Class Air Mech. M. Newnham, Radco.

EVENT 2.—LIGHTWEIGHT HALF-MILE SPRINT.
Lieut. G. S. Boston (G.H.Q. Staff), A.J.S., 349 c.c., 1 cyl.
Flight Sub.-Lieut. F. Fowler (R.N.), 2¾ Douglas, 350 c.c.
Lieut F. A. McNab (R.N.V.), Douglas.
Lance-Corpl. T. Thompson (R.E.), 2¾ Douglas, 350 c.c.
Sergt. A. Milner (R.E.)
Lieut. Miller (R.N.)
C. Remington.
R. E. Tarrant.
P.O. G. H. Kingdon (R.N.A.S.)

EVENT 3.—MEDIUM-WEIGHT HALF-MILE SPRINT.
2nd Lieut. R. Scrase Dickins (K.R.R.C.), 8 J.A.P.
Sub.-Lieut J. Havers (R.N.), Indian, 498 c.c., 2 cyl.
Corpl. H. Graham Hodgson (R.E.), A.B.C., 800 c.c., 2 cyl.
2nd Air Mechanic W. Street (R.F.C.), 3½ Arno, 550 c.c.
Lance-Corpl. T. Thompson (R.E.), 2¾ Douglas, 350 c.c.
2nd Lieut. M. C. Trench (R.E.), Sunbeam, 499 c.c., 1 cyl.
Corpl. S. Wright (A.S.C., M.T.), Triumph, 550 c.c., 1 cyl.
C. O. Henfrey.
C. F. Mossman.
Sergt. A. Milner (R.E.)
— Saunders.
A. McColl (R.E.)
Lieut. G. G. Barnard (R.E.)
2nd Lieut. H. Guy (R.E.)
S. R. Axford (R.N.A.S.)
Lieut. H. Guy (R.E.), Scott.

EVENT 4.—MEDIUM-WEIGHT HALF-MILE SPRINT FOR RACING MOTOR CYCLES.
2nd Lieut. R. Scrase Dickins (K.R.R.C.), 8 J.A.P.
Corpl. H. Graham Hodgson (R.E.), A.B.C., 500 c.c., 2 cyl.
Private G. Kendall (D.L.O.Y.), 3½ T.T. Norton, 490 c.c.
Lieut. F. A. McNab (R.N.V.), Douglas.
Private G. W. Miller (A.S.C., M.T.), Blackburne, 499 c.c., 1 cyl.
Lieut. J. E. Storey (R.F.C.), T.T. Norton, 499 c.c.
Lance-Corpl. T. Thompson (R.E.), 2¾ Douglas, 350 c.c.
Corpl. S. Wright (A.S.C., M.T.), Triumph, 550 c.c., 1 cyl.
C. O. Henfrey.
— Saunders.
A. MacColl (R.E.)
Lieut. G. G. Barnard (R.E.)
F. M. C. Houghton.
2nd Lieut. H. Guy (R.E.)
G. W. Huntbach.
P.O. G. H. Kingdon (R.N.A.S.)
S. R. Axford (R.N.A.S.)

EVENT 5.—QUICK-CHANGE PLUG RACE.
Sergt. F. E. Barker (A.S.C., M.T.), Zenith-Jap, 998 c.c., 2 cyl.
2nd Lieut. C. G. Cardew (R.E.), Zenith, 654 c.c., 2 cyl.
2nd Lieut. R. Scrase Dickins (K.R.R.C.), J.A.P.
Corpl. H. Graham Hodgson (R.E.), A.B.C., 800 c.c., 2 cyl.
Asst.-Paymaster C. P. Marcel (R.N.), Indian, 994 c.c., 2 cyl.
Lieut. F. A. McNab (R.N.V.), Douglas.
Lance-Corpl. T. Thompson (R.E.), 2¾ Douglas, 350 c.c.
Corpl. S. Wright (A.S.C., M.T.), Triumph, 550 c.c., 1 cyl.
Private R. A. Waddy (Oundle O.T.C.), Indian, 994 c.c., 2 cyl.
Cadet R. Charlesworth (O.T.C.), Zenith.
A.M. C. F. Mossman (R.N.A.S.), Zenith, 496 c.c., 2 cyl.
2nd Lieut. C. V. Parr (R.F.C.), Indian, 2 cyl.
Sergt. A. Milner (R.E.), Diamond, 349 c.c., 1 cyl.
Lieut. Miller (R.N.)
2nd Lieut. F. Stockdale (3/1st Cambs Regt.), Indian, 684 c.c., 2 cyl.
2nd Lieut. G. G. Barnard (R.E.), Triumph, 550 c.c., 1 cyl.
2nd Lieut. F. M. C. Houghton (25th Div. Cycl. Co.), Rudge-Multi, 499 c.c., 1 cyl.
Private H. F. Edwards (Artists Rifles) Zenith, 986 c.c.
P.O. G. H. Kingdon (R.N.A.S.)

EVENT 6.—UNLIMITED HALF-MILE SPRINT.
2nd Lieut. W. F. Abbott, (4th East Surrey Regt.), 7-9 Harley-Davidson.
Sergt. F. E. Barker (A.S.C., M.T.), Zenith-Jap, 998 c.c., 2 cyl.
2nd Lieut. A. Boston (11th Suffolks), 7 Indian.
2nd Lieut. C. G. Cardew (R.E.), Zenith, 654 c.c., 2 cyl.
2nd Lieut. R. Scrase Dickins (K.R.R.C.), 8 J.A.P.
Corpl. H. Graham Hodgson (R.E.), A.B.C., 500 c.c., 2 cyl.
Private G. Kendall (D.L.O.Y.), 3½ T.T. Norton, 490 c.c.
Asst.-Paymaster C. P. Marcel (R.N.), Indian, 994 c.c., 2 cyl.
Lieut. F. A. McNab (R.N.V.), 2¾ Douglas, 350 c.c.
2nd Lieut. O. J. F. Scholte (3rd Bedfords), 7 Indian.
Lance-Corpl. T. Thompson (R.E.), 2¾ Douglas, 350 c.c.
Private R. A. Waddy (Oundle O.T.C.), Indian, 994 c.c., 2 cyl.
Cadet R. Charlesworth (O.T.C.), Zenith.
2nd Lieut. C. V. Parr (R.F.C.), Indian, 2 cyl.

EVENT 6.—(Continued.)
Corpl. P. Davey (R.F.A.), Matchless-Jap.
A. MacColl (R.E.), Matchless.
2nd Lieut. G. G. Barnard (R.E.), Triumph, 550 c.c., 1 cyl.
2nd Lieut. W. H. Boston (11th Suffolks), Indian, 994 c.c., 2 cyl.
1st Class A.C. M. Newnham (R.F.C.), 60.92 c.c., 2 cyl.
2nd Lieut. F. M. C. Houghton (25th Div. Cycl. Co.), Rudge-Multi, 499 c.c., 1 cyl.
2nd Lieut. R. H. Dodd (A.S.C., M.T.), Matchless, 964 c.c.
Private H. F. Edwards (Artists Rifles), Zenith, 986 c.c., 2 cyl.
Capt. G. W. Hunthach (M.M.G.S.), Premier, 499 c.c., 1 cyl.
P.O. G. H. Kingdon (R.N.A.S.)
Flight Sub.-Lieut. L. P. Openshaw (R.N.), Zenith, 986 c.c., 2 cyl.
Private W. J. Read (R.F), Indian, 998 c.c., 2 cyl.
S. R. Axford (R.N.A.S.), Matchless.
C. J. Blumfield (R.E.)

EVENT 7.—SIDECAR HALF-MILE SPRINT.
Sergt. F. E. Barker (A.S.C., M.T.), Zenith-Jap, 998 c.c., 2 cyl.
2nd Lieut. C. G. Cardew (R.E.), Zenith, 654 c.c., 2 cyl.
A. MacColl (R.E.), Matchless.
Private H. F. Edwards (Artists Rifles), Zenith, 986 c.c., 2 cyl.
Flight Sub.-Lieut. O. P. Openshaw (R.N.), Zenith, 986 c.c., 2 cyl.

EVENT 8.—LIGHT CAR HALF-MILE SPRINT.
Sergt. F. E. Barker (A.S.C., M.T.)
— Scott, Singer.

EVENT 9.—SERPENTINE FAST RACE.
Sergt. F. E. Barker (A.S.C., M.T.), Zenith-Jap, 998 c.c., 2 cyl.
Lieut. G. S. Boston (G.H.Q. Staff), A.J.S., 349 c.c., 1 cyl.
2nd Lieut. R. Scrase Dickins (K.R.R.C.), 8 J.A.P.
Corpl. H. Graham Hodgson (R.E.), A.B.C., 500 c.c., 2 cyl.
Asst.-Paymaster C. P. Marcel (R.N.), Indian, 994 c.c., 2 cyl.
Lieut. F. A. McNab (R.N.V.), Douglas, 350 c.c.
2nd Lieut. O. J. F. Scholte (3rd Bedfords), Indian.
Lance-Corpl. T. Thompson (R.E.), Douglas, 350 c.c.
2nd Lieut. M. C. Trench (R.E.), Sunbeam, 499 c.c., 1 cyl.
Corpl. S. Wright (A.S.C., M.T.), Triumph, 550 c.c., 1 cyl.
Cadet R. Charlesworth (O.T.C.), Zenith.
Air Mech. C. F. Mossman (R.N.A.S.), Zenith, 496 c.c., 2 cyl.
2nd Lieut. C. V. Parr (R.F.C.), Indian, 2 cyl.
Sergt. A. Milner (R.E.), Diamond, 349 c.c., 1 cyl.
2nd Lieut. F. H. G. Stockdale (3rd/1st Cambs Regt.), Indian, 684 c.c., 2 cyl.
Angus McColl (R.E.), Sunbeam.
Lieut. G. G. Barnard (R.E.), Triumph, 550 c.c., 1 cyl.
1st Class Air Mech. M. Newnham (R.F.C.), Yale, 60.92 c.c., 2 cyl.
2nd Lieut. F. M. C. Houghton (25th Div. Cycl. Co.), Rudge-Multi, 499 c.c., 1 cyl.
2nd Lieut. R. H. Dodd (A.S.C., M.T.), Matchless, 964 c.c.
2nd Lieut. H. Guy (R.E.), Scott.
P.O. G. H. Kingdon (R.N.A.S.)

EVENT 10.—JUNIOR HILL-CLIMB.
Lieut. G. S. Boston (G.H.Q. Staff), A.J.S., 349 c.c., 1 cyl.
Flight Sub.-Lieut. F. Fowler (R.N.), 2¾ Douglas.
Flight Sub.-Lieut. G. E. V. Leather (R.N.), 2¾ Triumph.
Lance-Corpl. T. Thompson (R.E.), 2¾ Douglas.
Sergt. A. Milner (R.E.), Diamond, 198 c.c., 1 cyl.
Lieut. Miller (R.N.)
P.O. C. Remington (R.N.A.S.), Douglas, 350 c.c.
P.O. G. H. Kingdon (R.N.A.S.)

EVENT 11.—MEDIUM-WEIGHT HILL-CLIMB.
2nd Lieut. R. Scrase Dickins (K.R.R.C.), J.A.P.
Corpl. H. Graham Hodgson (R.E.), A.B.C., 500 c.c., 2 cyl.
Private G. Kendall (D.L.O.Y.), 3½ T.T. Norton, 490 c.c.
Lieut. F. A. McNab (R.N.V.), Douglas.
Private G. W. Miller (A.S.C., M.T.), Blackburne, 499 c.c., 1 cyl.
Lieut. J. E. Storey (R.F.C.), T.T. Norton, 490 c.c.
Lance-Corpl. T. Thompson (R.E.), 2¾ Douglas.
2nd Lieut. M. C. Trench (R.E.), Sunbeam, 499 c.c., 1 cyl.
Corpl. S. Wright (A.S.C., M.T.), Triumph, 550 c.c., 1 cyl.
2nd Lieut. C. O. Henfrey (A.S.C., M.T.), J.H. twin, 496 c.c.
— Saunders, Norton.
Lieut. G. G. Barnard (R.E.), Triumph, 550 c.c., 1 cyl.
2nd Lieut. F. M. C. Houghton (25th Div. Cycl. Co.), Rudge-Multi, 499 c.c., 1 cyl.
Capt. G. W. Huntbach (M.M.G.S.), Premier, 499 c.c., 1 cyl.
S. R. Axford (R.N.A.S.), Matchless, 498 c.c., 2 cyl.
A. MacColl (R.E.), 3½ Sunbeam.

EVENT 12.—UNLIMITED HILL-CLIMB.
Sergt. F. E. Barker (A.S.C., M.T.), Zenith-Jap, 998 c.c., 2 cyl.
2nd Lieut. C. G. Cardew (R.E.), Zenith, 654 c.c., 2 cyl.
2nd Lieut. R. Scrase Dickins (K.R.R.C.), 8 J.A.P.
Corpl. H. Graham Hodgson (R.E.), A.B.C., 500 c.c., 2 cyl.
Private G. Kendall (D.L.O.Y.), T.T. Norton, 490 c.c.
Asst.-Paymaster C. P. Marcel (R.N.), Indian, 994 c.c., 2 cyl.
Lieut. F. A. McNab (R.N.V.), Douglas.
2nd Lieut. O. J. F. Scholte (3rd Bedfords), 7 Indian.
Lance-Corpl. T. Thompson (R.E.), Douglas.
Private R. A. Waddy (Oundle O.T.C.), Indian, 994 c.c., 2 cyl.
Corpl. S. Wright (A.S.C., M.T.), Triumph, 550 c.c., 1 cyl.
Cadet R. Charlesworth (O.T.C.), Zenith.
2nd Lieut. C. V. Parr (R.F.C., R.B.), Indian, 684 c.c., 2 cyl.
Corpl. P. Davey (R.F.A.), Matchless.
2nd Lieut. F. H. G. Stockdale (3rd/1st Cambs Regt.), Indian, 684 c.c., 2 cyl.
Lieut. G. G. Barnard (R.E.), Triumph, 550 c.c., 1 cyl.
2nd Lieut. W. H. Boston (11th Suffolks), Indian, 994 c.c., 2 cyl.
1st Class Air Mech. M. Newnham (R.F.C.), Yale, 60.92 c.c., 2 cyl.
2nd Lieut. F. M. C. Houghton (25th Div. Cycl. Co.), Rudge-Multi, 499 c.c., 1 cyl.
2nd Lieut. R. H. Dodd (A.S.C., M.T.), Matchless, 964 c.c.
Private H. F. Edwards (Artists Rifles), Zenith, 986 c.c., 2 cyl.
Capt. G. W. Huntbach (M.M.G.S.), Premier, 499 c.c., 1 cyl.
Flight Sub.-Lieut. L. P. Openshaw (R.N.), Zenith, 986 c.c., 2 cyl.
Private W. J. Read (R.F.), Indian, 998 c.c., 2 cyl.
S. R. Axford (R.N.A.S.), Matchless. 498 c.c., 2 cyl.
C. J. Blumfield (R.E.)

A Novel Sidecar Hood and Windscreen.

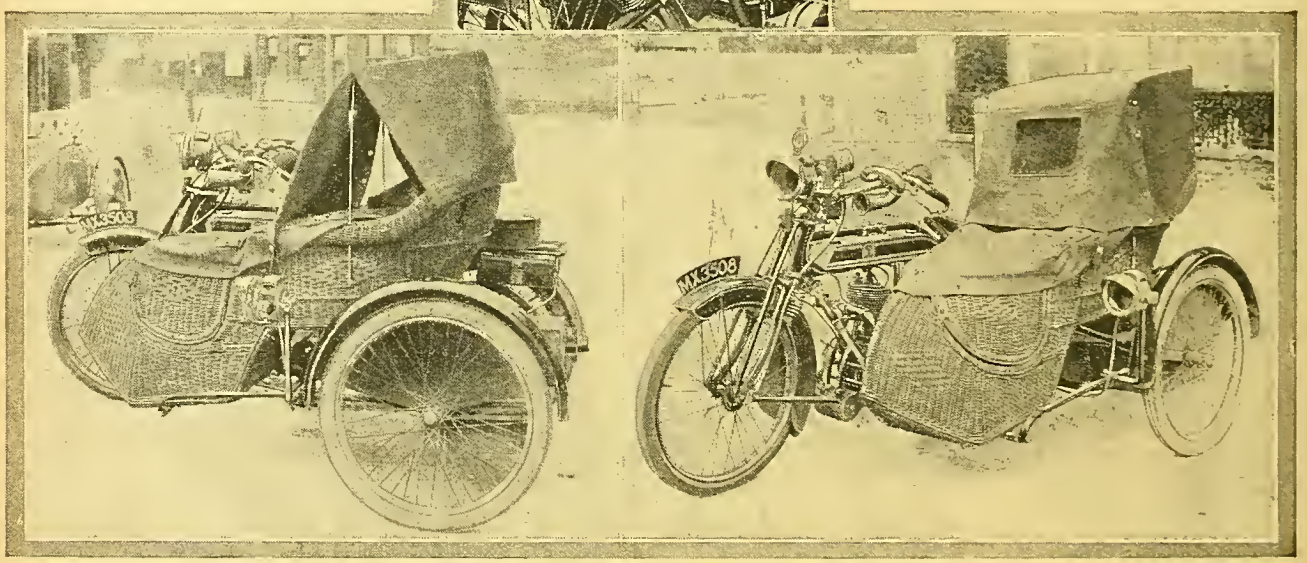
AN ingenious sidecar hood has been made by Mr. W. E. Boyce, 275, Archway Road, Highgate, N., and we are enabled to illustrate and describe it. The first photograph shows the hood folded up in its case, together with a small separate case containing the necessary sticks and stays. From the time Mr. Boyce, in giving us a demonstration, began to unpack the hood and its appurtenances from their cases until the device assumed the position shown in the third illustration, only 2m. 9s. passed.

The hood consists of one piece of material, suitably stayed by metal rods, and by long semi-circular pieces of cane, which allows it to assume the necessary curved position in front. Behind is a series of holes giving an adequate degree of ventilation. It will be noticed that the front is provided with a talc window, while the sides are secured by means of glove button fasteners. The second illustration shows the hood with the ends tucked in, a position which may be assumed when the rain is not very severe and more air is desired.

Weight and Space.

It only weighs 4½ lb., and when folded up occupies but little space. The actual hood portion, not including the sticks, can be carried underneath the cushion.

When ordering Boyce's patent hood and screen it is necessary to state the make of sidecar, whether it is cane or coachbuilt, the height from the back of seat to the top of back, height from front of seat to the top of sides, length of seat, and outside width across body. The passenger's height from the seat to the top of the head should also be stated.



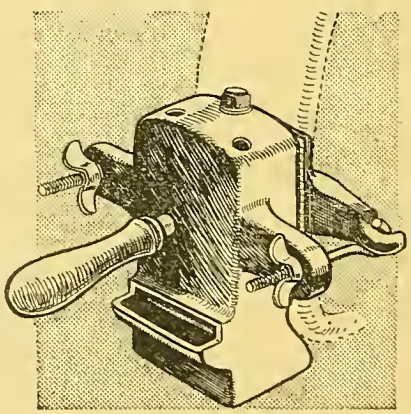
(Top) Hood and stick folded up in their respective cases, and sidecar equipped with apron.
(Left) Hood in position, with flaps folded back.
(Right) Sidecar passenger completely covered in and ready to defy the worst elements.

THE MARVEL STEAM VULCANISER.

AN ingenious and simple steam vulcaniser, known as the Marvel, has lately been placed on the market by Messrs. H. Taylor and Co., 21a, Store Street, W.C.

The vulcaniser consists of a casting which is hermetically sealed, and contains a certain quantity of water. The bottom portion forms the spirit lamp, which consists of absorbent wool covered with wire gauze. To start the vulcaniser, it is only necessary to pour a measure of spirit through the orifice leading to the gauze.

To repair a puncture in the inner tube, the place is roughened with sand paper, and thoroughly cleaned with petrol. A special cement is applied in the same manner as ordinary tyre solution. A piece of repair rubber the size of the puncture is then placed over the hole, and then another piece extending half an inch over the first piece. In the case of a large cut a piece of paper should be placed on the inside of the tube, so that the sides do not stick together. To vulcanise the repair, place a piece of paper as large as the machine over the patch, and fix the inner tube on to the vulcanising plate. The plate is then firmly screwed to the machine. For inner tubes, less than a full measure of methylated spirit or petrol may be used. The repair will be accomplished in about fifteen or twenty minutes after the spirit has been lighted. Cuts in outer covers may also be successfully repaired.



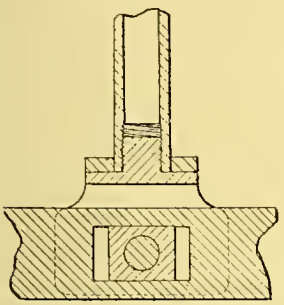
The Marvel vulcaniser

Another reason, beside that of bad city roads, why motorists should avoid Oxford has now been brought to our notice. Police traps are in operation about one mile outside the city on the Botley, Woodstock, Banbury, and Iffley roads.

A NOVEL SPRING FRAME.

THE spring frame illustrated is the invention of M. Van Geert, 59, Beaufort Road, Birmingham, and has many interesting features.

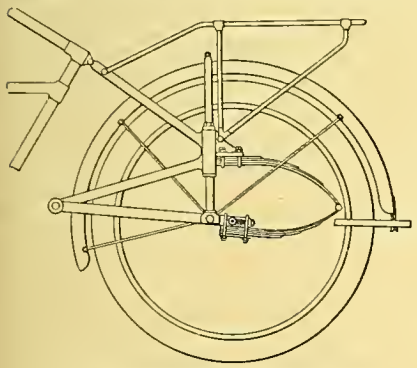
One end of the chain stays is pivoted, while the other carries a sliding fork, which embraces the mudguard. The guide for the fork forms a lug for the two rear frame members, and also a bracket for one side of the spring, the chain stays carrying the other side. It may be noted that it is not essential to use the kind of spring illustrated.



Section showing the manner in which the fork is attached to the hinged chain stay.

On referring to the sectional drawing, it will be seen that there is a slot in the chain stays, which allows the fork end to slide in a horizontal direction. The mudguard is secured at the top by an ordinary pin, and the removal of a single nut leaves it free to swivel round the wheel, thereby uncovering a large portion of the tyre to facilitate repairs.

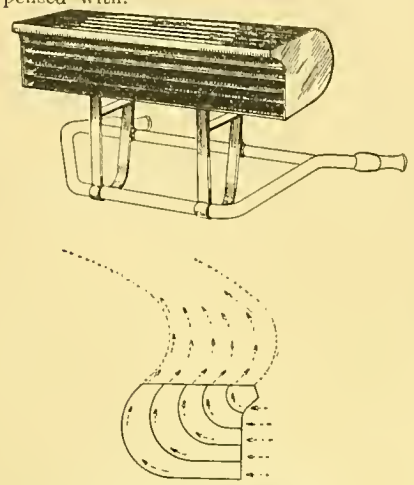
The inventor informs us that he has tested the frame on the road in Flanders for a considerable time, with excellent results.



The Van Geert patented system of rear suspension.

AN AIR DEFLECTOR FOR THE HANDLE-BARS.

AN interesting accessory hailing from America is the Van Zile air deflector. It is a device intended to shield the motor cyclist from wind and dust, and is attached to the handle-bar by means of a metal bracket, which has a vertical adjustment of three inches. It is constructed of curved metal vanes, which are secured to side plates, and the wind entering the front of the apparatus is deflected upwards away from the rider at an angle of 45°. Consequently, air currents coming along above the deflector are forced in an inclined direction over the rider's head. Dust, it is claimed, is treated in the same manner, goggles thereby being dispensed with.

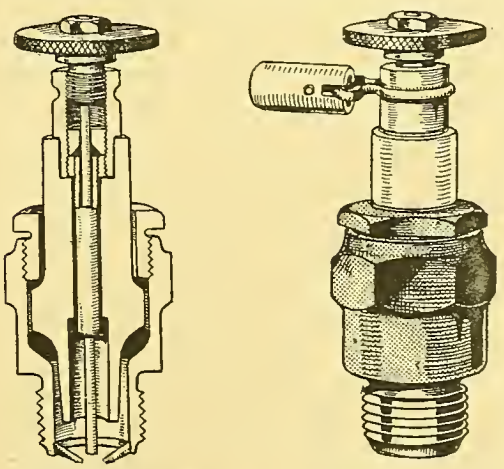


The Van Zile air deflector.

The Van Zile deflector may also be fitted to a sidecar in the place of a wind screen. It is stated that a pipe or cigarette may be lighted in the sidecar quite easily while travelling at fairly high speeds. The weight is nine pounds. Although few English riders would care to have this weight on the handle-bars, it would not be objected to in the United States, where machines are much heavier than those of British manufacture, nor is it a disadvantage on the front of a sidecar body where a glass screen is often supported.

NEW DESIGN SPARKING PLUG.

AN interesting design of sparking plug providing adjustable points has been submitted to us by the patentee, Mr. J. A. Kennedy McGregor, 124, Mere Road, Erdington. It will be noticed from the section here-with that a vertical adjustment of the central electrode is provided, adjustment of the points being possible while the engine is running, by means of the fibre disc at the top of the plug. We have not yet tested the benefits to be derived from the plug in question, but it is a well-known fact among experienced riders that the distance between the points of the plug has a great bearing upon the running of the engine, and Mr. McGregor tells us that during his tests it has been easily possible to note the varying effect on the speed of the engine by opening and closing the points. The plug is known as the "Gorson," and it should appeal particularly to owners of twin-cylinder machines, as by closing the points of each plug in turn the cylinders may be tested separately until the best results are obtained. Mr. McGregor claims that there is no fear of any compression leakage in the plug owing to the special stuffing box and asbestos packing provided. The price of the plug is 5s., including a patent terminal consisting of a spring clip which may readily be detached by pressing the sides. When in use the clip is covered with rubber, not shown in the illustration.



The Gorson sparking plug, the special feature of which is its adjustable point.

A NEW PUNCTURE-PROOF TYRE FILLING.

A TYRE filling which has been satisfactorily used for some years in America, known as Essenkay, is now being introduced into this country by Messrs. Essenkay, Ltd., of Southgate Street, Leicester. Essenkay is a light elastic substance, similar in appearance to porous rubber, though no rubber is used in its manufacture. It is made in sections of about 2ft. in length, and covered with a fabric casing. It is fitted into the tyre after the tube has been removed; the cover is replaced by means of a special tool, which forces it into place, so that the filling is under pressure.

Essenkay should prove very useful for the rear wheel of tradesmen's side carriers, etc., where tyre reliability is essential while speed and efficiency are not so important. Unfortunately, at present it is not possible to fit it to tyres of less than 3in. section.

We are informed that the life of tyres filled in this manner is increased by at least 100%. When the cover is worn out the Essenkay can be fitted to the new tyre just as satisfactorily. We understand it is better to fill a new cover rather than one partially worn.

A trial run on the carrier of a powerful twin and sidecar with the driving wheel filled proved this air substitute to be quite resilient, while the speed and power seemed very little affected, as during our test a speed of 40 m.p.h. was attained; and at this speed the machine was not unduly uncomfortable in spite of there being only a small cushion on the carrier. Although this outfit had done over 1,000 miles there was no sign of loose or broken spokes, which goes to show that little extra vibration is caused.

Races and Trials in Union and Dominion.

CAPE PENINSULA M.C.C. 112 MILES TRIAL.

COMPETITORS in the Garlick and Enfield Cup reliability trials which were held concurrently over the same course and under practically the same conditions on the King's birthday found the roads in far better condition than anticipated, and once more the sun shone in all its brightness on the scene at the Salt River start, when A. Manchip led off punctually at 9 a.m. All the competitors rode Enfield sidecar outfits, with the exception of A. E. Robinson, whose mount was a 5 h.p. Indian and sidecar.

Turning into the Koeberg Road, the route led past Potsdam and the old Dutch farm, Vissershok (once belonging to Governor van der Stel), and up a steep hill. Here the riders encountered a heavy bank of fog, the top of the hill, however, being bathed in sunshine. On descending they once more cut through the thick mist, travelling down the hill towards the Durbanville Valley, when they met officials of the secret control.

The good villagers had turned out *en masse* to see the men on their runs over the leafy five-mile road which leads to Belville.

The watersplash at Sir Lowry Pass being fairly deep, and with a soft bottom, caused A. Manchip's machine to stop; consequently, rider and passenger jumped in the river and pushed the outfit on to safer ground.

After lunch the journey was continued through Stellenbosch town, up the dreaded Hel's Hoogte (Hell's Height), and over the shocking roads past the village of Pniel.

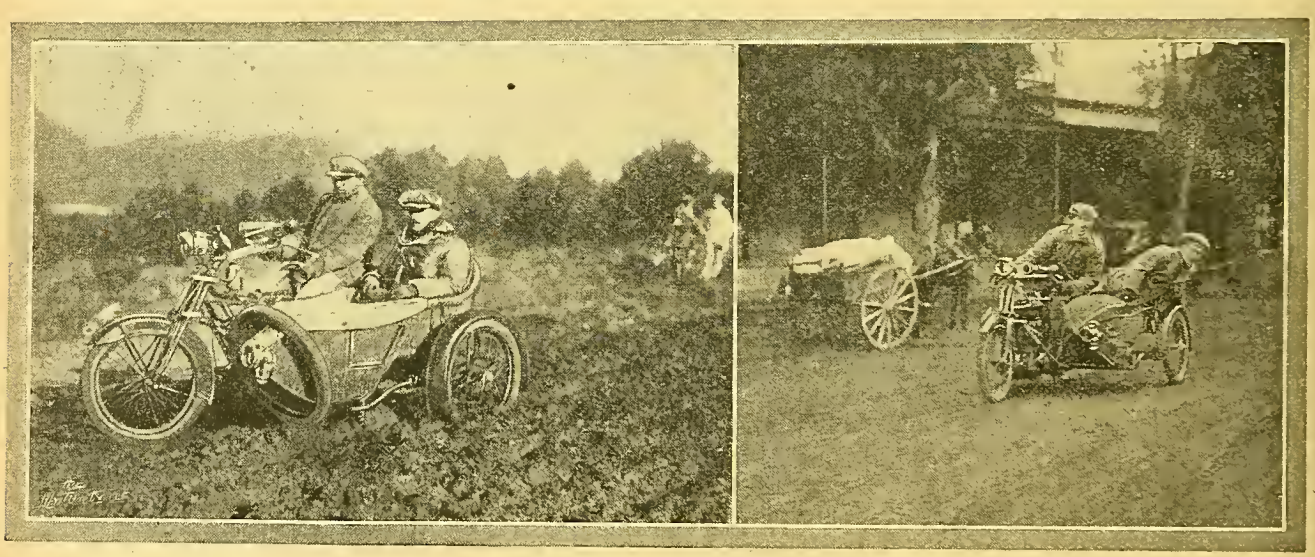
The descent of Hel's Hoogt—in parts through mud—proved trying work, especially when the village of Pniel, with its terrible roads, was reached. After the negotiation of many minor watersplashes and the subsequent crossing of the railway line, Klapmuts and the main road to Capetown were regained. Results:

GARLICK CUP.

		Marks lost.
1.	A. Moralee	0
2.	J. G. Elliott	3
3.	A. Manchip	20

ENFIELD CUP.

		Marks lost.
1.	A. Moralee	0
2.	R. Pike	2
3.	J. G. Elliott	3



Good and bad roads encountered by competitors in the Cape Peninsula M.C.C. reliability trial described on this page. (Left) B. Walsh negotiating a good sample of Colonial mud. (Right) A. Moralee, the winner, taking a bend. Both riders are using Enfield sidecar outfits.

DOINGS IN NEW ZEALAND.

JUNE saw the end of the motor cycle competition season in New Zealand, with the exception of a race meeting held by the South Canterbury M.C.C. on June 10th. The results of this and one or two other gatherings are given hereunder.

South Canterbury M.C.C. Washdyke Races.

TWO LAP SCRATCH RACE, 350 c.c.—1, A. Woodham (2¾ Douglas); 2, R. Marshall (2¾ A.J.S.); 3, P. A. Foden (2¾ Douglas). Time, 3m. 19s.

THREE LAP SCRATCH RACE, 350-550 c.c.—1, F. Baker (3½ Triumph); 2, A. E. Dendy (3½ B.S.A.); 3, H. McNight (3½ Rudge). Time, 7m. 12⅕s.

THREE LAP HANDICAP, 350 c.c. CLASS.—1, R. Marshall (2¾ A.J.S.); 2, S. Hatton (2¾ Douglas); 3, A. Woodham (2¾ Douglas). Time, 4m. 36s.

FIVE LAP HANDICAP, OPEN, for the Cowan Cup.—1, F. Baker (3½ Triumph), 30s. start; 2, H. McNight (3½ Rudge), 55s.; 3, C. Evans (4 Triumph), 70s. Time, 6m. 29⅕s.

FIVE LAP HANDICAP, 350-550 c.c.—1, C. Evans (4 Triumph), 60s start; 2, H. McNight (3½ Rudge), 35s.; 3, F. Baker (3½ Triumph), scratch. Time, 7m. 24⅖s

Hawkes Bay Club Reliability Trial.

The Hawkes Bay Club held its annual reliability trial recently from Hastings to Tikokino and return. There were twenty competitors, and nineteen finished, despite severe conditions.

The winner of the event was Sutton (3½ Humber), who, therefore, holds the Triumph Cup for the succeeding year.

Pioneer Motor and Sports Club.

The Pioneer Motor and Sports Club (Christchurch) held a smoking concert on June 12th, when the distribution of prizes won during the season was made. Several of the donors of special prizes announced their intention of donating further trophies for the coming season. There were thirteen events conducted during the season, and all were successful. The results of all these meetings and trials have appeared in *The Motor Cycle*.

Wanganui Motor Cycle Club.

The Wanganui Motor Cycle Club's eight-hour reliability trial, held on June 3rd, resulted as follows: 1, A. B. Collins (3½ Triumph); 2, H. H. Smith (2¾ Douglas).

Does an Engine run better at Dusk?

Concluding Instalment—Some Interesting Theories.

THIS old topic has brought us so many interesting letters that we feel constrained to publish a further, but final, selection. Of course, the larger the amount of oxygen that can be got into the cylinder the more forcible will be the explosion. Moisture, too, should have some effect in the matter of cooling (a Martini rifle always shot better on a wet day, but perhaps the cases are hardly analogous). We must confess that the ozone theory propounded by one of our correspondents is new to us.

Sir,—With reference to the discussion on the question of whether petrol motors run better at dusk, and if so, why? In the first place, the simple question of fact, there does not appear to be room for argument. Any experienced motorist will tell you that they *do* run better towards evening, whether they have been used previously during the day or not. With reference, however, to the reason for this phenomenon, may I suggest a theory which I have held for some years, and which I think is at all events as tenable as any of those already put forward? It is briefly this: In the first place, it is well known that light has a peculiar action on many substances—in particular, on certain unstable or polymorphous elements, causing them to assume a different molecular distribution of the atoms. As, for instance, the unstable flexible form of sulphur, which rapidly assumes the usual hard crystalline form when exposed to the action of light.

Now, the oxygen of the atmosphere is known to be capable of assuming another form, namely ozone, which is still oxygen, but in which the molecules consist of three atoms instead of two. This form is known to be less stable than the usual one, and, consequently, will more readily enter into combination with other substances—petrol vapour, for instance. Further, it is known that ordinary oxygen can be converted into ozone by the passage of an electric spark. Why not, therefore, by the prolonged action of sunlight?

Thus, my theory is this: That at the end of the day there exists a greater proportion of the atmospheric oxygen in the form of ozone than at the beginning of the day, much of that which has been converted into ozone by the action of light during the day reverting back to its original state during the night, and that, consequently, combustion is more readily obtained at dusk than at any other time. That it has no connection with temperature is obvious, as otherwise there would be an appalling difference between the running of a motor in summer and in winter. F. C. LYTH, M.B.

Sir,—Referring to the question "Does a motor cycle run better at dusk?" I think this peculiarity may be coupled with a similar peculiarity in wireless telegraphy.

It is an accepted theory that immediately after sunset the molecules composing the ether (being in themselves minute magnets, each consisting of a north and south pole) increase their magnetism owing to the absence of the sun's rays, which weakens them; the consequence is the range of communication is greatly increased after sunset.

During the absence of the sun's rays the magnetic field of the magneto would be influenced by the strengthening of the magnets composing the ether. This would give rise to a considerably hotter spark through increased voltage.

Allowing the above theory to be correct, a motor cycle should increase its speed on a thundery day, when the air is overcharged with electricity. This is a suggestion from W. E. G. MARSHALL.

Sir,—I have felt considerable interest in the correspondence on this topic recently revived in your columns, mingled with some pity for the unfortunate people so lacking in a sense of humour that they cannot recognise and appreciate the gentle art of "taking a rise" out of anybody.

It may not be generally known to the motor cycling community at large that on high-powered oil engines used for driving launches, tugs, yachts, etc. (I have the Gardner oil engine in mind), it is customary at heavy loads to introduce a water drip-feed which allows a small quantity of water to enter at the top of the cylinder at each suction stroke. This flashes into steam, deadens the heavy thud of the explosion, and helps to do work by expansion.

I am of opinion that something of the same sort of thing occurs when riding at dusk. At this time the cooling air is charged with moisture ready for condensing, which it does in the form of dew, especially on a spot like the intake of the carburetter, where it can be readily sucked into the cylinder. Personally, I have frequently found my carburetter and the connecting pipe smothered in beads of moisture on returning home.

Some people may object that it is colder in the morning, and the same results ought to obtain. It may be colder, certainly, but the air is not so moist owing to the condensing process having continued all night, leaving a smaller percentage of dampness in the air. If the result is as I suggest, it would account for the extra silky feeling of the engine, and the defective light would cause the impression of increased speed.

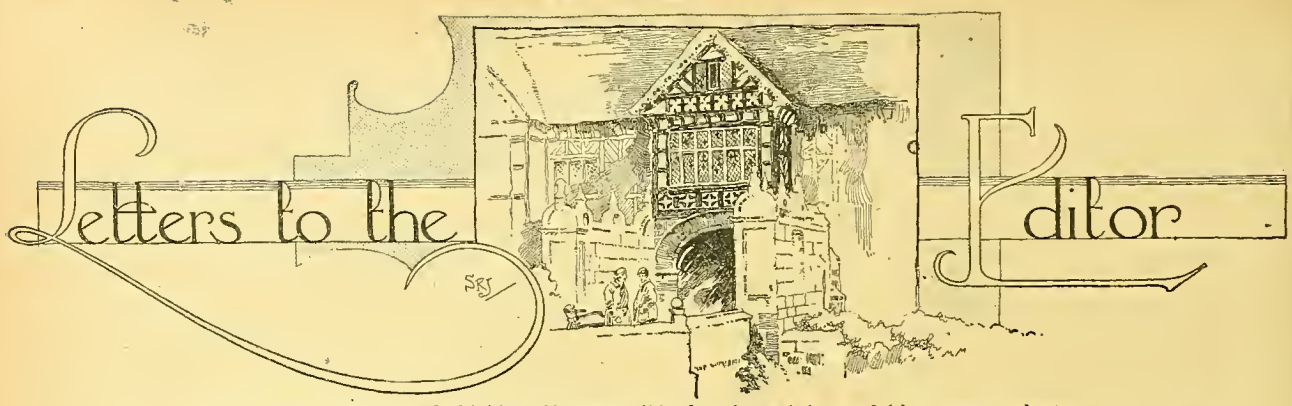
My opinion coincides with that of the writer referred to by Mr. C. M. Stuart, whose engine ran better in mist. I know a man who gets more power and smoother driving on a pouring wet day. Carbonic acid gas has, of course, no effect upon the engine, unless it may be to weaken the mixture and cause slow burning instead of a sharp explosion.

"G.P.G.K." need not get huffy at having his leg pulled. I am sure all motor cyclists will understand and sympathise with him in his thirst for knowledge; let him rather join with the rest of us in thanking Mr. G. Pinker and "Y 2895" for pouring forth the vials of their wisdom and, incidentally, amusing us. The same remarks apply to "Biscuits" and "G.W.P." in a way, although the amusement is different, for their kind remarks on natural, elementary, geographical, and perhaps supernatural science.

LM 2525.

Sir,—I have just perused a copy of *The Motor Cycle*, which I have sent out to me every week. I was both highly amused and interested to read the replies sent by readers in reply to the question "Does an engine run better at dusk?" In my opinion it does. My reasons for thinking so are as follow: At dusk the trees, plants, etc., give off a large quantity of oxygen. Although it will not burn by itself, oxygen is one of the greatest supporters of combustion. This can be proved by the following simple experiment: Take a bottle, turn its neck downwards, and fill it with oxygen from a cylinder, as used with a limelight lantern. Next take a thin piece of wood and ignite it, then wait until the actual flame goes out, and the wood assumes a red glow; then push the smouldering end of the wood up into the bottle, when it will immediately burst into flame again. Now this proves my statement that "oxygen supports combustion." Consequently, at night, the air drawn in through the carburetter has far better combustible properties than during the day. Furthermore, the air is cooler at night; therefore it is denser. So, although the same "volume" is drawn in, it is far heavier. Summarised, it is as follows: During the day an engine draws in a small amount of "weak" air, whilst at night the same engine draws in a greater quantity of rich air. Of course, I gladly throw this letter open to the severest criticism; in fact, I should be far more amused than offended if any other reader could prove where I am wrong, as a *correct* solution of this question would be greatly beneficial to the sport in general. J. E. MITCHELL, M.T., A.S.C., B.E.F.

Sir,—*Re* the correspondence in your journal as to whether an engine runs better at dusk. All practical motor cyclists will agree that an engine does run considerably better and with far greater ease in the dusk. Being a motor cyclist of over eleven years' experience, I first noticed the above about eight years ago, and endeavoured to assign reasons for it. After rejecting many theories I believe I have discovered the reason for it, and, if possible, I hope in the near future to patent a carburetter that will give to the engine the same conditions that are usual at dusk, and so ensure the ideal running which is so obvious when dusk sets in. F.C.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

An American Lightweight.

Sir,—The new American two-stroke which you described last week certainly does bear a strong resemblance to a well-known Coventry machine, and I take it that this machine is the two-stroke Triumph. Has it struck you or any of your readers that the American machine also bears a still stronger resemblance to a well-known Belgian make, namely, the F.N.? In fact, as I turned the page when looking through your paper and came upon the illustration of this new machine, I thought for the moment that it *was* an F.N. until I looked more closely. The position of the magneto, the appearance of the engine, and also the design of the frame (bar the front forks) all strike me as being extremely similar to the Belgian motor cycle.

ANTHONY T. PRAGA.

Motor Cycle Volunteers.

Sir,—I have followed with considerable interest the correspondence in your columns *re* the various Motor Cycle Volunteer Corps. I do not wish to discourage any of the members, but they might be interested to know that they are invariably referred to here as "The Cheap Glory Brigade." We are told that members must have an excuse for not joining the regulars, yet we are given figures showing the number of members who have joined the Colours.

H. BROCKBANK.

B.E.F., France.

Sir,—I crave your kind indulgence to add a few words to the correspondence that has already appeared on this subject.

It is quite evident that the only information your correspondent Lieut. M. B. has as to the training of the Midland Motor Volunteer Corps is derived from the motor cycle press, and if this has created a misapprehension in his mind, it is a pity that he did not obtain more information before forming views which are totally opposed to the actual facts.

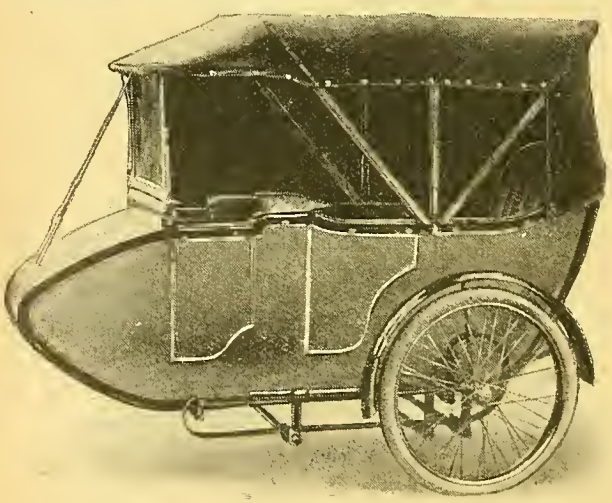
The training of the corps is carried out under military discipline, and it is just possible that even Lieut. M. B. could pick up some useful knowledge were he to attend a field day or lecture.

I wish to say most emphatically that your correspondent is incorrect in saying that the corps is being used by men to evade military duty. The names of the men associated with the administration should be sufficient to guarantee the impossibility of such a thing.

The sore point with Lieut. M.B. seems to be about some occurrence amongst some members at the Style Cop hill-climb. This charge is so childish that it hardly deserves a sportsman's notice! Did "M.B." attend the Khaki Meeting? Did he sit in a corner and weep all day? Did all there wear long faces? Was there no fraternity and no play?

In conclusion, may I remind Lieut. M. B., with all courtesy, that ridicule and sarcasm never make good arguments.

N. RANDOLPH,
Hon. Sec. M.M.C.V.C.



A weatherproof double-seated sidecar built by Stokes and Holt, Ltd., of Leicester. It has been the aim of the designer to make it roomy and comfortable for both riders. The model illustrated is complete with hood, screen, and side curtains.

Boycotting German Motor Cycles and Accessories.

Sir,—Letters on this subject appeared in your journal during May and June, and I think after, but I cannot turn them up, having sent the numbers to a D.R. at the Front. So far as I remember, the only objection of a practical nature was from a manufacturer, who asked how he was to get a certain tool elsewhere than from Germany, unless from the U.S.A., in which case he would have to pay three times as much for it. One must look facts in the face, and admit that the proposed boycott may possibly for a time raise the cost to some small degree of motor cycling goods. On the other hand, let us consider if cheaper goods are not costing more than appears on the surface, if they are only to be obtained by co-operating with as murderous and unscrupulous a nation as ever defiled the earth, whose violations of warfare and of the usages of civilisation brand them as the very Canaanites of the modern world. Let that manufacturer get his tool from America or somewhere else than from such a tainted source, and let him—as he assuredly will—transfer the increased charge to his customers; they will, one would imagine, shoulder the burden if not willingly at least resignedly.

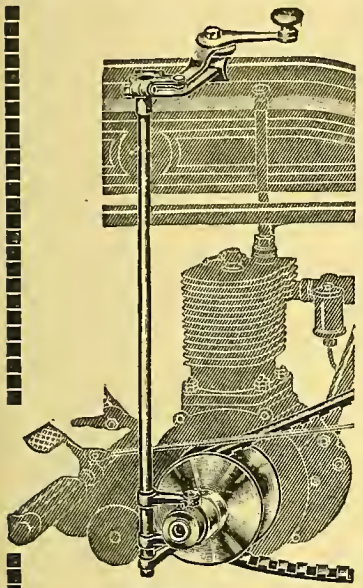
Many readers of *The Motor Cycle* must have perused with shame and amazement the letter from a firm of British magneto makers published in your correspondence columns, observing that certain makers had openly avowed their intention of resuming German magnetos when the war had ended. These men ought to be shunned as the pariahs of the motor cycling trade. One can only hope against hope that the British firm had been misinformed. My means are not large, but I would rather give up my motor cycling than knowingly handle another German accessory or machine, unless paid for by the seller before the commencement of the war, and this is surely the attitude of mind of the vast majority of your readers.

I trust that satisfactory measures may be forthcoming to establish the boycott on such lines as may be effective and permanent.

DELTA.

The GRADO Multi-Pulley

is just the thing, gives gear for 4-1—8-1, Lightweight 10-1.



Motor Cyclist! Read what it will do for you.

This is no boast. It starts your machine like a car.

Takes machine and sidecar up hills impossible without.

Gets you safely through thick traffic.

Ensures safety over the greasiest roads.

In fact, it turns work into pleasure.

Just half a turn of the handle on the top tube changes from top gear to free engine. So Simple!

Read what a Police Constable says:

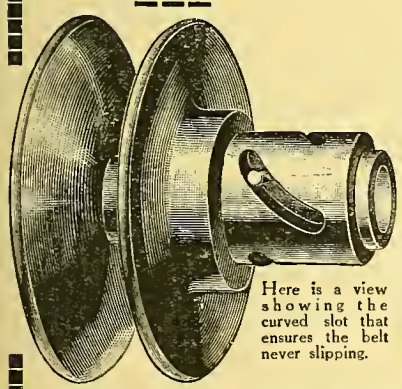
Police Station, Broughton,
Kettering, Aug. 16th, 1915.

Gentlemen,

I received the Grado Multi-Pulley mid-day Saturday last. Thanks for your prompt attention to my order. I fitted same and tried it same evening, and am delighted with it, it acts splendidly to every move of the control lever, and there is not the slightest slip with the belt. The fitting is quite simple. Once more thanking you,

I remain, yours faithfully,

Constable H. SWIFT.



Here is a view showing the curved slot that ensures the belt never slipping.

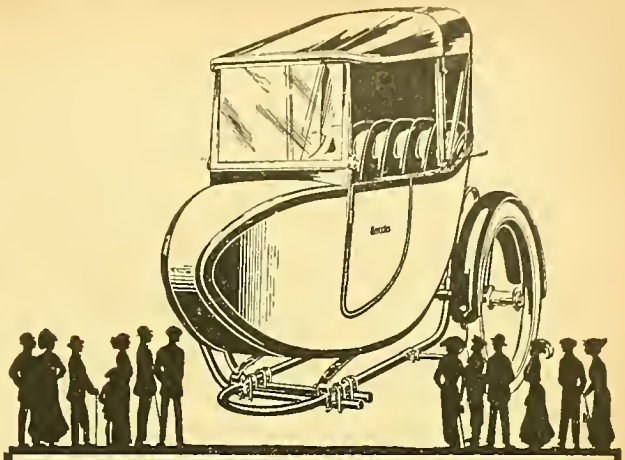
Fitted in two hours to Triumphs, B.S.A., Bradbury Premier, T.D.C., Rex, Singer, Precision, and others.

Fit one to-day, you are sure to be pleased.

Prices: For Triumph, B.S.A., etc., **£3 3s.**
Lightweights, **£2 10s.**
Recessed for J.A.P., old Rex, etc., 10/- extra.

Write for Catalogue to-day.

The GRADO Manufacturing Co.,
64, Pershore Street, BIRMINGHAM.



EXAMINE IT—

as closely and minutely as you will—you will not discover a flaw in any single

HERCULES SIDECAR

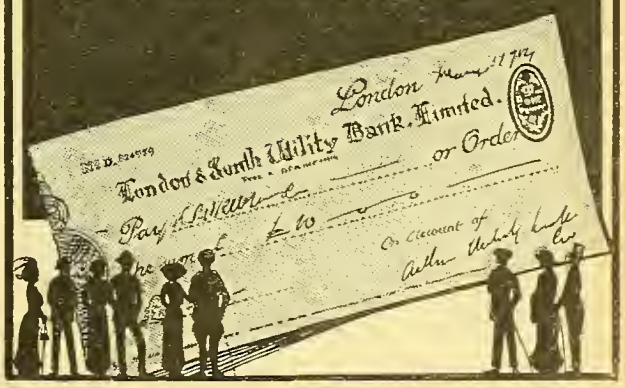
Your cheque cannot buy more value, £ for £—bring you a better exchange—or prove a better investment—War Loan alone excepted—than the Sidecar with this specification—

Chassis—Our own patented design with circular front giving low and most comfortable riding position—greatest strength, rigidity, and absence of side-drag. The details are in the catalogue—

Body—Large—roomy—handsome—strong—comfortable—draught-proof—and all desirable fitments and fitted anti-skid wise. The details are in the catalogue—

Mudguard—Very wide with side wing incorporating a cute arrangement for wheel stand—in a word—adequate. The details are in the catalogue—

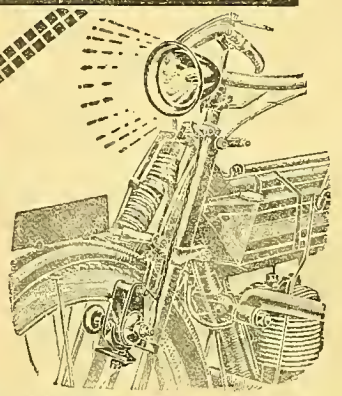
Hercules Cycle & Motor Co. Ltd.
Conybere Street Birmingham



ROY H.

Volex

GIANT MOTOR CYCLE LIGHTING.



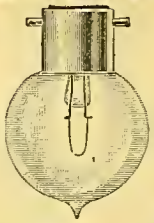
"VOLTALITE"

SELF-GENERATING ELECTRIC MOTOR CYCLE LAMP. British Made. The First Cost the only Cost.

The lamp which produces by the movement of the machine an inexhaustible supply of electric light to illuminate brilliantly the head lamp at no cost whatever. Fitted with Hoffmann Ball Bearings.

Complete with head lamp and metal filament bulb, ready for use ..... **£3/3/0** Post free.

Min Screw.



Small B.C.

Favourable reports on this system of Dry Battery Lighting have appeared in "The Motor Cycle." The "Volex" Giant Battery is made up in convenient form in 4 and 6 volts. No other make of battery gives such excellent results. Equally useful for lighting head light, sidecar, or rear light. Light Weight. Convenient Size. Reasonable Price. British Manufacture.

4 volts, price **6**/- each. 6 volts, price **8**/- each.

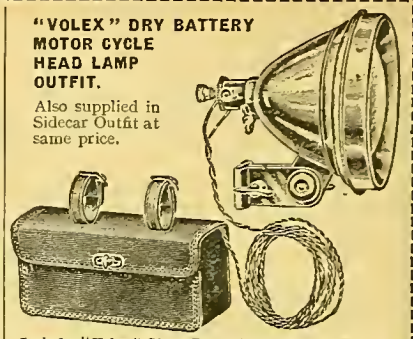
Only use Special "Volex" Bulbs to ensure best results.

"Volex" Bulb, Min Screw Cap, for 4 or 6 volt battery, Price **9d.** each.

"Volex" Bulb, Small B.C. Cap, for 4 or 6 volt battery, Price **1/6** each.

"VOLEX" DRY BATTERY MOTOR CYCLE HEAD LAMP OUTFIT.

Also supplied in Sidecar Outfit at same price.



Includes "Volex" Giant Dry Battery, Conducting Cord, Switch, and Penetra Motor Cycle Head Lamp with Bulbs or Sidecar Lamp

Price **24**/- complete outfit.

The battery can be fitted in Sidecar Bottom or carried in Satchel which can be attached to the frame of Motor Cycle. The Dry Battery will give about 80 hours' light, and will hold up in stock for over 12 months.

Spare "Volex" Giant Battery, 6/-.

SEND FOR SIXTY PAGE ILLUSTRATED CATALOGUE POST FREE ON APPLICATION.

BLACK ADHESIVE TAPE.

British made. Excellent quality, adhesive, high insulation, and does not dry up in stock. Supplied in 3d. and 6d. tins.

Actual Manufacturers of High and Low Tension Wires.

See our M. and E. Catalogue.

POCKET VOLTMETER.

Accurately calibrated. Highly finished.

each

0 to 6 volts, **4**/-
0 to 12 ,, **4/4**
0 to 16 ,, **4/6**

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WARD & GOLDSTONE,

Contractors to H.M. Government,

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TELEphone—7083-4-5-6 Central.
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LODGE PLUGS

are not advanced in price.

In spite of the heavy demand and the shortage due to the military requirements, we have so far adhered to our pre-war prices, and we intend to avoid any increase right through if we possibly can.

Of all Dealers.

Standard Model (*English or American Thread*) **4/-**

Weatherproof Model **5/-**

THE LODGE SPARKING PLUG CO., LTD., BIRMINGHAM and RUGBY.

B26

NO MORE PUNCTURES

Now you can ride day in and day out with never a thought of bursts or punctures. You can increase tyre mileage and lessen upkeep costs by having your covers filled with

Essenkay
"ENDS TYRE TROUBLES"

— the most wonderful substitute for air yet discovered.

Perfectly resilient — unaffected by wear or temperature.

FREE TRIAL.

Write to-day for full particulars of our free trial offer.

ESSENKAY LIMITED,
28, Southgate St., LEICESTER.

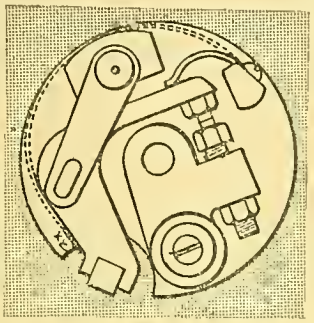
AGENTS WANTED.

Live Agents wanted in districts where we are not already represented—Apply at once.

Godbolds'i

A Roadside Repair.

Sir,—The enclosed sketch will show how I made a temporary repair when troubled with a broken contact breaker spring recently. The dotted line shows the correct position of the spring before breaking, and X is where it broke. The full line shows the reinforced leaf spring, bent to press on the platinum points of rocker arm to close the points when the fibre block leaves the segment. This temporary repair is still running and proving satisfactory. Perhaps making mention of this in your paper would prevent some other poor motor cyclist from being stranded.



ARTHUR BUTTERFIELD.

A Loose Flywheel.

Sir,—I hope this may interest you and your readers. After overhauling a 2¾ h.p. twin Douglas, a loud metallic knock was heard whenever the engine fired. It could be traced to no more definite place than the engine. The engine was taken down three times by three different people. It was first thought to be the valves, then the timing gear, then the big ends, etc., but to no effect. At last somebody suggested that perhaps the flywheel was loose. A new nut was fitted, and it was then found that this had been the cause of all the trouble. R. G. SPIKINZ.

A Friend in Need.

Sir,—Whilst riding a Scott motor cycle with my wife in a sidecar on Wednesday, August 11th, I had a breakdown, and could not discover the cause of it. A passing motor cyclist came to my assistance and correctly diagnosed the trouble as being with the Bosch magneto. He rode into a garage at Ascot with a part of it and had it put right. He then very kindly put it back for me, and the engine went on without any difficulty. In the excitement and relief at restarting, I am ashamed to say that I entirely forgot to reimburse him for any expenditure to which he may have been put, and, though I went out again on the following day, all my efforts to trace him proved unavailing.

I should be very much obliged if you would find space for this letter in your next issue, and hope that if this catches his eye he will communicate with

ARTHUR ROE.

Physically Unfit.

Sir,—I wonder whether any of your readers are similarly situated to myself?

I was a member of the first survey party to cross the Rocky Mountains on the present route of the Grand Trunk Pacific. It was dead of winter for half the trip, and by accident of one kind and another we lost two white men, one Indian, and numerous ponies. Then I spent two years forest ranging in Algonquin and B.C., and anyone familiar with the muskeg forests will know that the life of the forest ranger is by no means without incident. Later I went north into the Yukon Territory; more than once I was without dogs and without money during the winter, with nothing to eat for weeks but fish and pemmican, and living generally the toughest life it is possible to imagine. I went through the ice one night when the thermometer registered 60° of frost, and when I finally arrived at Dawson the doctor told me that I'd better get away south, p.d q., if I wanted to live.

Finally I came to anchor at Porcupine, the gold camp of the day, and for one summer I drove a gasolene launch on the Mattagami River. I was there during the terrific forest fire which shocked the whole civilised world with its appalling loss of life and property, and out of the thirteen members of the camp to which I belonged only three of us came out alive. When we went back to look for our chums we found only their trouser buttons and the buckles of their belts.

The smoke played havoc with my lungs, and next winter I got pneumonia again. The doctor told me that I could not face another winter in the North, so I came home, apparently fit and hard as nails, but with one lung gone.

At the beginning of the war I enlisted as a despatch rider, since the work promised plenty of fresh air, without too much sleeping in the damp and general exposure. I was rejected at the last moment, and since then I have had five shots to get in. Every time it has been the same question—"Had any lung trouble?"

My grievance is against the interfering old fools who, having had little experience of life beyond their own towns, are constantly talking about what they would do "if they were young again." Surely it is about time this sort of hot air were kept under control. I have not a friend left of military age who is not in uniform, and were it not that I myself have experienced more than most of these armchair critics have ever dreamt of, and am now paying for it, I should have been among the first to go.

I went into a shop the other day, and a little pale-faced bounder behind the counter, after giving various reasons for not enlisting, quietly asked me when I was going. Everyone in the shop could hear the question, and one can imagine how I felt. I wonder how this little weed would have fared on the Yukon trail without dogs, or what he would have thought of the Porcupine forest fire, had he not died of fright, as more than one man did.

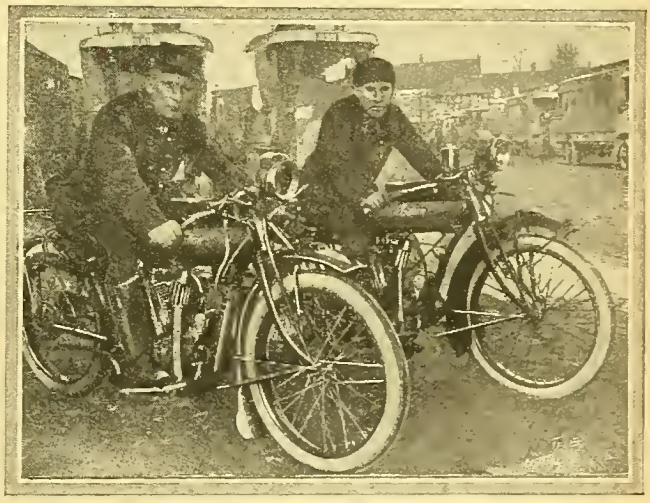
Physically unfit? Yes, but unfortunately I do not look it. I do not want a badge, because my own conscience is clear; but I write this letter in order to show how much juster it would be if we were all content to leave the obtaining of recruits to those whose work it is.

H.M.B.

Magneto Rear Lights.

Sir,—With reference to the remarks of "H 1227," I should like to inform him that my letters in your columns were not intended to give full details as to making the choking coil, but that these were in every case sent to those who wrote me for particulars. Two four volt (or 3½ torch) lamps can be used with every satisfaction connected in series, but as regards four volt Osrams, these must be of low candle-power, as the amount of current that can be taken from the magneto without affecting the ignition is strictly limited. The size of wire I recommended was gauge 26, and in my replies I stated that the amount of wire can only be found by experiment.

I am using two 3½ volt torch lamps in series on my Lea-Francis motor cycle, Bosch magneto. "H 1227" does not say whether he wound his wire closely and carefully or otherwise. SHAZBAZZIK.



Two French despatch riders attached to a convoy section of the French Army. Both are mounted on Indians, and the man on the left, L. Bertrand, who sends us the original photograph, says he has covered over 11,000 miles without an involuntary stop. The vehicles in the background are Paris motor 'buses, now used for transport work.

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Chain Adjustment.

I should be obliged if you could give me some information regarding a chain, in which some of the rivets seem to be tight. Should I take out the tight ones and put fresh ones in their place, or would it be quite all right to put bolts and nuts instead of rivets? I notice where there is a bolt and nut that one side of the chain is tapped for the screw. This, I presume, is to prevent slackening of the bolt and nut. I should imagine then that if I put a bolt and nut in place of a rivet I would either have to tap one side of the link or put two nuts on the bolt, one to act as a lock-nut.—J.C.M.

It is improbable that you will be able to fit bolts in place of rivets without reamering out the holes; it is also desirable to thread one link and screw the bolt in, putting a nut on the end, and hammering it to prevent the nut from shifting, which it is very likely to do. It is most unusual for a properly made chain to have tight links, owing to the reason you suggest. Are you sure they are not clogged with dirt? Really, your best plan would be to send the chain to the makers, unless you are a competent mechanic.

A Flooding Carburetter.

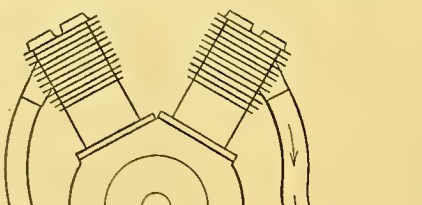
I have a 1909 3½ h.p. machine, and am experiencing some trouble with the carburetter. When the machine is travelling at medium speed, the petrol does not appear to get consumed fast enough; consequently, the float chamber floods considerably. It appears to work all right on top speed, but when slowing down a little the engine seems to lose more power than it really should do, and a quantity of black smoke is emitted; the last defect seems to me to be caused by having too much petrol on. If I fill the float chamber and then turn the tap off and start the engine it will run satisfactorily until the petrol is consumed, but if I turn the petrol tap on again, the engine still goes well until the float chamber gets full, and as soon as it starts to flood the engine loses power and finally refuses to fire at all.—T.K.

The trouble is probably due to the needle valve being bent or requiring to be ground in, as it does not shut off the supply when there is enough liquid in the float chamber. You can easily see if this is the case by examining the jet, turning on the petrol, and seeing if there is any overflow, and if so the needle valve clearly does not shut off the supply. Make sure, too, that the float is not punctured.

Various Questions.

Please answer the following questions: (1.) I have a 1912 2¾ h.p. motor cycle, and I find that when on the road a thin blue smoke is blown out from where the magneto is fixed on the crank case. How can I stop this? (2.) I have got your three books on motor cycles, but although I have read them I cannot find any definite explanation as to when piston rings are worn and need renewing. (3.) What speed should I get out of my machine on the level? (4.) What mileage should I get per gallon on average roads?—R.S.

(1.) It is unusual for blue smoke to come from the magneto. It is probable that there is a leak in the crank case joint here which allows the oil vapour to blow out. You should see that all the crank case bolts are done up tightly; if this does not stop it, the paper washer between the two halves of the crank case should be renewed. (2.) Piston rings need renewing when there is up and down play between them and their grooves, or when they have lost their spring—that is, fit the cylinder too easily. It is difficult to tell except by ascertaining whether the compression is leaking past them or not. (3.) The speed you obtain with your machine depends entirely upon the amount of tuning and adjustment which it receives; it is difficult to say exactly, but you should have no difficulty in touching 40 m.p.h., while this type of machine has been known to do well over 50 m.p.h. (4.) You should get at least ninety miles per gallon, and it is quite possible to obtain 120 and 130 under favourable conditions.



An ingenious idea of Gunner D. T. Austin Jones, of the M.M.G.S., for silencing the exhaust of a motor cycle engine. The exhaust gases are led to a form of turbine, which in rotating reduces the speed of the gases impinging upon the air at the exit. At the same time the rotating blades of the turbine do not, it is claimed, cause back pressure. Thus the silencer is very efficient.

A Heated Crank Case.

Will you please explain the overheating on the level (heavy roads especially) of a 2½ h.p. 1911 model when running at a speed of less than 20 m.p.h.? The crank case becomes very hot, and emits blue smoke from the release valve and the bearing of the magneto-shaft, which is slightly loose. I give plenty of oil, my weight is 10 stone, and the engine does 140 miles to the gallon.—J.B.C.

You need not trouble about the overheating unless the machine actually loses power. The crank case very often becomes hot merely through conduction. If, however, the machine is really showing signs of distress, this may be an indication that the rings are worn, and that the charge is getting past them. The remedy is then, of course, to fit new rings.

Motor Cycle Riding in Spain.

I should be extremely obliged if you could give me any particulars regarding motor cycling in Spain. Are the roads possible? What are the regulations as to registration, taxation, etc.? I am going to the North of Spain—San Sebastian, or that district—and thought of taking my sidecar outfit. Will the sidecar have to be on the right-hand side of the machine instead of left as here? If so, will this mean structural alteration to machine and sidecar? I should have a machine of 5-6 h.p., and I suppose this would take my passenger and myself anywhere in the country with three-speed gear.—R.H.C.

There is quite a reasonable amount of motor cycling done in Spain. The main roads are fair, in parts, especially in the North. Sidecars are admitted into Spain on payment of a duty of £1 19s. per cwt. There is no necessity to have the sidecar fitted to the off-side. To use the machine for one year in Spain you would have to have an International pass, which can be obtained at a cost of 10s. 6d. This does away with the necessity of having local licences. We should advise you to become a member of the Auto Cycle Union, if you are not one already; from it you will get the International pass. This would also do away with all difficulties about shipment, and it would give you the fullest possible information about the country, roads, maps, Customs facilities, etc. Petrol is dear—about 2s. 6d. per gallon.

Retreading.

[?] I had a pair of 26in. × 2in. covers retreaded by a well-known firm, who also relined them with canvas. After fixing the covers and blowing up tyres, I started on a run, and had only gone about 100 yards when the outer cover came off one side, the inner tube came out, and was fairly "chewed" up into scrap. I procured a new tube, fixed it, and set off again, and in a similar distance the same thing happened, but this time with the cover and tube on the front wheel. Now I am afraid to venture out again until I know the reason of the above happening and the remedy.—H.L.

It is very hard for us to account for the trouble with your tyre which you have experienced. We should recommend you to report the matter to the firm who carried out the retreading. It is possible that, through faulty treatment, your tyre may have become distorted or the bead damaged, so that it does not keep in place.

Shorting in Wet Weather.

[?] I have a 3¾ h.p. engine fitted with a Bosch magneto which has developed most unpleasant symptoms during very heavy rain. I got shock after shock, and then the engine finally stopped. I dried the h.t. wire, plug, and magneto, and then the machine went a few yards, and I again got shocks. I was an hour trying to get up a hill at 1 a.m.—not very pleasant I assure you. Where am I to look for and remedy the fault, for if the rain had not abated, I might have spent the night on the road? Another fault which the machine has had for some time, and is not in any way due to the rain, is that when running slowly and one opens the throttle quickly the engine knocks itself to pieces. Yet if one opens the throttle slowly it usually picks up. The carburetter is a Brown and Barlow latest automatic variable jet pattern. Does this knocking injure the engine? The bearings cannot be worn, as the engine was new four or five months ago.—R.M.

The trouble is probably due to bad arrangement of the high-tension wire. Perhaps this may be anchored up to the tank. The wet runs off the tank on to the wire, and thence down it right on to the plug. Owing to the wet, the insulation of the high-tension wire fails, with the result that there are shorts in every direction. If the magneto is of the waterproof type, it is unlikely that the wet has affected the magneto itself; if it is one of the older type, probably the magneto has become saturated with moisture, and it should be taken apart and stored in a warm room for a couple of days, but, of course, not subjected to extreme heat. The remedy is to dry the wire carefully, and fix it in such a way that shorts are not possible. The second trouble may be due to carbonisation. Clean off the carbon deposit, and see if the trouble still occurs. It is unlikely that the mixture is incorrect, but if you get further trouble after cleaning out the engine, write to the makers of your carburetter. Are you sure that the gear is not too high? Knocking is by no means good for the engine.

READERS' REPLIES.

Repairing a Tube.

In reference to the query on page 195 of the issue of the 19th ult. by "C.T." *re* repairing a tube, I have in the past had the same difficulty as experienced by him in making a patch stick on an inner tube. You recently illustrated in your paper a repair outfit known as Mustikon, and the only repair I have had to make since I secured this outfit was a nail puncture which had badly jagged the inner tube and necessitated cutting a piece out about half an inch in length. The repair was carried out in accordance with the instructions given in the booklet, and was most satisfactory, occupying a few minutes. The design of the rubber stud is such that I am sure the repair would be airtight even if solution were not used, and whatever heat the tyre may attain the stud cannot possibly be displaced.—H.R.M.

In the issue of the 19th ult. your correspondent "C.T." complains of the trouble he had in patching an inner tube. I recommend him to do away with all patches and adopt the Mustikon method of tube repairing. With this method I have never had the slightest trouble, even repairing permanently splits of 3in. in length.—P.S.L.

EXPERIENCE WANTED.

"B.V.H." (Bradford).—Sun-Vitesse. Speed and reliability.

"D.F.S." (Beckenham).—2½ h.p. two-stroke Metro. Speed, consumption, reliability, and comfort.

"H.P." (Yorks).—7-9 h.p. 1915 Indian, Model C, for solo and sidecar work. Consumption and reliability.

"G.G.H." (Leicester). — Air-cooled Morgan. Reliability, durability, consumption and hill-climbing.

ROUTES.

MANCHESTER TO PWLLHELI, and distance.—J.H.H.G.

Manchester, Frodsham, Chester, Hawarden, Holywell, Abergele, Conway, Bangor, Carnarvon, Clynnog, Pwllheli. Approximately 125 miles.

EPSOM TO HEREFORD.—H.E.R.

Epsom, Ewell, Surbiton, Kingston, Teddington, Hounslow, Heston, Southall, Uxbridge, Beaconsfield, Stokenchurch, Wheatley, Oxford, Eynsham, Witney, Northleach, Andoversford, Cheltenham, Ledbury, Hereford. Approximately 120 miles.

UPAVON (WILTS) TO BARMOUTH.—L.A.T.P.

Upavon, Marlborough, Swindon, Cricklade, Cirencester, Cheltenham, Tewkesbury, Upton, Malvern, Bromyard, Tenbury, Ludlow, Craven Arms, Montgomery, Llanfair, Dinas Mawddwy, Dolgelly, Barmouth. Approximately 180 miles.

HUDDERSFIELD TO COLWYN BAY: avoiding heavy traffic as much as possible.—A.S

Huddersfield, Holmfirth, Crowden, Glossop, Macclesfield, Holmes Chapel, Northwich, Chester, Hawarden, Holywell, Abergele, Colwyn Bay.

LEEDS TO CHEDDAR (SOMERSET); avoiding large towns as far as possible.—W.A.M.

Leeds, Methley, Doncaster, Tickhill, Worksop, Mansfield, Heanor, Derby, Burton-on-Trent, Lichfield, Coleshill, Stonebridge, Kenilworth, Warwick, Stratford-on-Avon, Broadway, Cheltenham, Painswick, Stroud, Nailsworth, Bath, Radstock, Wells, Cheddar. Approximately 220 miles.

MOTOR CYCLING IN THE CAPE PENINSULA.

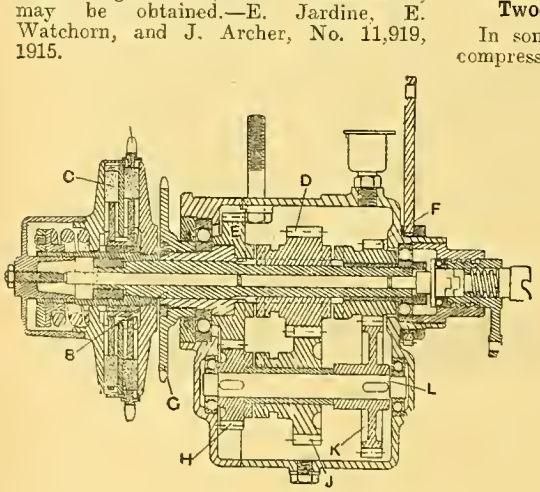
Hel's Hoogte, a test hill in the 112 miles trial of the Cape Peninsula M.C.C., reported on page 238. The picture shows A. Manchip (Enfield and sidecar) coming up steadily.

PATENTS.

By ERIC W. WALFORD

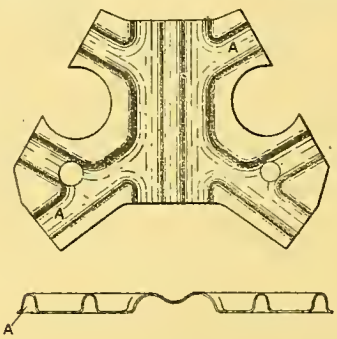
A Countershaft Gear Box.

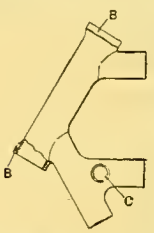
Power from the engine is transmitted to a chain sprocket A, which drives the main gearshaft B through a friction clutch C of orthodox construction. Upon the shaft B is mounted a spur gear wheel D, which cannot rotate in relation to the shaft, but is free to slide thereon to engage clutch dogs formed on either side with corresponding dogs on the spur gears E and F. Of these gears E is fixedly mounted on the sleeve which carries the sprocket G, whereby motion is transmitted to the rear wheel, whilst the gear F is revolubly mounted on the shaft B. The gears E D F engage corresponding gears on the layshaft L, those of H and L being keyed thereon, whilst the gear J is free to slide and also to rotate. Between the gears H and J are arranged dog clutch teeth, which may be moved into and out of engagement by the gear control mechanism. This comprises sliding forks M and N, carried by arms mounted upon a vertical spindle O. Movement of the forks is effected by a rotatable cam P, having slots suitably shaped to provide the required movement. When the clutch dogs on the gears E and D are engaged the main shaft is coupled to the driven sleeve, and the direct or top gear is provided. The bottom gear is afforded by engaging the dogs on the gears D and F, the drive being from the shaft B through the gears F K H and E. The intermediate gear is provided by releasing the gear D from both gears E and F and clutching the gear J to that H, the transmission then passing through the gears D J H and E. The specification also describes a modified form of operating mechanism, and a simple addition to the gear box whereby a fourth gear ratio, or a reverse drive, may be obtained.—E. Jardine, E. Watchorn, and J. Archer, No. 11,919, 1915.



Steering Head Construction.

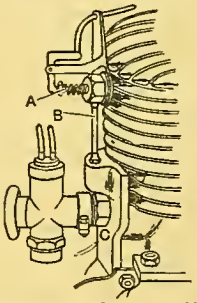
The steering head of a motor bicycle is usually a malleable casting, but the present invention suggests its construction from sheet metal by stamping or pressing. The drawings illustrate the head in various stages of the operation. The blank is first provided with depressions A, and is then folded over so that the depressions register and form the sockets for the frame tubes. The head then has strengthening rings B slipped upon it, and the various joints are completed by electric or acetylene welding. An eye C is formed during the process of manufacture to accommodate a sidecar attachment.—J. Sankey and Sons, Ltd., and A. P. Smith, No. 7,964, 1914.

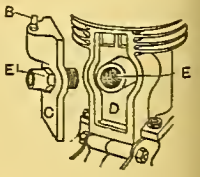


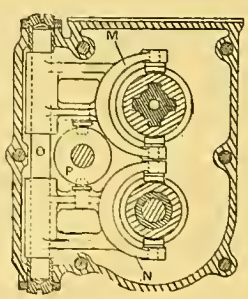


Two-stroke Compression Release.

In some two-stroke engines, when the compression release valve is opened, the gas is blown direct into the air, whilst in others it passes into the silencer pipe. In the present instance the released gas is conducted back to the crank chamber, passing, on its way, over the surface of the inlet pipe to which the carburetter is connected, and providing a heating effect. The release valve A is of the usual type, but admits the gas to a pipe B, the lower end of which is connected to a cover plate C, which encloses the transfer passage D. This cover plate has a tubular screwed connection E with the cylinder, and this tubular connection forms the inlet pipe, and the carburetter is attached to a spigot F. This forms a convenient construction, and enables the released gases, heated by contact with the hot cylinder, to warm the ingoing charge.—W. Murphy, No. 27,887, 1913.

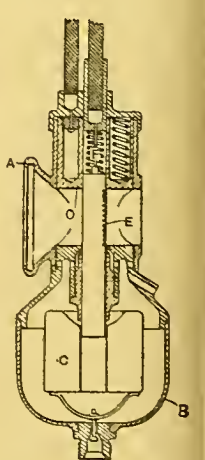






A Variable Jet Carburetter.

Beneath the carburetter body A is arranged the fuel chamber B, with a float C, which cuts off the supply of fuel at a certain level, as usual. The body A is provided with a piston valve D for regulating the flow of air through the carburetter, and the fuel is supplied to the air current through a perforated sleeve E, which slides in the throttle barrel controlled by a Bowden cable F, so as to open the desired number of perforations in the sleeve. The inventor also suggests that the sliding rod and piston valve might be interconnected so as to regulate the fuel with the air supply, or, alternatively, the air supply may be entirely automatic.—A. E. Coyne, No. 14,395, 1914.



MOTOR CYCLES FOR SALE.

Auto-Wheels.

AUTO-WHEEL, excellent condition; £9.—Morgan and Maxwell, The London Motor Mart, 80, High Rd., Streatham. [X4936

TWO Auto-Wheels, one 1914, one 1915, both almost new; £9 and £10/10.—Percy and Co., 337, Euston Rd., London. [1464

AUTO-WHEEL, 1914, with 3-speed bicycle, complete; £12.—18, Bellevue Gardens, Clapham Rd., Stockwell, S.W. [1883

WALL Auto-Wheel, second-hand, perfect order, overhauled by makers; £10.—Seen at 248, Bishopsgate, London, E.C. [9128

AUTO-WHEEL, just overhauled, perfect going order; £9/9; can be seen running any time.—Arthur Richmond, 43, Broadway, Walham Green, S.W. [2004

Bat.

3h.p. Bat, spring frame, new mag.; £10.—F. Walker, Weston Pt., Runcorn. [X5388

BAT-J.A.P., 1915, 5-6h.p., done 300 miles; reason for sale, going abroad; £58.—84, Earl's Court Rd. [1735

TWO 6h.p. Bats for sale, cheap.—Morgan and Maxwell, The London Motor Mart, 80, High Rd., Streatham. [X4957

T.T. Bat, 5-6h.p., 1914, 2 speeds, countershaft, in perfect order; £56.—Percy and Co., 337, Euston Rd., London. [1457

BAT-J.A.P. 7-8h.p. Combination, 2-speed, all accessories; 50 gns.; liberal deferred terms.—Lamb's, 151, High St., Walthamstow. [1781

8h.p. 1912 Bat, Montgomery sidecar, 1914 J.A.P. engine, Albion clutch, fast outfit, tyres and belt new, complete; £36/15.—14, Napier Rd., Luton. [1992

FOR Sale, 1913 5-7h.p. Bat-Jap engine, with wicker sidecar, in first-class order; price £45.—Apply, Arno, Golf Club, Luffenham, or Wheatley's Garage, Stamford. [X5418

BAT-J.A.P., 1914-15, 5-6h.p., 3-speed, F.E., sporting, grey, speedometer, lamp, horn, accessories, spares, perfect, new condition; £55 cash.—Perkins, Victoria Rd., Devizes. [1823

4h.p. Bat-Jap, spring frame, P. and M. 2-speed gear, new condition; £25.—Tuke and Bell, Ltd., Motor Department, Carlton Engineering Works, 599, High Rd., Tottenham, N. [1712

7-8h.p. Bat, 1913, 2 speeds, free engine, thoroughly overhauled by makers, made equal new in every respect, complete with lamp, horn, tools; price £55; only wants seeing.—Pullan and Son, Cirencester. [X5371

Bradbury.

BRADBURY, 4h.p., 1913, Philipson and Binks, and F.E., perfect; £28.—Rackley, 12, Corn St., Witney. [1919

BRADBURY, 1915 models; lists free.—Agents, Bright and Hayles, Church St., Camberwell. [1972

1914 4h.p. Bradbury, chain drive, 2-speed, handle-bar control clutch, kick start, splendid condition; £36.—B. Kerswell, Fairfield, Exeter. [1794

BRADBURY, 1912¾, 4h.p., 2-speed, kick-start, all on, very good condition, £26; coachbuilt sidecar, £6.—43, Woodside Green, South Norwood. [X5529

BRADBURY Combination, 1912¾, 2-speed, F.E., countershaft, speedometer, lamp, accessories, fast; £32, or near offer.—28, Homerton Row, Homerton. [1731

1912 (September) Bradbury, 3½h.p., with sidecar, free engine, 3-speed, lamps, spares, very reliable, tyres and tubes, as new; £32/10.—Lawson, Holly Villas, Snibstone, Ashby-de-la-Zonch. [1895

Brown.

3½h.p. Brown, spring forks, Grado gear, new belt; cheap.—G.O., 10, Vanban St., Spa Rd., Bermondsey. [X5382

BROWN, 3½h.p., good puller, little adjusting required; real bargain, with sidecar, £13/10.—17, Goldhawk Rd., London, W. [2013

10-12h.p. Brown Touring Car, 4-seater, dual ignition, new Binks, perfect, completely equipped; £55.—Reilly, 215, Overgate, Dundee. [X5032

BROWN, 1912, 3½h.p., 2-speed and free, tyres good, Saxon forks, coachbuilt sidecar, lamps; bargain, £28/10.—71, Coleridge Rd., Crouch End. [1893

BROWN, 6-8h.p., with sidecar, powerful twin, 1911 model, 2 speeds, free engine, smart turnout; £28, offers.—Speechley's, 45, Church Rd., Acton. [X5565

BROWN 6h.p. T.T. Twin (all red) and wicker sidecar, fast and powerful, any trial; 29 gns., no offers. 'Phone: 2180 Streatham.—Benn, 7, Sunnybill Rd., Streatham, S.W. [2029

B.S.A.

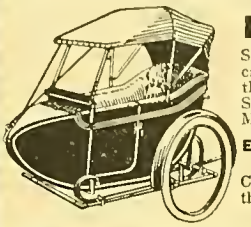
B.S.A., 1913, 3½h.p., engine in splendid order; £28.—V. Bull, Waterbeach, Cambs. [X5415

1914 B.S.A. 4¼h.p. 3-speed Motor Cycle and sidecar, equal to new.—R. Urmston, King St., Leigh. [X5336

1913 2-speed B.S.A. and sidecar, in fine condition, lamps, horn, etc.; £40.—Jones, The Broadway, Muswell Hill. [2009

CORONET Sidecar Chassis

is designed for long life, and has a wonderful reserve of stability, and is safe on greasy roads. Luggage carrier built into frame. Cannot shake loose, and is a boon when touring.



From £6 6s.

Send for illustrated catalogue describing these well known Sidecars. Several Models.

Easy Payments or Exchanges.

Can be supplied through any dealer.

We can give immediate delivery of all models, and suitable for any make of machine.

WE CAN DELIVER FROM STOCK

THE WORLD'S RECORD MACHINE.
THE WORLD'S V A L U E MACHINE.

We will make a special allowance for your machine in part payment. Write for terms, as we are large contractors.

7-9 h.p. Harley-Davidson.

The most improved sidecar machine made. Fitted with automatic mechanical oil pump like a car, 3-speed sliding countershaft gear, fool-proof, both hand and foot control to clutch, spring seat, 3in. tyres, silent running engine, will just tick over when in free engine, double stem handle-bar made from rolled cold steel, carrier one steel stampiag, spare petrol tank; in fact, refinements not found on any other machine. Full detailed catalogue upon application.

PRICE—7-9 h.p., 3-speed model **£68 5**
ditto, ditto, electrically equipped **£76 13**

You cannot beat us on exchanges. Yorkshire dealers supplied.

Coronet Sidecars for Harley-Davidsons.

We make a special Sidecar, enamelled French grey to match, 28 × 3in. tyre, apron to cover entire body, and fourth point attachment **£13**

BOOTH'S BIG BARGAINS.

4½ h.p. **JAMES,** 1914, 3-speed, kick starter, complete with Sidecar **£49 10**
6 h.p. **REX,** 1912, 2 speeds, complete with new coach Sidecar **£33 10**
7-9 h.p. **HARLEY-DAVIDSON,** 1915, 3-sp. model with coach Sidecar to match, nearly new **£72 10**
2 h.p. **CALTHORPE** Lightweight, 1914 model, Precision engine, countershaft 2-speed gear, easy starter, nice condition **£18 10**
3½ h.p. **N.S.U.,** 1914, twin model, 2-speed, with coach-built Sidecar, all finished red **£30 0**
2¼ h.p. **VELOCETTE,** 1915, 2-stroke model, 2-speed gear, nearly new **£28 10**
3 h.p. **LINCOLN-ELK,** 1910 model, M.O.V., magneto, B. & B., h.-b. control, enamel and plating in splendid condition **£12 15**
8 h.p. **CHATER-LEA,** 1912, J.A.P. engine, 3 speeds, complete with coach Sidecar **£48 10**
8 h.p. **BRADBURY** Tricar, water-cooled, open frame, 2 speeds, magneto, coach-built, spare tyres and tubes **£18 15**
4 h.p. **BRADBURY,** 1911, 2-speed gear, complete with Sidecar **£30 0**
3½ h.p. **L.M.C.,** 1913, countershaft gear .. **£25 0**
3½ h.p. **REX,** 1909 Millennium 2-speed .. **£18 10**
MOTOSACOCHE Lightweight, magneto .. **£8 15**
6 h.p. Twin **REX,** spring forks **£11 10**
6 h.p. **ENFIELD** Com., coach Sidecar; little worse than new **£59 15**

MISCELLANEOUS.

New Trouser Overalls, usually £1 ..... **12/6**
Brand New Waterproof Magneto **£3 15**
New Accumulators, 10 amps. **6/11**; 40 amps **12/6**
New 21/- Glare Brass Electric Tail Lamp . **4/11**
New 2 h.p. Gray Stationary Petrol Engine, electric ignition, 2 flywheels **£10**

BOOTH'S MOTORIES,

PORTLAND PLACE, SKIRCOAT ROAD,

HALIFAX.

'Phone 1062. Close at 6 p.m.

MOTOR CYCLES FOR SALE.

B.S.A.

B.S.A., 1915, 4h.p. countershaft models, August delivery guaranteed.—Layton's Garage, Bicester, Oxon. 'Phone: 35. [X5489

B.S.A., 1913, 3½h.p., T.T. model, very good and reliable machine; £30.—Layton's Garage, Bicester, Oxon. 'Phone: 35. [X5490

FOR Sale, motor bicycle, B.S.A., 3½h.p., T.T., engine just completely overhauled by makers; £27.—Box 9,179, *The Motor Cycle* Offices, Coventry. [X5623

B.S.A., 1913½, 3½h.p., 2 speeds, F.E., lamps, horn, speedometer (5,200), Milliford coachbuilt sidecar, perfect order throughout; £48.—Lloyd, Surveyor, Spalding. [X5027

B.S.A., August, 1912, 3½h.p., 2 speeds, free engine, complete set of tools and accessories, Bosch, B. and B., splendid condition; £30 cash.—Tompson, Mayfield, Tamworth. [X5344

B.S.A. 1914 4¼h.p. Combination, Model H., chain drive, 3-speed countershaft gear, kick starter, lamp, horn, spares, 2 new tyres; £55.—Petheram, 20, Coronation Rd., Bridgwater. [X5338

B.S.A., 1912, 3½h.p., 2-speed, 1913, 12 gn. Bramble sidecar, Cowey speedometer, P. and H. lamp and electric rear light spare belt and valve; £40.—Passey, 230, St. Albans Rd., Watford. [1791

B.S.A. 2-speed and sidecar, 1912, all accessories, guaranteed perfect and reliable, good beginner's proposition, £37/10; another, £42/10.—Leighton's, opposite Wood Green Station. [1983

B.S.A., 1912, 3½h.p., free engine, coach sidecar, Cowey speedometer, 2 lamp sets, Garner exhaust whistle, full kit, ready ride away; £35; call Sunday.—Sales, 25, Cambray Rd., Balham. [1977

1915 B.S.A., 4¼h.p., 3-speed countershaft, all chain drive, with sidecar costing £15/15 to match, perfect condition, only ridden 10 weeks; owner bought car; £63.—Workman, 32, Bath Row, Birmingham. [X6319

1914 T.T. B.S.A., Lucas lamp, horn, numerous accessories, run 3,000, condition perfect; expert examination invited; one of the fastest machines on the road: 40 gns.—Thursby, Harrison St., Barnoldswick, via Colne. [X5563

1915 B.S.A., 4¼h.p., 3-speed, countershaft gear, clutch, kick starter, chain-cum-belt, lamp (£2/15), horn (£1/1), only done a small number of miles, excellent condition; £58/10.—Clayton, Church Terrace, Berriew, Montgomeryshire. [X5470

B.S.A. 1915 Combination, 4¼h.p., chain drive, 3-speed countershaft gear, kick-starter, 3 electric lamps and Van Raden accumulator, Lucas horn, wind screen; cost £85 May, take £65; going abroad.—Wilkes, 102, Bath Row, Birmingham. [X5532

Calcott.

CALCOTT, 2½h.p., 1911¾, good going order, recently overhauled by makers, new tyres, spares.—Fowke, 10, St. Stephen's Gardens, Twickenham. [1715

Calthorpe.

CALTHORPE 2-speed 2-stroke Models from stock; generous deferred payments.—Lamb's, 151, High St., Walthamstow. [1772

CALTHORPE 1915 latest 2-speed lightweight models in stock; cash or exchange; no waiting.—Eagles and Co., High St., Acton, W. [X5456

CALTHORPE Motor Cycles, J.A.P.'s and 2-strokes, from £27/14; send for list and easy payment terms.—Storey's, 118, Gt. Portland St., W [0647

CALTHORPES.—Any of this famous trio delivered from stock; extraordinary value.—Agents, Colmore Depot, 31, Colmore Row, Birmingham. [X3026

CALTHORPE Junior, 2-speed, as new, only done a few hundred miles; cost £28, bargain, £22; after 4 o'clock.—441, Brighton Rd., South Croydon. [1768

CALTHORPE-J.A.P., 1915½, 2¾h.p., mileage 750, lamps, horn; £32; condition excellent; buying combination.—Lieut. Elliott, 6, Boundary Rd., Chatham. [1818

1915 Calthorpe-J.A.P., 2-speed and clutch, £34/15; also 2¼h.p. 2-stroke, 2-speed, 35 gns.; delivery from stock; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6409

CALTHORPE-J.A.P., 2¾h.p., Enfield 2-speed and free engine, Senspray, Dunlop and Moseley tyres, P. and H. lamp and rear light, long horn, and accessories, all good condition, nearly new; £30.—Madgwick, Portsmouth Rd., Hindhead, Surrey. [X5472

Campion.

CAMPION-J.A.P., 1912-13 model, 6h.p. twin, 2 speeds, free engine, fine machine; bargain, £28.—Speechley's, 45, Church Rd., Acton, London. [X5564

1914 Campion-Jap, 8h.p., Jardine 3-speed, Cairns 2-seater sidecar, speedometer, 2 lamps; cost £107 nett; run under 4,000 miles, absolutely perfect; £75.—Elliot, Jeweller, Fleetwood. [X5476

Centaur.

CENTAUR, 3½h.p., 2-speed, free, perfect; £30.—70, Evering Rd., Stoke Newington. [1942

3½h.p. Centaur, mag., powerful machine; £12.—Nicholls, 35, Nelson Rd., South Chingford. [1730

MOTOR CYCLES FOR SALE.

Chater-Lea.

NEW Chater-Lea 2-stroke Lightweights, £38/6/6; immediate delivery from stock.—Wauchope's, 9, Shoe Lane, London. [X5444

8h.p. Chater-Lea, No. 7, 3-speed, coachbuilt sidecar, screen, hood, new tyres all round; genuine bargain, £50, no offers.—7, Dorville Rd., Lee, S.E. [1654

1913½ Chater-Lea 8h.p. Coachbuilt Combination, complete with accessories, spares, 2 carrier seats; offers.—Mann, 61, West Ferry Rd., Milwall, E. [1698

1912 Chater-Lea No. 7, 1915 Gloria Projectile sidecar, hood, metal screen, Jones trip, watch, 3 lamps, 2 spare covers, tubes, £60.—48, Audley Rd., Hendon. [1796

1914 Chater-Lea 8h.p. Coachbuilt Combination, hood, screen, complete accessories, perfect condition; £70, cost £110.—Walsh, 119, Pepys Rd., Wimbledon. [1824

CHATER-LEA, late 1912 and 1914, coachbuilt sidecar, 6h.p. J.A.P. engine, re-bushed and new pistons this season, 3-speed, new Kempshall tyre back, front and side good condition, lamps, wind screen, spares, all in splendid condition; £48.—Pleasant, 89, Crayford Rd., Tufnell Park, N. [1981

Chater-Lea-Antoine.

4h.p. Chater-Antoine, Albion clutch, Rushmore head lamp; £22, or near offer.—54, Trueman St., Liverpool. [1694

Chater-Jap.

CHATER-J.A.P. 6h.p. Twin Combination, 2-speed, P. and M., chain drive, cane sidecar, lamps and generators, Rom tyres, perfect condition; bargain, £45. S.E. district.—Box L1,244, *The Motor Cycle* Offices, 20, Tudor St., E.C. [1738

Chater-Peugeot.

5-6h.p. Chater-Peugeot, speed gear (Matchless), and C.B. underslung sidecar, all modern fitments; £30, or exchange.—13, Footscray Rd., Garden Village, New Eltham. [1835

Clyno.

CLYNO, 1914, 2-stroke, all accessories; £23.—Lindfield, 93, High St., Crawley, Sussex. [X5347

CLYNO 1914 6h.p. Combination, elegant turnout; £64.—11, Luna Rd., Thornton Heath. [1862

1913 Clyno and Sidecar, lamps, horn, tools, spares, splendid condition; £45.—50, Clapham Rd., S.W. [1885

CLYNO 6h.p. Combination, perfect condition, and accessories; £45.—Leighton's, opposite Wood Green Station. [1936

CLYNO Combination (1913), perfect running order, spare wheel, new Rom tyre; quick sale £47/10.—Wippell Bros. and Row, Exeter. [1941

CLYNO Combination, late 1913, 6h.p., 3 speeds, kick starter, coachbuilt sidecar, 4 detachable wheels, tip-top order; £50.—Percy and Co., 337, Euston Rd., London. [1458

1914 Clyno Combination, low mileage, perfect condition, 2 head lamps, speedometer, spare wheel, etc.; £70.—Readhead, Swanley Villa, Beacon Rd., St. Peter's, Thanet. [1508

CLYNO 6h.p. Coachbuilt Combination, purchased 1913, condition first-class, fully equipped, speedometer, watch, whistle, special carrier seat, etc.; £45. —117, Victoria Park Rd., South Hackney, N.E. [2020

CLYNO 1914 6h.p. Combination, with No. 6 sidecar, 3-speed countershaft, kick starter, perfect condition, little used, spare wheel, speedometer, good lamps, tyres good condition, thoroughly overhauled; 65 gns.—Finney, 140, King St., Hammersmith, London, W. [1670

Connaught.

CONNAUGHT, 1914, 2-stroke, 3-speed, clutch starter, Watsonian coachbuilt sidecar, excellent condition; £38, cost £56.—7, Hampton Rd., Ilford. [1678

De Dion.

DE DION, 2¾h.p., Druids, enclosed mag., minus handle-bars; £10; will sell parts.—Laybourn, Wolsingham, Co. Durham. [X5466

Dene.

DENE Motor Cycle and Sidecar, 3½h.p., 3 speeds, free engine, fine condition; £48.—Apply, West, Station Approach, South Shields. [X5644

Douglas.

DOUGLAS, 2¾h.p., T.T., 2-speed, 1914, as new; £42.—Fairhead, Nurseries, Colnbrook. [X5635

1911 Douglas, sloping tube, Amac; bargain, £11.—67, Lower Addiscombe Rd., E. Croydon. [1802

1915 Douglas, 2¾h.p., W, in stock, new; £54.—Moffat, Douglas Agent, Yeovil. Tel.: 50. [9203

1912 2-speed Kick Start Douglas, splendid condition; £28.—Reeves, Yels, Wellingborough. [X5530

DOUGLAS, 1911, lamp, generator, good running order; £18.—Campbell, The Vents, Cranbrook. [1758

DOUGLAS, 2¾h.p. to 10h.p. models.—Gourlay, the great Douglas agent, Fallowfield, Manchester. [4241

DOUGLAS, 1914, model W, little used, all spares; £42/10.—Laybourn, Wolsingham, Co. Durham. [X5464

NEW MODELS.

ALLON, 2½ h.p., 2-speed, 2-stroke	£38 17
INDIAN, 5 h.p., 3 speeds, semi-T.T.	£63 0
ENFIELD, 3 h.p., twin, 2-speeds, T.T.	£52 10
SUN-VILLIERS, 2½ h.p., 2-str., single-speed	£27 11
INDIAN, 7 h.p., clutch T.T. model	£57 0
REX, 6 h.p., 1914, Combination, 2-sp., new	£70 0
JAMES, 3½ h.p., twin, 3 speeds, all-chain	£66 6
SUN V.T.S. engine, 2 speeds	£37 9
JAMES, 4½ h.p., 3-speed, Combination	£80 0
HENDERSON, 4-cylinder, 2 speeds	£81 18
HARLEY-DAVIDSON, 7-9 h.p., 3 speeds	£68 5
NEW RYDER-J.A.P., 2½ h.p., fixed gear	£30 19
J.H., 3½ h.p., T.T. model, M.A.G. engine	£55 10

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SIDECAR OUTFITS.

B.S.A., 3½ h.p., 2-speed, cane Sidecar	£41
HARLEY-DAVIDSON, 1915, 7 h.p., 3 speeds, all accessories	£71
BAT, 1913, 6 h.p., 3 speeds, coach Sidecar	£53
INDIAN, 1915, 5 h.p., 3 speeds, Sidecar, only done 200 miles	£76
ENFIELD, 1913, 6 h.p., 2 speeds, as new	£55
DOUGLAS. 1914, 3½ h.p., 2 speeds, Canoelet sidecar, speedometer, three lamps, horn, disc wheels, outfit like new throughout	£69

SOLO MOUNTS.

DOUGLAS 2¾ h.p., single-speed	£16
RUDGE, 1912, 3½ h.p., clutch model	£28
BROUGH, 1915, 3½ h.p. twin, 3 speeds	£54
TRIUMPH, 1914, 4 h.p., 3 speeds	£52
DOUGLAS, 1914, 2¾ h.p., 2 speeds, T.T.	£46
HOBART, 1915, 2½ h.p., 2 speeds, as new	£33
HOBART, 1915, 2½ h.p., as above	£32
TORPEDO, 1913, 2 h.p. Precision engine, 2 sp.	£25
F.N., 1912, 2½ h.p., 2 speeds, shaft drive	£24
TRIUMPH, 1913, 3½ h.p., 3 speeds, fine order	£46
BAT, 1915, 8 h.p., 3 speeds, spring frame	£60
CLYNO, 1915, 2½ h.p., 2 speeds, T.T.	£36
DIAMOND, 1914, 2¾ h.p., 2 speeds, accessories	£37
TRIUMPH, 1910, 3½ h.p., clutch model	£29
TRIUMPH, 1913, 3 speeds, excellent order	£47
ZENITH, 1913, 3½ h.p., Gradua gear, and clutch	£40
ROVER, 1914, 3½ h.p., 3-speed, T.T. model	£49
NEW HUDSON, 1915, 2½ h.p., 2-speed, 2-stroke	£34

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MOTOR CYCLES FOR SALE.

Douglas.

DOUGLAS, 1914, 2¾h.p., 2-speed, model W, lamhorn; £43.—Golding, Market Place, St. Ives, Hunt [179

1915 Brand New Douglas, model V; £50; only on —Jones, Anglesey Motor Mart, Llanfairpwll. [X463

DOUGLAS, 1912 £26, 1913 £33; both in perfec order.—Percy and Co., 337, Euston Rd., Londo [145

DOUGLAS, 1915, model U, 3-speed, in stock, new £52/10.—Moffat, Douglas Agent, Yeovil. 'Phone 50. [161

DOUGLAS, 1914, clutch, 2-speed, speedometer, lamp new condition; £43/10.—11, Luna Rd., Thornto Heath. [186

DOUGLAS, T.T., 1910, very fast and good cond tion; £22/10.—Leighton's, opposite Wood Gree Station. [199

DOUGLAS, 2¾h.p., 2-speed, new, all accessories £48; exchange B.S.A. or Triumph.—Spencer Kingston. [183

DOUGLAS, 1914, 2¾h.p., 2-speed, in excellent run ning and condition; £40.—J. Cowsill, Lyme Grov Altrincham. [X552

2¾h.p. Douglas, 2 speeds, kick starter; £38.—Morga and Maxwell, The London Motor Mart, 80, Hig Rd., Streatham. [X493

DOUGLAS 1913 and 1914 second-hand machines i stock, £28 to £43.—Turpins, 22 and 29, Presto Rd., Brighton. [071

DOUGLAS, 1913¾, 2-speed, clutch, kick starter, full equipped, like new; £38.—18, Kimberley Rd Upper Edmonton. [175

DOUGLAS, extraordinary good, late 1914, 2-speed all accessories; £43. — Bartter, St. James Rd Kingston-on-Thames. [181

DOUGLAS, 1915, model U, V, and W in stock Tel.: 388. T.A.: Bicycles.—Robinson's Garage Green St., Cambridge. [686

DOUGLAS, 1915, 2¾h.p., War Office all blac model, 2-speed, T.T.; delivery from stock; £5 plus 5% increase.—Below.

DOUGLAS, 1914, 2¾h.p., T.T. model, 2-speed gea speedometer, lamp set, horn, and tools, long ex haust pipe; £42.—Elce and Co., 15, Bishopsgate Av Camomile St., E.C. [055

DOUGLAS, the world's best and British.—Write u your requirements. — Gibb, Gough, Dougla Specialists, Gloucester. [X353

DOUGLAS, 2¾h.p., 1910, running order, fully guaranteed as new, re-plated; bargain, 16 gns.—15 Grenville St., Stockport. [X549

DOUGLAS, 1913, 2¾h.p., T.T., 2-speed, spare bel tube, tyre, tools, lamp, horn; £32.—Lieut. Taylo Fort Stamford, Plymouth. [X541

DOUGLAS.—All models from stock from sole whole sale and retail Midland agents, Colmore Depot, 31 Colmore Row, Birmingham. [X303

£43.—Semi T.T. Douglas, splendid machine, purchase early this year, practically unused, lamps, and a cessories.—1, Montserrat Rd., Putney. [171

4h.p. Douglas, 1915, 3-speed, almost new, n scratched, 2½in. tyre; £53.—Gardner, Sherington Newport-Pagnell; also 46, Paternoster Row, London. [196

DOUGLAS, 1914, 2¾h.p., T.T. model, lamp se horn, Watford speedometer, knee grip, excellen condition; private owner; £40.—The Morris Garage Oxford. [X560

DOUGLAS, 1914¾, T.T., speedometer, lamp se knee grips, little used, in splendid condition £43, no offers.—Lawrence, 30, Harriet Mews, Sloan St., Knightsbridge. [187

DOUGLAS, 2¾h.p., 1914, T.T. model, 2-speed, tyre good, very fast, head and rear lamps, wit separate generators; £38 cash.—The Isle of Purbec Garage, Swanage. [X564

1914 Douglas, 2¾h.p., 2-speed, clutch, kick starter Amac carburetter, head light, generator speedometer, horn; £45.—Write, Rex Mundy, 1 Grafton Mews, Warren St., W. [250

DOUGLAS, War Office model. Special feature Write for further particulars and illustrate pamphlets. T.A.: Bicycles. Tel.: 388.—Robinson Garage, Grecn St., Cambridge. [686

DOUGLAS.—Delivery from stock.—See the latest military model.—Place your requirements befor the sole wholesale and retail district agents, The Co more Depot, 31, Renshaw St., Liverpool. [180

DOUGLAS, 1913, 2¾h.p., 2-speed, kick-starter mode new Watford 4 gn. speedometer, Lucas lamp se horn, spare belt, new tyres, perfect condition throughout; £38.—The Morris Garages, Oxford. [X560

DOUGLAS, 1914, 2¾h.p., model U, Watford speed meter, Lucas horn, handle-bar mirror, spare tu in case, rear light, had little use, original tyres, almost new condition; £42.—The Morris Garage Oxford. [X560

1914 Douglas W, 2¾h.p., 2-speed, clutch, kick starte Xl'all back-rest saddle, Binks 1915 carburette Lucas horn, Stewart trip speedometer; £47/10, co over £60.—Edwards, Guildford Lodge, Clarendon Rd Watford. [170

All letters relating to advertisements should quote the number at the end of each advertisement, and the date of the issue

MOTOR CYCLES FOR SALE.

Humber.

1913 2¾h.p. Humber 4 T. Twin, 3 speeds, clutch, practically new; any examination; £26, offers.—Empson, Gamlingay, Sandy. [1792

HUMBER, 1912, 3½h.p., 2 speeds, powerful and fast, perfect condition; lowest £24.—Dell, 21, Birkbeck Rd., Newbury Park, Ilford. [X5400

HUMBER, 1912, 3½h.p., 2-speed, coachbuilt sidecar, splendid running order; £35, or nearest offer.—Duke, Clothier, Caterham Valley. [X5520

HUMBER Motor Cycle and sidecar, good running order, just overhauled; £35, or offer.—Apply, B. Riley, King's Head Buildings, Coventry. [X5341

HUMBER, 1912, 3½h.p., handle starter, coachbuilt sidecar, splendid condition; £36.—Moules, Lynmouth, Gammon's Lane, Watford, Herts. [X5378

HUMBER, 1915, 3½h.p., 3-speed, F.E., in stock; price £57/10, plus 5% advance by makers.—Robinson's Garage, Green St., Cambridge. [6866

2h.p. Lightweight Humber, new engine last June, Bosch mag., new belt, good tyres; £14; will ride 50 miles to cash buyer.—A. Davis, Tibberton, near Gloucester. [X5521

HUMBER, 1912½, 3½h.p., Roc 2-speed, free engine, handle starter, all accessories, in excellent condition, fine sidecar machine; £32, no offers.—G.S., 70, Terrace Rd., Upton Manor, E. [1746

HUMBER Lightweight, 2h.p., mag., B. and B.; price £13, or exchange with cash for new or late 2-stroke lightweight; Birmingham district.—Box 9,173, *The Motor Cycle* Offices, Coventry. [X5260

1915 Humber, 6h.p., opposed water-cooled, 3-speed, and sidecar, speedometer, lamp and generator, condition as new (only done 600), property of an officer; £85.—H. P. Moore and Sons, Bridge St., Andover. [1897

HUMBER, 1914, 3½h.p., 3-speed, coach sidecar, wind screen, spare belt (new), tube, accessories, 3 lamps, insurance till May; £46, or near offer.—29, Dalberg Rd., Brixton. Seen at 336, Coldharbour Lane, Brixton. [X5404

3½h.p. Humber, 2-speed, F.E., handle starting, smart featherweight Phœnix sidecar, just overhauled, most reliable mount, good tyres, Rom studded back; £24; exchange solo; seen any time; photo.—1, Kennard St. North Woolwich, E. [1674

Indian.

INDIANS, models B. and C. from stock.—Lamb's, 151, High St., Walthamstow. [1774

1915 5h.p. Twin-cyl. Indian; immediate delivery; £63.—Parker and Son, St. Ives, Hunts. [2016

INDIAN, 1912, 7-9h.p., 2-speed, Gloria cane sidecar; £40.—63, Chapel Rd., Sale, Manchester. [X5571

INDIAN, 7-9h.p., and Brownlow sidecar, very fast; bargain, £30.—Farrell, 34, Lowerhead Row, Leeds. [X5525

TWIN Indian, 2-speed, clutch; any trial; £35.—43, Woodlands St., Cheetham Hill, Manchester. [X5589

1911 Indian, 5h.p., 2-speed, free, good condition, fast and reliable; £32, or exchange.—Taylor, Harker, Carlisle. [X5517

INDIAN, 5h.p., clutch model, good condition, lamp, horo, etc.; £30.—Adams, 21, Market Parade, East Finchley. [1727

1914 2-speed 7-9h.p. Indian and sidecar, lamps, horn; bargain, £55.—Jones, The Broadway, Muswell Hill. [2008

7-9h.p. Red Indian and Montgomery sidecar, electric lighting; £55.—Morgan and Maxwell, 80, High Rd., Streatham. [X4935

1914 7-9h.p. Indian, 2-speed, electric lamps, horn, good condition, 3,500 solo only; £52/10.—Nias, Porthcurno, Cornwall. [X5478

INDIAN, 1915, 7-9h.p., 3-speed, electrically equipped, coach sidecar, scarcely used; £70.—H. Wareing, 182, Portland St., Southport. [X5533

1915 Indian, 5h.p., 3-speed, kick starter, perfect condition, done 300 miles; £52, cost £63.—Clark, Rainsford House, Chelmsford. [X5031

RED Indian, 7h.p., 1913, complete with Montgomery De Luxe sidecar costing £110, £42.—Hazlewood, 11, Selly Park Rd., Birmingham. [X5320

INDIAN 1914 T.T., 7-9h.p., clutch model, very fast, guarantee sound; £43, carriage paid.—Macrae, and Telfree, 2, Castle Terrace, Edinburgh. [1961

1915 Indian, model B., 3-speed, done about 200, lamps, horn, etc., better than new; £59/10.—Jones, The Broadway, Muswell Hill. [2010

INDIAN, 7h.p., powerful, 1912, 2-speed, clutch, Millford sidecar, very roomy, new tyres; real bargain, £40.—Mills, Slades Green Station, Erith. [1795

INDIAN, 1914, 7-9h.p., 2-speed, spring frame, electric equipment, speedometer, perfect condition; £46.—A. E. Hart, 12, Nansen Rd., Lavender Hill, S.W. [1876

INDIAN, 7h.p., 1913, 2-speed, spring frame, lamps, horn, speedometer, good order; particulars on application; £35.—Box 9,174, *The Motor Cycle* Offices, Coventry. [X5257

INDIAN, 1915, 5h.p., 3-speed model; £63; delivery from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. 0/17

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2¾ h.p. CALTHORPE-J.A.P., 2-speed	£36	15	0
2¾ h.p. Lady's COMET, 2-stroke, 2-sp.	£33	1	6
2¾ h.p. EXCELSIOR, 2-stroke	£30	16	0
MILLFORD Corvette, coach-built	£13	13	0
ROVER Sidecar, coach-built	£16	16	0
TAYLOR'S oxy-welded, coach-built Sidecars, with luggage grids for Harley-Davidsons, from	£15	15	0

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1914 8 h.p. ZENITH, countershaft, coachbuilt	65 0	28 0	71/8
1913 6 h.p. REX 2-speed Combination	40 0	10 0	53/9
1914 2¾ h.p. DOUGLAS, 2-sp., and accessories	39 10	19 10	36/-
1915 2¾h.p. CALTHORPE-J.A.P., run 700 miles	22 10	7 10	26/10
1914 6 h.p. A.J.S. Combination, fully equipped	72 0	22 0	89/7
1911 3½ h.p. ZENITH, Gradua gear, & Sidecar	29 10	9 10	35/10
1915 3 h.p. ENFIELD, twin	46 0	—	—
1915 6 h.p. SUNBEAM Combination, many extras, cost £140, six weeks old	120 0	—	—
8 h.p. 1913 HENDERSON, 4-cyl., 2-sp., very fast	86 0	26 0	53/9
Forecar for same	12 12	3 3	16/11
2¾ h.p. DOUGLAS, 1914, T.T., fully equipped	39 10	10 10	51/11
2¾ h.p. 1915 ALLDAYS-MATCHLESS Combin'n	38 0	—	—
6 h.p. 1913 A.J.S. and Millford Sidecar, fully equipped	60 0	—	—
2¾ h.p. 1915 A.J.S., fully equipped	50 0	—	—
4 h.p. 1914 TRIUMPH, clutch, and Philipson's pulley	46 0	—	—

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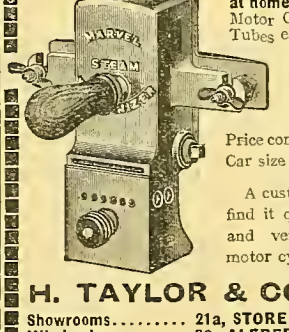

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MOTOR CYCLES FOR SALE.

Indian.

INDIAN.—Delivery of all 1915 models from stock. We are large contracting agents for these machines, and can offer best deliveries.—The Morris Garages, Oxford. [X5608

INDIAN, 1913, and sidecar, 7-9h.p., 2 speeds, speedometer, head, rear lamps, beautiful condition, perfect order, only used Thursdays; £52/10.—Riding, Crookes, Sheffield. [1872

INDIAN, 1914 Hendee Special, electric starter, lamps, and horn, speedometer, with 20 gn. sidecar, one of the smartest, mileage 1,600; £70.—Longman Bros., 1, King St., Acton. [1866

1914 7-9h.p. Hendee Special, electric starting and lighting, with De Luxe sidecar, 3 electric lamps, complete kit, guaranteed perfect; £65.—Apply, 24, Fields Rd., Newport, Mon. [1871

1915 Indian Combination, 7h.p., full equipment extras, hood, screen, grid, 1,000 miles, carefully used.—Particulars and price to Box No. 9,185, *The Motor Cycle* Offices, Coventry. [X5551

INDIAN, Hendee Special, 7-9h.p., with 20 gn. Millford coach sidecar, dynamo lighting and starting, practically new, only done 1,200 miles; cost over £100, accept £67.—Broad, High St., Esher, Surrey. [X5296

INDIAN, 7-9h.p., 1915, electric lighting, 3-speed gear, fitted with Gloria sidecar (unused), wind screen, hood, guaranteed as new; cost over £100; unscratched; £85.—Commander Hatcher, c/o Dan Guy, Weymouth. [X5455

1915 Indian B., 3-speed, 5h.p., done about 300; 2-seater wanted; £58; Indian red sidecar, new, £14; Canoelet sporting sidecar, done 300 miles, £9.—Aslett, 277, Seven Sistere Rd., London. Private, not trade. [1705

INDIAN, 1915½, 7-9h.p., sporting combination, 3-speed gear, kick starter, electric front, back, and side lights, all-red finish, smartest outfit on the road, only done 1,000 miles; accept £75.—3, Aubert Park, Highbury, London, N. [X4887

INDIAN, late 1913, 7-9h.p., with Cowey speedometer and Mills-Fulford Radio spring wheel sidecar, whole outfit in perfect order; £55.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0569

1913-14 7h.p. Indian, 2-speed, clutch, spring frame, electric light, horn, kick-starter, new chain, mudguards, etc., engine in excellent condition, fast, and wonderful puller, luggage grid, spare handle-bars; £50.—Congreve-Pridgeon, Vicarage, Steyning. [9912

1914 7h.p. Indian, 2-speed, complete with dynamo electric lighting set, electric horn, and speedometer, smart Indian coachbuilt sidecar, whole outfit in very good condition, and thoroughly overhanled; 58 gns.—Julian, Broad St., Reading. 'Phone: 1024. [X4835

1915 7h.p. Indian, spring frame, electric lamps and horn, almost brand new, not been 300 miles, guaranteed perfect, fitted with £18/18 Swan coachbuilt sidecar, very comfortable, wind screen, complete; accept £78 the combination.—Wallis, 49, High St., Saffron Walden, Essex. [X5590

Invicta.

INVICTA, 2-stroke, 2-speed, new, wtih accessories; £33/10. — Leighton's, opposite Wood Green Station. [1987

James.

JAMES Combination just arrived; 73 gns.—Lamb's, 151, High St., Walthamstow. [1778

1914 James Coach Combination, 3-speed, clutch; 49 gns.—Le Marchant, Heatherlea, Ilkley. [1803

VERY Fast June, 1914, 3½h.p. Twin James, done 68, 3 speeds; £40, lowest.—Millard, Chesterfield. [X5539

1915 James 4¼h.p. Combination; £76/13; liberal exchanges.—Newnham, 223, Hammersmith Rd., W. [1999

1915 James, 4¼h.p., 3-speed countershaft, clutch, kick starter; 60 gns.—Parker and Son, St. Ives, Hunts. [2017

JAMES, 3-speed, countershaft, 1913, and sidecar, very reliable, with accessories; £45.—Leighton's, opposite Wood Green Station. [1984

1915 James, 4¼h.p., 3-speed countershaft, clutch, kick starter, fitted with James Canoelet sidecar, complete; 73 gns.—Parker and Son, St. Ives, Hunts. [2018

JAMES 1914 4¼h.p. 3-speed Combination, coach body, excellent condition, horn, lamp set, etc., powerful combination; £54.—The Morris Garages, Oxford. [X5609

1915 4¼h.p. James, 3-speed countershaft gear, good as new, with £12/12 coachbuilt sidecar, all complete, been little used; £58.—Wallis, 49, High St., Saffron Walden, Essex. [X5592

JAMES 3-speed Combination, 1914, new condition and guaranteed perfect, with Lucas, accessories, and speedometer, fine turnout; £60.—Leighton's, opposite Wood Green Station. [1988

JAMES, 1914, 4¼h.p., 3-speed countershaft gear, clutch and kick-starter, speedometer, Lucas lamp set and horn, complete; £45. — Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0552

JAMES, late 1914, 4¼h.p., 3-speed, countershaft, clutch, kick starter, with James Canoelet sidecar, Lucas horn, head, rear, sidecar lights, splendid condition; £57.—Stanton, Castle Rd., Tipton. [X5479

MOTOR CYCLES FOR SALE.

James.

JAMES, 1915, 4¼h.p., 3-speed counter-shaft gear, clutch and kick starter, chain drive, Canoelet sidecar, with Lucas electric lighting outfit, Lucas electric horn; £90/15.—Colmore Depot, 261, Deansgate, Manchester. [0674

NEW 1915 James, 4¼h.p., fitted with their sidecar, also fitted with Lucas lighting set, electric horn, rear light, sidecar lamp, all Lucas electric complete turnout, 3-speed countershaft gear, chain drive, and free engine; just arrived; tuition free; £93/16/6; ready for the road.—Wauchope's, 9, Shoe Lane, London. [X5437

J.A.P.

J.A.P., 9h.p., 90°, and sidecar, new 3 weeks back; cost £117, take £70.—65a, Rosendale Rd., West Dulwich. [X5577

1912 3½h.p. Overhead Valve Racing J.A.P., in new condition, drip feed, do 60; £20.—Baumforth, Churchtown, Killamarsh. [X5381

6h.p. J.A.P., 1915, Leighton, 3-speed chain-cum-belt countershaft combination, with accessories; £65. —Leighton's, opposite Wood Green Station. [1985

J.E.S.

J.E.S., in good condition, not had 18 months' wear; £11.—Nobbs, Beech Villa, Priory Rd. Hornsey, London. [1734

Kerry.

KERRY, 5-6h.p. twin, low. racing model, nice appearance; £23.—Blake, 63, Somerset Rd., Tottenham. [1766

KERRY, 2¾h.p., stand, carrier, toolboxes, new tubes, good covers, both lamps, brakes, horn, footrests, fine puller; £8/15.—Sinclair, 45, Horseferry Rd., Westminster. [1751

King Dick.

BARGAIN.—Brand new 3½h.p. King Dick; £40 secures.—Mitchell, White Hill, Crowborough. [1801

1914 King Dick, 3½h.p., 2-speed, coach sidecar, all accessories and spares, in exceptional condition; £43.—3, Green Terrace. Rosebery Av., E.C. [1955

Klement.

4h.p. Sporting Twin Klement, disc wheels, Cowey, Bosch, Amac, fast; £19/10.—145, Meanley Rd., Manor Park. [1797

Lagonda.

NEW 1915 Lagonda Coupe, just delivered fresh from works; price £165, cash, or exchange.—Wauchope's, 9, Shoe Lane, London. [X4797

LAGONDA Coupe, 1914 model, 4-cyl., water cooled, complete with all accessories; £110, bargain.—Wauchope's, 9, Shoe Lane, London. [X5442

Lea-Francis.

FOR Sale, 1914 Lea-Francis motor cycle, not ridden 500 miles.—To be seen at John McNiece's, Mill St., Ballymena. [1699

LEA and Francis, 1913, twin J.A.P. engine, in quite new condition, extra heavy tyres, all perfect; £45.—Wallis, 49, High St., Saffron Walden, Essex. [X5591

1915 Lea-Francis Auto-Wheel Combination, in perfect condition, and complete, hardly scratched; cost £33/10, accept £19/10.—Carpenter, Fisherton, Delamere, Wylye, Wilts. [X5484

Levis.

LEVIS, Baby model, new condition; £21.—Barlow, 43, Dora St., Pleck, Walsall. [X5480

LEVIS, 1914, or similar; £16 cash waiting.—Ottley, 52, Church Rd., Guildford. [1954

LEVIS Popular, as new, bought June; £26.—22, Osborne Rd., Weston-super-Mare. [X5630

BABY Levis, new March, 1915, lamp, generator, good order; £19.—Aitken, Imperial Hotel, Hythe. [1742

LEVIS Popular; £28/1 cash, or fifth down, 2½/- on balance.—Referee Cycle Co., 332, High Holborn, W.C. [2773

1914 Baby Levis, 2¼h.p., grand condition, fully equipped; quick sale £22.—Asquith, Gilmonby Hall, Bowes, Darlington. [X5391

1915 Levis, 2½h.p., Popular model, absolutely in stock; £28/1; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6410

LEVIS Popular, 2½h.p. single, and 2-speed, and De Luxe models.—Sole Midland distributing agents, Colmore Depot, 31, Colmore Row, Birmingham. [X3034

LEVIS, 1915½, 2½h.p., as new, Lucas lamp set, cost with accessories over £40; footboards, fast; £32; any trial.—Norman, 97, Virginia Rd., Shoreditch, N.E. [2006

LEVIS, 2¾h.p., 2-speed, chain and belt, Model de Luxe, April, 1915, hardly used, lamps, horn, generator; bargain, £38.—G., 106, Cole Park Rd., Twickenham. [1672

LEVIS, 1913-14, countershaft, 2 speeds, splendid condition; £26, or exchange for good combination, each adjustment; seen any time.—Phillips, Tupwood Cott, Caterham Valley. [X5519

LEVIS 2-stroke Motor Cycles, latest 1915 models.—Sole London and district agents, Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent. [0711

NOW.

1915 Model D 7 h.p. Twin

INDIAN

Road Racers.

1915 3¾ h.p. 2-stroke 2-speed

SCOTTS.

1915 2¾ h.p.

CALTHORPE-JAPS

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Early Delivery of—

1915 Model B 5 h.p. Twin **INDIAN,** 3-sp. gear, kick starter.

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'Phone—7091 Mayfair (2 lines).

MOTOR CYCLES FOR SALE.

L.M.C.

L.M.C., 1913, 4h.p., 3-speed, and coachbuilt sidecar, guaranteed sound; £48.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [1962

3½h.p. L.M.C., for quick sale, new piston, tyre, and belt, Bosch renewed by makers; nearest £11.—338, Chesterfield Rd., Mansfield. [X5594

Martin.

MARTIN, 6h.p., brand new, delivered too late; cost £57, first cheque over £35.—Colonel Knight, c/o 65a, Rosendale Rd., West Dulwich. [X5576

Matchless.

MATCHLESS 1914 Combination, perfect condition, complete; £70.—Albion Garage, Albion St., Leeds. [X5406

MATCHLESS, late 1912, 8h.p., coachbuilt sidecar, 2-speed; £40.—Williams, Assheton House, Llanbeblig Rd., Carnarvon. [X5474

7h.p. 1915 Matchless Combination, as good as new; cost over £100; fitted up complete; accept £90, no offers.—Soper, Andover, Hants. [X4733

MATCHLESS, late 1913, 8h.p., Canoelet sidecar, accessories, excellent condition; £55.—A.B.S., 6, Earlsthorpe Rd., Sydenham, S.E. [1744

1914 8h.p. Matchless and sporting sidecar, model 8, fully equipped; £58, or exchange 1914 3½h.p. and cash.—Firmin, Bell Cottage, Chelmsford. [1991

1914 Matchless 7h.p. Combination, in excellent condition, fitted with speedometer and lamps; £72.—Newnham. 223, Hammersmith Rd., W. [1995

MATCHLESS, 6h.p., late 1913, clutch, kick start, lamps, all accessories, unscratched, splendid machine; £43.—Walton Lodge, Surbiton Rd., Kingston. [2002

1914 Matchless 8B. Combination, in perfect condition, not done 500 miles, 3 lamps, horn, wind screen, hood, spares; 76 gns.—54, St. Gabriel's Rd., Cricklewood. [1688

1915 Matchless Combination, 8B Model, 7h.p. M.A.G. engine, done 1,200, with Lucas horn, lamps, and full accessories; any trial; £85.—Smith's Garage, 23, Tooting Bec Rd., Tooting. [1711

MATCHLESS, 8h.p. J.A.P., F.E., 2-speed, twin belt, strong combination, C.B. sidecar, wind screen, hood, speedometer, lamps, spares, accessories; £60, bargain.—19, Hadley St., N.W. [1861

1914 New Matchless, model 8B. combination, run a few hundred miles only, not a blemish on it, speedometer, F.R.S. lamp, horn, and spares; 1t; £80. —West, 42, Cranbrook Rd., Ilford. [X5446

MATCHLESS Combination, 7h.p., 1914½, screen, all Lucas accessories, speedometer, numerous spares, new light car tyres, splendid condition, little used; £80, or nearest offer.—28, Esmond Gardens, Bedford Park, W. [1677

1913 Matchless, 8h.p., 2 speeds, chain drive, and 1914 Matchless coachbuilt sidecar, Jones tnp speedometer, largest F.R.S. lamp, new 650×75 heavy Hutchinson on back wheel, other tyres unpunctured, machine in perfect order, enamel and plating as new; £60.—Daintree, 17, Dornton Rd., South Croydon. [X5380

1915 Matchless 3½h.p. Twin, 3-speed, clutch, kick starter, belt-cum-chain drive, and Phœnix torpedo sidecar, 2 lamps, horn, speedometer, clock, mirror, the most fully equipped and smartest outfit on the road, not run 200 miles; to be seen and all particulars; 70 gns.—Cambridge Garage Frances St., Woolwich. 'Phone: 108 Woolwich. [1762

Minerva.

MINERVA, 2¾h.p., good order; £6, or would exchange for push bike and cash.—Scovell, Yateley, Hants. [X5385

3½h.p. Minerva, spring forks, Bosch, B. and B., new rings, good tyres, running order.—Corpl. Turner, 3/6 Notts and Derbys, Chesterfield. [X5537

3½h.p. Minerva, Senspray, mag., clutch, spring forks, good running order; will ride 25 miles to purchaser; £18, offers.—19, Wellesley Buildings, Churchway, N.W. [1755

MINERVA, 2¾h.p., mechanical valves, contact breaker, in good condition; first P.O. for 25/- secures; Rex spring forks, complete with wheel (wired), 12/6.—Gordon, Kneesworth St., Royston, Herts. [1890

Moto-Reve.

MOTO-REVE 2¼h.p. Twin, 1914, with clutch, very light and yet powerful: £20.—The Isle of Purbeck Garage, Swanage. [X5641

MOTO-REVE Twin Lightweight, perfect order throughout, enclosed mag., Amac.—Laybourn, Wolsingham, Co. Durham. [X5465

Motosacoche

2½h.p. Motosacoche, new condition; £19.—Osborne, 8, Glenville Cottage, Glenville Av., Enfield Town. [1707

MOTOSACOCHE, 2¼h.p., excellent condition, Bosch mag.; £11.—Mylam, 197, London Rd., West Croydon. [1907

MOTOSACOCHE, 2¼h.p., Druids, B. and B., Whittle, etc.; £10 trial willingly.—Howard, Iona, Craigdale Rd., Romford. [1695

MOTOR CYCLES FOR SALE.

Rudge.

3½h.p. 1915 Rudge, Isle of Man model, complete with accessories, 3-speed gear and free engine; £50; opportunity.—Wauchope's, 9, Shoe Lane, London. [X5445

RUDGE Multi, 5-6h.p., late 1913, in splendid order, grand solo or combination machine, all accessories; first cheque £33.—A. Quenby, Park House, Hitchin, Herts. [1720

5-6h.p. Rudge Multi, Millford spring wheel sidecar, screen, not done 900 miles, spare cover, tube, belt, etc., speedometer; cost £89, sacrifice £79; buying car.—Food, Ibstock, Leicestershire. [X5536

3½h.p. Rudge Multi, 1913, with 1914 improvements, recently overhauled by makers, new 1914 back wheel and gears, new clutch plates, many accessories, magnificent running order; £41, or near offer.—54, Trueman St., Liverpool. [1693

RUDGE Multi for sale, 4 months old, 1915 model, 3½h.p., only done 800 miles, absolutely perfect condition; £50; horn, speedometer, etc.; no offers below that figure considered.—No. L1,241, *The Motor Cycle* Offices, 20, Tudor St., E.C. [1690

Scott.

SCOTT, 1915, actually in stock, for immediate delivery.—Harris, Garage, Slough. [1276

SCOTTS.—Two in stock for immediate delivery.—Colmore Depot, 31, Colmore Row, Birmingham. [X3032

SCOTT (1914), Cancelet sidecar, faultless condition; £55; take Douglas part.—Sinclair, East Molesey. [X5511

SCOTT, 1911, superb condition, lamp, horn, spring footboards; £22.—Birch, 68, Lingham St., Stockwell. [1966

SCOTT, 1914, 2-speed, clutch, kick-starter, Lucas accessories, perfect; £49, or exchange, Douglas preferred.—Pigot-Disney, E. Molesey, Surrey. [1965

SCOTT, 1913, with skeleton sidecar, 1914 improvements, speedometer, lamps, tools, etc., splendid order; £40.—Glover Bros., Windsor St., Coventry. [X5522

1913¾ Scott, with Millford cabrio sidecar, 1915 forks, lubricator, Binks carburetter, beautifully equipped, numerous spares, perfect condition throughout; expert trial or examination invited; bargain.—Bush, Wells Rd., Bath. [X5502

SCOTT, 1913, 2-stroke, 2 cyls., 2 speeds, water-cooled, kick-starter, smart 1914 coachbuilt sidecar, sound tyres, large Lucas head light, speedometer, watch, horn, bell, tools, spares, including tube and chains, low mileage, condition and appearance exceptional, been carefully driven by expert; £50. — 20, Woodbury Rd., Walthamstow. [1817

Sheffield Minor.

SHEFFIELD Minors (2-stroke), single and 2-speed models from stock only at Colmore Depot, 31, Colmore Row, Birmingham. [X3035

Singer.

2½h.p. Singer, 1913, first-class order, F.E.; £25.—L. Parker, 38, High St., Bedworth. [X5560

SINGER, 1913, 4h.p., sidecar, countershaft 2-speed, kick starter, splendid order; £38.—Waddell, Heads Nook. [X5584

2½h.p. Singer, clutch, new 1914, P.H. lamp set, de-compressor, as new; £26.—Brooks, Wharf House, Rugeley. [X5543

SINGER, 1913, 2½h.p., clutch model, sound condition throughout; £26/10. — Layton's Garage, Bicester, Oxon. 'Phone: 35. [X5491

SINGERS.—Immediate delivery of 4¼h.p. chain drive 3-speed model; sidecars supplied to suit io stock. —Colmore Depot, 31, Colmore Row, Birmingham. [X3033

Sun.

1914 Sun-Villiers, 2½h.p., in excellent condition, fitted with electric light; £19/10.—Newnham, 223, Hammersmith Rd., W. [1997

SUNS, with Villiers or V.T.S. engines, single or 2-speed models; delivery from stock.—Colmore Depot, 31, Colmore Row, Birmingham. [X3028

SUN-VILLIERS, 2½h.p., 1914, single-speed, 2-stroke, good running order; £18.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0491

SUN-VILLIERS, 2½h.p., 2-stroke, 2 speeds, Dunlop tyres and belt, late 1914, accessories; £26/10, bargain.—103, Heeley Rd., Selly Oak. [X5452

1915 2½h.p. Sun-Villiers, perfect condition, horn, tools, etc., £23; with lamp set and speedometer, £3 extra.—17, Derby Rd., West Croydon. [1831

SUN-VILLIERS, 1914, 2½h.p., 2-stroke, semi-automatic B. and B., touring and semi T.T. bars, big Brooks-Triumph saddle, tip-top condition; £20.—Atkinson, 463, Smithdown Rd., Liverpool. [1856

Sunbeam.

2¾h.p. Sunbeam, 1913, no accessories, excellent condition, 2-speed, hand clutch, Bosch; cost £63, take £36/10, offers.—Hewett, Grocer, Canterbury. [1854

1915 3½h.p. 3-speed Sunbeam Lightweight, coachbuilt sidecar, black horn and lamp to match, new May, not done 800, carefully used; offers.—Arnold, Dentist, Newark, Notts. [X5353

SERVICE SUMMER SALE.

OUTFITTING DEPARTMENT.

GREAT REDUCTIONS. HUNDREDS OF BARGAINS.

WATERPROOFS, OILSKINS, CAPS, LEATHER GARMENTS, GOGGLES, GLOVES, OVERALLS, etc., etc.,

at much under usual prices, and offer an exceptional opportunity of filling present and future requirements which should not be missed.

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	Usual Price	Sale Price.
20 pairs Separate Legging Overalls, black rubber face material	14/6	—
30 only Fawn Ponchos, double texture	17/6	—
A few Shop-soiled Jackets	17/6 to 25/-	—
A quantity of Best Quality Rainproof Suits and odd garments, etc. Must be cleared. Great reductions.		
200 pairs of Separate Leggings, all sizes	8/6 to 11/6	4/8½
A few Ladies' Raincoats. Not latest style, but suitable for sidecar.		
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Best Quality Overall Suits, extra heavy material, jackets 40in. long, with belt, and seatless trouser overalls	50/-	40/-
50 odd Jackets	—	10/-
24 Gents' Raincoats, soiled. Suitable for motor cycling	30/- to 50/-	18/-

SERVICE Oilskin Clothing.

200 Gents' Oilskins, long coats	18/11	10/6
30 " " " best quality	25/-	15/11
Special Sale Line of Ladies' Oilskins, various shades	14/11 to 21/-	10/6
38 Ladies' **Oilsilks**, various shades	43/9	15/11
60 Black Oilskin Suits (jacket and leggings)	15/11	10/6
100 pairs Black Oilskin Overalls straight leggings	4/9	2/10
50 Grey Oilskin Suits (jacket and trousers with seat)	25/-	14/11
100 Special Line Sou'westers, light weight	2/11	1/8
200 Brown Oilskin Suits, shop-soiled	30/.	20/-

SERVICE Leather Goods.

(Please note we are quoting old prices, although leather has advanced 25%.)

50 large Leather Chest and Back Protectors	15/6	10/6
75 small Chest and Throat Protectors, all sizes	4/9	3/3
50 Tan Leather Waistcoats, with sleeves	32/6	22/8
25 pairs Black Leather Breeches	30/-	22/6
20 Double Breasted Black Leather Waistcoats, with sleeves	30/-	22/6
50 Grey Cold-weather Jackets, lined throughout tan leather	30/-	21/-

25 ditto, better quality. Much reduced prices.
A few Leather Carrier Cases, shop-soiled.

SERVICE Caps.

90 Special Service Caps, in fawn rainproof cloth	3/6	2/9
50 Jaeger Caps, slightly soiled	3/6	2/3
100 Waterproof Caps, in mackintosh	3/6	2/3
50 Cotton and Cloth Racing Caps	5/9	3/6
100 Oilskin Sou'westers, various shades	2/11	1/8

SERVICE Gloves.

40 dozen pairs Best Quality Black sheepskin lined, large gauntlets	6/11	4/6
100 pairs Yellow Asbestol Gloves with gauntlets, lined	7/6	4/3
50 pairs Yellow and Tan, unlined, cord at wrist	4/6	2/6

WRITE AT ONCE FOR SALE LIST.

The Service Company Ltd (LONDON)

MOTOR CLOTHING SPECIALISTS,

289, 292, 293, HIGH HOLBORN, W.C.

MOTOR CYCLES FOR SALE.

Sunbeam.

1914 6h.p. Sunbeam and 26 gn. Gloria sidecar, absolutely as new, 3 Lucas lamps and horn, any amount of spares, speedometer; cost over £120, will sell for £78/10.—Apply, Sam Bacon, Aston Rd., Nuneaton. [X5486

1914-15 2¾h.p. Sunbeam, 2 speeds, kick starter, clutch, almost new, Lucas head lamp, generator, and horn, rear lamp, spare valve, tyres and chains perfect; cost over 60 gns., £48.—Morrey, 16, Nicholas St., Chester. [X5477

1915 Sunbeam, 3½h.p., 3-speed, absolutely new and unscratched, done 600 miles only, with tools, Lucas front and rear lamps, horn, speedometer, mirror, and extra case of spare parts, etc.; accept 80 gns. cash, no offers.—Write or call, Glenmore, Langley Park, Mill Hill, N.W. [1784

FOR Sale, latest model 1915 6h.p. twin-cyl. Sunbeam motor cycle combination, with interchangeable wheels, delivered July last, done just over 2,000 miles, better than new, absolutely perfect condition, spare wheel and tyre never used, Lucas acetylene head, rear, and side lamps, and 2 generators, never been used, Lucas horn and handle-bar mirror, Smith's handle-bar watch, Stewart's speedometer, Sunbeam sidecar, Cape cart hood, specially made adjustable plate glass wind screen, Brooks leather travelling trunk and detachable leather dust cover, with Brooks patent fasteners, expressly made to fit grid and back of sidecar (cost £6), detachable real horse hair and spring stuffed pillion seat, expressly made to fit over back, luggage carrier, tools and spare parts; whole outfit cost £140, receipts shown; reason for selling, buying car.—Apply, Private Owner, Box 170, c/o Pool's Advertising Agency, 92, Fleet St., London. [1959

Taylor.

3h.p. Taylor, only wants assembling, room wanted; £3/10.—Jones, The Broadway, Muswell Hill. [2012

T.D.C.

3½h.p. T.D.C., semi T.T., new August last, not run 800 miles, perfect, will guarantee, lamps, horn, accessories, suit complete; owner enlisted; £24, a gift. —Whalley, 2, Hollins Grove, Darwen. [X5569

Triumph.

1912 Triumph, standard model, lamp, horn, etc.—88, Peel St., Dresden, Staffs. [X5495

TRIUMPH Junior in stock at Bagnall's Depot, Horninglow, Burton-on-Trent. [X5259

TRIUMPH, 1907, perfect order, all accessories, tools, spares; £19.—Job, Heyteshury, Wilts. [X5459

TRIUMPH, 1912, 3½h.p., very fast, perfect; £26/10. —Particulars, Setchfield, 55, Bridge St., Cambridge. [X5399

TRIUMPH, new Nov., 1913, 3-speed, coachbuilt sidecar; offers; buying Indian.—Gandy, Turton, Bolton. [X5518

1910 Triumph Motor Cycle, in most excellent condition; £21 for quick sale.—Bond, E. Dereham. [X5629

LATE 1912 2-speed Triumph, all accessories, excellent order; £29.—Blencathra, Walton-on-Thames. [X5494

1913 Triumph, 3-speed, coach sidecar, Cowey; £40, offer.—Oakenrood Mill, Bury Rd., Rochdale [X5572

TRIUMPH and Sidecar, 3½h.p., 2-speed, good tyres, free engine, in good condition; £22.—Ayres, Hednesford. [X5377

TRIUMPH, 3-speed, with sidecar, F.R.S. lamp, Whittle belt, etc.; £27/10.—Albion Garage, Albion St., Leeds. [X5408

TRIUMPH, clotch, new inner tubes, new Kempshall back; £22.—Crisp, jun., Goodwins Rd., King's Lynn. [X5587

TRIUMPH, 1908, thoroughly overhauled, reliable machine; 18 gns.—Darby, 336, Gloucester Rd., Bristol. [X5631

TRIUMPH Junior, 1915, as new, speedometer, Lucas lamps, etc.; £42.—Mylam, 197, London Rd., West Croydon. [1905

TRIUMPH, 3h.p., accumulator ignition, splendid condition, Druid spring forks; £12.—Unwin, Glengarnock. [X5513

TRIUMPH, 1912, and blue coachbuilt sidecar, clutch, Grade multi gear; £33.—130, Basford St., Darnall, Sheffield. [X5503

TRIUMPH, 3-speed, Rom, 1912 engine, in 1911 frame; £30.—Capt. Ward, 65a, Rosendale Rd., West Dulwich. [X5575

TRIUMPH, 3½h.p., excellent order, accessories; £18/10.—Hurrell, 2-3rd E.A.F. Amb., Camp, Thetford, Norfolk. [X5487

LATE 1914 4h.p. Triumph, 3-speed, free engine, as new, only done about 1,000 miles, perfect; £51.—Oglesby, Harpenden. [1994

TRIUMPH, 1910, Senspray carburetter, Bosch waterproof mag., adjustable tappets, good condition; £21. —Gilby, St. Denis, Torquay. [1853

TRIUMPH Junior, 2-stroke, 2-speed, brand new, just arrived, ready to ride away; £42 secures.—Pepper, Market Hill, Royston. [1892

TRIUMPH, 1909, 3½h.p., Bosch, new belt, tyre, excellent condition; £20; exchange 2-stroke, 2-speed, equally good make.—Deavall, Tewkesbury. [1869

MOTOR CYCLES FOR SALE.

Triumph.

TRIUMPH, 1914, 4h.p., 3 speeds, new tyres, belt, spare valve, plug, lamp, and horn, good condition; £43/10.—42, St. Leonard's Rd., Weymouth. [X5523

TRIUMPH, 1913, T.T. model, lamp, horn, and watch, accessories, very fast, splendid condition; seen by appointment; £36.—95, Madrid Rd., Barnes. [X5350

TRIUMPH, 3½h.p., 1910, engine recently re-bushed, plating and enamel excellent, tools, horn; £22.—Lucae, 81, Oakdale Rd., Leytonstone. After 7. [1769

3½h.p. Triumph, 1911, Bosch, free engine, variable pulley, decompressor, new Dunlop, Clincher, perfect; £25.—Chase, 111, Colwith Rd., Hammersmith. [1687

1915 Triumph Junior, 2½h.p., 2-speed, speedometer, had very little use, perfect order, all accessories; £38, bargain.—47, Mosford St., Burdett Rd., Bow, E. [1849

TRIUMPH, 1913, 3½h.p., 3-speed, new clutch, accessories, spares, perfect throughout; £37; seen Saturday after 4.—36, Philipps Av., Worcester Park. [X5393

1913 Triumph, 3½h.p. clutch model, 2 lamps, horn, etc., splendid condition; £33.—Cambridge Garage, Frances St., Woolwich. 'Phone: 108 Woolwich. [1761

TRIUMPH, 1912, 3½h.p., clutch, Brampton gear, new rear tyre and belt, all accessories, £33; cane sidecar, £4 extra.—45, Ravensdale Mansions, Crouch End, N. [X5562

TRIUMPH, 3½h.p., clutch, 1913-14, guaranteed perfect, £36; Bonniksen's Isochronous speedometer, used 500 miles; cost 4 gns., sell £23.—28, Burgate, Canterbury. [1708

1914 Triumph, 3-speed, T.T. Roadster, big F.R.S., Cowey, Lucas horn, Gloria cane sidecar, excellent condition; 50 gns.—4, Tenby Av., Withington, Manchester. [X5580

1913½ 3-speed Triumph, coachbuilt sidecar, engine and gears recently overhauled at works, running splendidly; £40 cash, lowest.—Langdale-Smith, Holton Rectory, Oxon. [X5309

TRIUMPH, 2¾h.p., perfect running order throughout, B. and B., footboards, foot brake, 2 lamps, Dunlop belt; £9/10.—Call or write for particulars, 150, Merton Rd., Wimbledon. [1909

TRIUMPH, 1908, N.S.U. adjustable pulley gear, Binks 1915 carburetter, 1915 Splitdorf mag., climb anything solo; with wicker sidecar £28.—Palace Studio, Halifax. [X5322

TRIUMPH, 1910, N.S.U. 2-speed, F.E., Kempshalle, Dunlop belt, Dunhill sidecar, new Michelin, complete; £28/10.—Parker, 3, Eckington Gardens, New Cross Gate, S.E. [1750

TRIUMPH, 1911, 3½h.p., Philipson automatic pulley, Senspray, Bosch, Brooks, and accessories, all in good condition; £25.—Madgwick, Portsmouth Rd., Hindhead, Surrey. [X5471

BARGAINS.—Triumph, 1911, 2-speed gear, Palmer cord, £27/10; another, with Brampton gear, £25; another, £20; all been overhauled.—Bunting, Wealdstone, Harrow. [1881

TRIUMPH, late 1913, 3-speed, and coachbuilt sidecar, electric horn, and many spares, like new; £50, or exchange Matchless or Indian.—Clayson, 27, Bridge St., Northampton. [X5585

TRIUMPH, 1914 model, 4h.p., 3-speed Sturmey-Archer, Brooks B 170 saddle, Clincher de luxe studded tyres, in excellent condition; £45.—Robinson's Garage, Green St., Cambridge. [6867

1915 Triumph, 4h.p., countershaft gear, and Millford-Empress sidecar, Lucas horn, Lucas head, tail, and sidecar lamps and generators; best offer for cash.—Popham, 460, Fore St., Edmonton, London, N. [1982

3½h.p. Triumph, 1907, mixus cylinder, following fixtures new—back Stelastic tyre, Dunlop belt, latest B. and B. carburetter, exhaust whistle, large toolbag, recently overhauled; bargain, £9.—Box 9,172, *The Motor Cycle* Offices, Coventry. [X5262

Villiers.

VILLIERS, 2½h.p., 2-stroke, lamp, horn, spare belt, accessories, perfect condition; £20.—Wilkins, 29, Friars Rd., Stafford. [X5267

Vindec.

2¼h.p. Vindec 2-stroke, 2-speed; usual price £38/10, take 34 gns.; shop-soiled only.—Gifford's, Overton, Hants. [1786

1915 Vindec Combinations, in stock, 3-speed Sturmey-Archer countershaft gear box, smart turnout; £85; easy payments arranged.—Jones, The Broadway, Muswell Hill. [2007

Wanderer.

WANDERER, 1¾h.p., mag., spring frame and forks, in good running order; £12/10.—Boyce, 275, Archway Rd., Highgate. [1900

Williamson.

WILLIAMSON, 8h.p., sidecar; £40.—34, Hormead Rd., Westbourne Park, W. [1736

8h.p. 1914 w.c. Williamson Combination; £55.—Particulars, C. Allenby, Helmsley, Yorks. [X5516

1914 8h.p. Williamson, and 2-seated sidecar, hood, and screen, lamps, horn, and speedometer, like new; cost £115, £70, or best offer.—James Christie, 22, Spens Crescent, Perth. [1666

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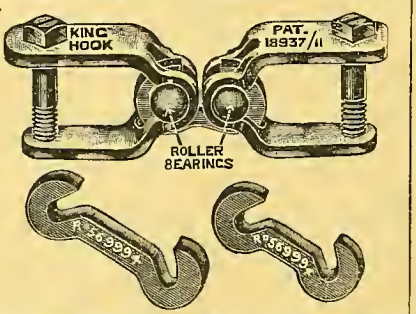
were protected by us in 1910 and enable you to adjust your belt in a second. They have, of course, been copied, but never equalled. **It is impossible for them to come apart in use as their design does not necessitate fitting them upside down.**



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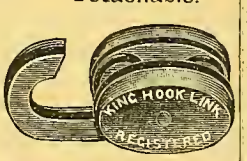

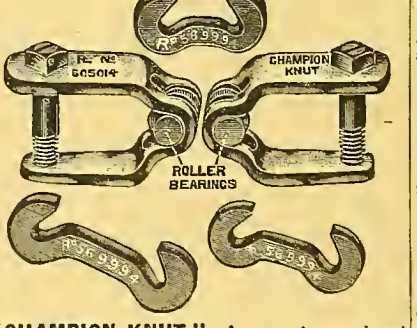

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MOTOR CYCLES FOR SALE.

Williamson.

WILLIAMSON, new, 8h.p., water-cooled, sidecar combination; £99/5; exchanges quoted.—Motories, 68, Horton St., Halifax. [0706

Wolf.

WOLF 2-stroke 2-speed models, £32/6/9; delivery from stock.—Wanchope's, 9, Shoe Lane, London. [X4799

WOLF, 2½h.p. J.A.P., 2 speeds, hand clutch, kick starter, new end of July, ridden 100 miles; cost £41, lowest £34.—Hucklebridge, 133, Sloane St., London. [X5461

T.T. Wolf-Jap, 2¾h.p., 1914½, 2-speed, countershaft, kick starter, hand clutch, do over 50 m.p.h., Stewart speedometer, F.R.S. lamps, 2 generators, Lucas horn; £27; after 8 p.m.—10, Baxendale St., Columbia Rd., Hackney Rd., N.E. [1865

Wyvern.

WYVERN, 3½h.p., good running order, accumulator ignition; £6.—Toms, Catherine St., Leicester. [X5615

Yale.

YALE Motor Cycle in stock, 8h.p., 2-speed, kick start; 60 gns.—Jones, The Broadway, Muswell Hill. Sole agent for N. London, trade and retail. 'Phone: Hornsey 2562. [7638

Zedel.

ZEDEL, 5h.p. twin, Bosch, N.S.U. 2-speed, new Druids, and cane sidecar, in splendid condition; a bargain, £16.—Gordon, Gower Rd., Royston, Herts. [1888

Zenith.

3½h.p. Zenith, 1910, Gradua gear, and accessories; £15.—Collis, 3, White Horse Cottages, Dorking. [1956

ZENITH, 1913, 6h.p. twin, Lucas lamp, horn, splendid condition; £40.—169a, Lower Clapton Rd., N.E. [2025

1912 3½h.p. Speed Gear Zenith and sidecar, new tyres, all been overhauled; £32.—Boyce, 275, Archway Rd., Highgate. [1899

1914 Zenith Combination, 6h.p., almost new, 18 gn. sidecar, fully equipped; £55.—Percy and Co., 337, Euston Rd., London. [2024

1912 Zenith, 3½h.p., with 1915 Northern sidecar, coachbuilt; £35; without sidecar £26.—Harris, Manor, Forest Hill, Oxford. [X5263

ZENITH-GRADUA, 3½h.p., 1911, and 1914 coachbuilt sidecar; a bargain, £30, no offers.—Gordon, Kneesworth St., Royston, Herts. [1889

ZENITH, 1914, 8h.p., 90 bore, clutch model, Bramble sidecar to match, speedometer, lamps, spares; £65.—Wasley, 9, Victoria St., Bristol. [X5463

ZENITH, late 1912, 6h.p., Canoelet sidecar, £3/3 Lucas lamp set, speedometer; £38, bargain.—H. Blackburn, Bradford Rd., Brighouse. [X5528

1914 5h.p. Zenith, countershaft, clutch, kick starter, lamps, speedometer, horn, and spares; £50 or near.—Bigwood Lodge, Bigwood Av., Hove. [1787

ZENITH 6h.p. Combination, countershaft, kick starter, coachbuilt sidecar, almost as new; cost £117, accept £70.—Percy and Co., 337, Euston Rd., London. [1459

ZENITH-GRADUA, 4h.p., late 1912, usual accessories, fully equipped, perfect order; trial, photo; best over £30.—Particulars, Dinsdale, Dent, near Sedbergh. [X5389

ZENITH-GRADUA, 1914, 5h.p. twin, excellent order, horn, 2 lamp sets, plugs, tools, new tyre back; £43 cash.—Tom Simpson, Outfitter, Stalybridge, near Manchester. [1964

ZENITH-GRADUA, 1912, and wicker sidecar, 4¼ h.p. J.A.P., new Clincher and tube back, new Dunlop belt, piston, timing gear; £25.—22, New Rd., Driffield, Yorks. [X5553

ZENITH Gradua, 6h.p., 1913, with Bramble sidecar, 3 lamps, horn, etc., recently overhauled, carefully used; £45; seen by appointment.—W., 176, Coldharbour Lane, Camberwell. [1914

1915 8h.p. Zenith, countershaft gear and clutch, condition good, not done 2,000 miles, all accessories; £65.—Morris, 9th South Wales Borderers, Kinmel Park, Rhyl. [X5316

ZENITH, 1914, 8h.p., with Gradua gear but no clutch, complete with Middleton cane-bodied sidecar, Lucas lamp and horn; £46/10.—Layton's Garage, Bicester, Oxon. 'Phone: 35. [X5492

6h.p. Zenith-Gradua, semi T.T., in perfect condition throughout, horn, P. and H. lamp and generator, speedometer, new belt, tyres perfect, very fast; £32/10; grond sidecar optional, £4.—190, Choumert Rd., Peckham. [1673

1914-15 90 Bore 8h.p. Red Zenith, 16 gn. Millford sidecar, special engine, fitted 2 carburetters, etc., one of the fastest combinations on the road, absolutely as new throughout; sacrifice £70; seen by appointment.—Linkside, Lytchett Rd., Bromley, Kent. [1952

ZENITH-GRADUA, 1914, 8h.p., J.A.P., and Gloria Projectile sidecar, hood, screen, 3 very large lamps, large horn, spare tyre in waterproof case, and spare tube; this combination cost £115 last year, price £68, or will take 3½h.p. combination in part exchange, but must be first-class; no dealers; can be seen at 28, Ellerby St., Fulham Palace Rd., Fulham, S.W. [2003

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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Swivelling Head Lights.

THERE still seems to be considerable doubt about the legality or otherwise of what may be termed swivelling head lights. These head lights are not swivelling in the ordinary acceptance of the term, but are so fitted into their brackets that they are capable of vertical adjustment, which is a great advantage, as a lamp which, as a rule, throws its beams horizontally may on a foggy night be set to throw them downwards, thus illuminating the road instead of the fog. Motor cyclists who do much riding at night need not be told that this makes progress much easier and safer. Some little time ago a more than usually enlightened magistrate gave it as his opinion that such a lamp did not contravene the regulations of the Defence of the Realm Act, but in spite of this devices for removing the adjustment continued to be put forward, and motor cyclists are still in danger of prosecution for carrying such lamps. On the 20th ult. a motor cyclist was stopped in the neighbourhood of Fenny Stratford by four police officers and his lamp confiscated that it might be destroyed (this was reported in a recent issue), although the lamp was not in a condition to be lighted, having no rubber connection between the lamp and generator. This strikes us as a very high-handed piece of interference. The absurdity of making the regulation apply to motor cycles will be realised when we state that a peg or a little solder between the faces of the clamp is sufficient to satisfy the authorities. If a motor cyclist desired to do any signalling with his lamp it would be the work of a moment only to remove the whole complete with generator from the machine, and the lamp adjustments would then make no difference whatever; or simply a loosening of the nuts which attach the bracket to the handle-bar would give sufficient movement.

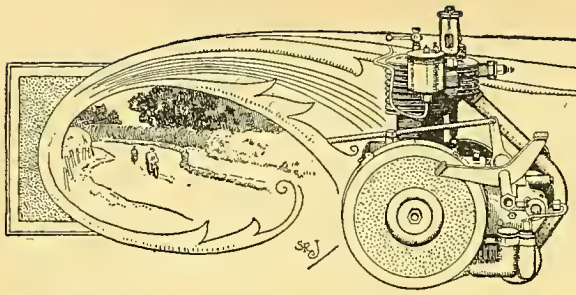
If there is any real need to make these restrictions respecting motor cycle lamps, we contend that they should be made by some responsible central authority, and the conclusions arrived at should be communicated to all parts of the country, so that a motor cyclist could take his lamp to the nearest police station and get definite information as to its suitability or otherwise. If the lamp were passed by the superintendent, he would then know that he was conforming to the law and could go his ways in peace. At present a man can be fined and fined heavily in one district for what is certified as correct in another.

The Psychic Relation Between Man and Machine.

WE publish on another page an interesting letter on the relationship which is possible between a sympathetic rider and his motor cycle. Before we can demonstrate the existence of any psychic connection between the two we must prove that a motor cycle has a soul. The seat of this soul we should take to be the engine, and there is no doubt that the sympathy which a skilful rider has for his engine contributes in a very large degree to his success in getting the utmost out of it, just as a practical driver can obtain better results from a horse than one who is lacking in the necessary temperament and experience.

This is a question, of course, in which it is far easier to theorise than to produce conclusive proof, and in this matter it is by no means alone. Some people refuse to credit anything they cannot understand, and a greater mistake than this it is hardly possible to imagine, for some of our friends would then have extremely limited opportunities for belief; for example, we all know that electricity exists, some of us know a few of its capabilities, but who knows what it really is? A more intelligent interest in our machines, combined with an intelligent anticipation of events, would bring us more efficient service and longer wear from our bits of cast iron, steel, and aluminium.

An index to the advertisements in this issue will be found on the page facing the back cover.



HINTS FOR BEGINNERS.

Some Elementary Tips on the Driving of a Motor Cycle.

NOW that all (?) our young and expert riders are serving their country in various capacities at the Front, and the ranks of enthusiastic clubmen are sadly depleted, it has become increasingly difficult for the novice to obtain reliable advice on the care and management of his machine. There are, too, hundreds of riders on the road who are past the prime of youth, and, therefore, less inclined to risk their necks or their machines in making the experiments in which younger men delight. Many of these are members of no club, and possibly have but few friends who also ride motor cycles, and these machines may be of very different patterns, and consequently the experience of their riders of but little use; thus they are bound to rely entirely upon their own initiative and mechanical ability (in many men a negligible quantity) in every little problem which may crop up. It is for riders of this class that these few notes are penned. So much by way of preface.

Overheating.

Let us first consider the question of overheating. Every rider knows that an engine gets hot, but a letter in *The Motor Cycle* of June 3rd shows that there is much uncertainty in the minds of some as to what constitutes overheating, and the margins mentioned are extremely wide. The rider who always stops to cool his engine when he cannot bear his hand on the cylinder where it joins the crank case is certainly erring on the safe side, but his progress is likely to be slow. On the other hand, if a rider told us that he could see his exhaust valve glowing red-hot while riding we should not call him a liar, whatever we might think (and say when we got home), but should put on our "spring poet" expression and say, "How interesting," or something equally fatuous. After all, the power of believing impossible things is, as Lewis Carroll says, simply a matter of practice. Perhaps, too, he really thought he saw a red-hot exhaust valve; some people think they see snakes. Personally, we should say that an engine is too hot when it begins to lose power; so long as full power is maintained heat does no damage, but when an engine begins to flag more oil should be given at once and less throttle. A test of overheating sometimes adopted is to place a lucifer match on the cylinder head; if this does not ignite it may be taken for granted that the engine is not unduly hot. In the event of a piston seizing paraffin put into the cylinder will prove beneficial.

The causes of overheating are many: overloading, an incorrect mixture, a retarded spark, and insufficient or unsuitable oil are perhaps the most common. Therefore give plenty of oil, for it is better to err on the safe side, and do not drive too hard. A thousand miles at top speed will take more out of the machine and tyres than many thousands at a reasonable pace.

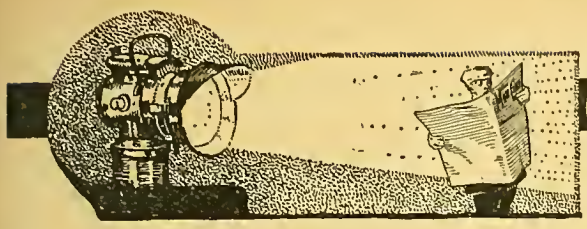
Carburation.

The rider should always aim at getting as perfect a mixture as possible. If his carburetter is an automatic one this will be done for him to a large extent by the designer, but most automatic carburetters have an air adjustment which can be varied to suit atmospheric conditions. This should be done as carefully as possible, the rider noting the position in which the explosions seem to be most powerful. It is not a bad plan to open the air until the engine begins to slow up and misfire occasionally, and then to close it slightly. It should at all times be the rider's object to use as much air as possible, as this economises the petrol and also tends to a cooler running engine.

By "perfect mixture" is meant that proportion of air and petrol which allows the petrol to be completely burnt, but with no excess of air. This mixture gives the hottest flame and quickest combustion, but does not cause overheating to anything like so large an extent as a mixture containing an excess of petrol or even an excess of air, the reason being that the explosion is quicker and more powerful. It will be readily understood that a skewer, for instance, passed quickly through an intensely hot flame will not be heated to the same extent as one passed slowly through a moderate flame; also, when the explosion is comparatively slow, the exhaust valve is opened while the combustion is still incomplete, and this is continued in the exhaust port and pipe, with the result that these become red-hot. Hence the reason of the apparent paradox. A retarded spark will also have a similar effect, and for that reason the ignition should always be kept as far advanced as the speed of the machine will allow. The user of a two-lever carburetter soon gets into the way of adjusting his air to suit his speed and throttle opening, and with some carburetters this adjustment has to be varied constantly with the changes of pace and gradient, but in the case of many of the popular carburetters of the semi-automatic type the air lever is thrown right open when a start has been made and left in that position for all ordinary speeds, the reason being that the throttle is so constructed that it controls both air and gas simultaneously—in fact, it forms a variable choke opening with the throttle, but unless the jet is enlarged as the throttle opens, or other jet orifices uncovered, this gives too much air when the throttle is wide open, and the air lever must be closed down to some extent or the mixture will be too weak. This applies particularly to the two-lever Amac.

Some carburetters are very sensitive to correct petrol level; in others (notably the Senspray) this is of much less importance, owing to the principle upon which they act.

(To be continued.)



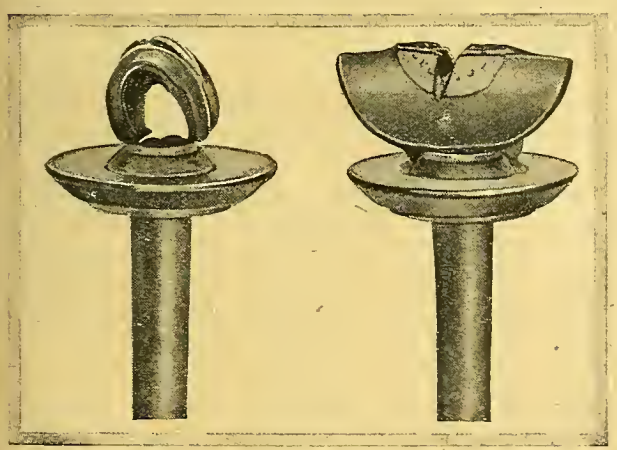
Occasional Comments

"By Ixion"

Now for Tail Lamps.

As our correspondence columns have contained no complaints on the subject, I suppose that most users are tolerably satisfied with the new inventions. I have tried three—all electric, and on the garage shelf there is a fourth waiting for the day when I am driven to return to acetylene for the moment. That acetylene tail lamp is a substantial object, which cost me 7s. 6d., and which certainly will not dissolve even under the terrific vibration which concentrates at the tail of the carrier above a rigid rear frame; my sole dread about using it lies in the fear of catching my costly oilies on it and ripping them from the shirt to the hem, for—shameful to relate—in these days of kick-starters, I still cling to the pre-historic hop, skip, and a jump mount. The "electrocities" as the office wag calls them, have not done badly. One of them—an F.R.S.—cost me 12s. 6d., and would stand up on a 1900 7 h.p. Panhard with solid tyres, as it ought to at that price. Another shed its spring ring and ruby glass on its first trip, and has since shimmered feebly through an ill-tied knot of pink muslin, at which the police blink doubtfully. The third is presumably one of those contraptions alluded to by the gentlemen who know what kilowatts are, as a "choking coil," for it takes its current off the magneto and is guaranteed to burn brilliantly without affecting the ignition. The only time I tried it, nothing would induce the engine to start, and I was coward enough to solve the problem by calling up my reserves and taking out the spare machine adorned by an F.R.S. dynamo; as soon as I can get a spare bulb I shall try it again.

FATE OF A THREE-PIECE VALVE.



A few years ago the three-piece valve was popular on motor cycles, but single-piece valves have now taken their place. The illustrations show how the top portion of a three-piece valve separated from the remainder after continuous use on a 1912 Triumph, the U-shaped top being found resting on the top of the piston, where it had set up a knocking like a hammer on an anvil.

The Evening Promenade.

A year or two ago I called the attention of motor cycling tailors to the fact that nine motor cyclists out of ten, after a speedy day in the saddle, like to stroll round their sleeping town, and to turn their radiant smiles on the damosels of the vicinity; a practice as natural as it is doubtless reprehensible. If they wear their dusty overalls, Phyllis is not kind; if they emerge in their house clothes, they catch cold when they lean against a gate in some rural lane, and whisper sweet nothings into Phyllis's rosy ear. The only solution I then attained was a patent coat, about which the worst thing was its name, the "Legstenshun," or words to that effect. It was a good coat, and I still have it; it is more than a coat, for it has disappearing leggings buttoned inside its skirt; it has served me well, but the Phyllises of my touring routes have never seen it, for it is designed to be worn in the saddle, and the dust from it ruined the chiffons of the first Phyllis who came under its proximity. (We live and learn.) But the other week I found something better suited to the reprehensible brigade. I was smiting the nimble gutty in company with a well-known trade magnate, when a terrific cloud burst caught us just as he was playing his third in a bunker. What time I was burrowing for shelter in a gorse bush, and shouting to my cowering caddie to fetch my oilies from the clubhouse garage, his caddie produced a small satchel measuring about 10in. × 4in. from his golf bag, and shook out of it a featherweight waterproof of smart cut, scaling a couple of pounds or so; and, oddly enough, it turned out to hail from the very firm which makes my oilies, to wit, Barbour, of South Shields. A similar vanity bag now graces the top of my carrier on all long runs, and after a gruelling day in the saddle I turn on to the local boulevards as smart as if I had stepped out of a band box; and I catch no more of those awful "gate-colds."

What the Baby Wants.

Most users of "baby" two-strokes will have noticed that these handy little machines are sluggish starters. I do not mean that there is any difficulty in securing a few initial explosions, but rather that these explosions are of an unsatisfactory character. Whereas a 500 c.c. four-stroke in moderate tune will fire at once, and fire with sufficient vim to justify the driver's vaulting aboard or letting in his clutch without delay, the "baby" will spit and cough and four-stroke for a distance varying from twenty to a hundred yards with the make of the machine or the inclination of the road. When I unleash my "babies" they have to negotiate a slightly uphill run of eighty yards or so before they attain a dead level, and not once in ten starts do they achieve two-stroking until they have climbed this paltry little slope. In a start from cold on the level they are nearly as bad. The

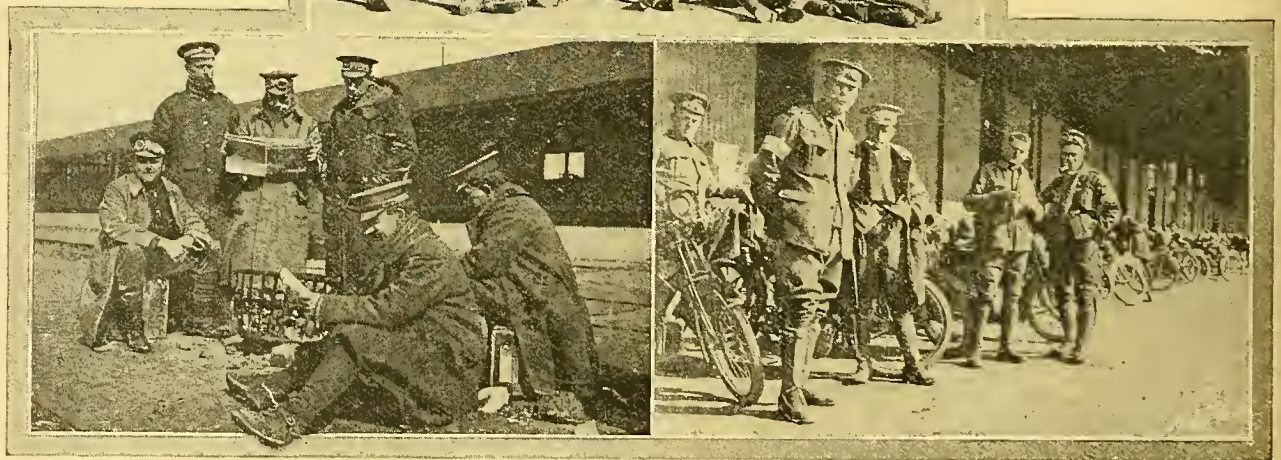
Occasional Comments.—

cause of their misconduct is obvious—or so I fancy. The cylinder, inlet pipe, transfer passage, and crank case are full of cold air; and below these volumes of air there is, more often than not, a pool of cold oil. In addition the chilly spirit in the carburetter vaporises rather sluggishly, and the metal of the engine is all stone cold. I can only get the eighty yards of four-stroking by dint of liberally flooding the carburetter, and the effects of the flooding are exhausted after four or five explosions, when, to all appearance, there are still remnants of cold air in the induction system, the engine metal is still chilled, and the petrol is uncertain about vaporising. It is clear that all these defects could be overcome by a special design of carburetter which afforded a temporary surplus of petrol; such surplus would not be required when running slowly with the same throttle opening and a warm engine. The emergency is purely and simply confined to starting from cold, and applies only to small engines, as a 500 c.c. engine in a coquettish mood can still supply sufficient power. It is plainly for this reason that the Scott manual always advises petrol injections for a start from cold, and in this case the engine is given a chance to warm up by reason of the fact that it is designed to be started when free of its load. Is some refined designer going to cope with the petty worry, or are we to be left to run alongside or foot-slog, world without end? For the time being, I adopt one of two home-made dodges; either I warm the engine up on the stand by pulling over the back wheel, or I keep a finger on the carburetter tickler until the engine begins to two-stroke, as apparently a very rich mixture is required for starting. Over a dozen machines of the best make misbehave in identically the same way under the conditions indicated.

A Deceptive Misfire.

Before my last air-piston control-wire snapped, I allowed myself to be thoroughly deluded. The untinned wire was kinking outside the sheathing, instead of sliding into the sheathing when the lever was moved, and the resultant symptoms were curious, in that the exhaust suggested that one cylinder was firing properly and that the other was suffering from intermittent misfiring. It was dark at the time, and I could not see what was happening. I stopped under a lamp post and squinted over the machine without spotting anything, so I ran the engine, declutched, and shortened each plug in turn with a screwdriver, only to discover that each cylinder fired perfectly solo, but that, when both were running, one always missed. This suggested carburetter trouble, and the cause was then rapidly tracked; but I do not think I have ever struck an exactly parallel case before. Truly, motor cycles are whimsical things, but let us cheer up. A light carist of my acquaintance was seen stopped in a busy street the other day and using particularly strong language. In reply to my enquiry, he remarked there was nothing particular the matter; it was only that his reverse gear insisted on engaging instead of the forward gears, and that while half the car was trying to go forward and the other half was equally eager to travel astern, he could not make good progress. Luckily, motor cycles have not reverse gears. Still the Yankees are providing us with a fresh hoodoo. One of my friends has just got an American machine with an electrical lighting outfit. The head lamp has a big bulb for speed work and a wee bulb for traffic; the other night his big bulb suddenly exploded, and he had to cover seventy miles in inky darkness on a 7-9 h.p. twin with a light about equal to a smouldering safety match. Moral: carry a spare bulb.

DESPATCH RIDERS EN ROUTE TO THE FRONT.



These photographs were taken in France, when a party of forty R.E. despatch riders were on their way to active service. The left-hand picture shows men enjoying a fire and rest at a railway station in the early hours of the morning. Though summer time, warm coats are appreciated at night and early morning

The Mechanical Testing of Metals

AND THEIR INTERNAL STRUCTURE.

By ARTHUR MARKS, F.I.C., A.R.C.S., A.R.S.M. FIRST INSTALMENT.

THE fracture of apparently strong metals whilst in daily use has led to a closer study of the tests to be applied to them, so that an exact impression may be obtained of the way in which the metals will act under the severe conditions which modern usage imposes upon them.

The advent of high speed movers has revolutionised the tests to which metals are now put, since it has been found that the tensile test, which at one time was considered to give a thorough indication of the strength of a metal, has passed metal as good that in practice gave lamentably poor results. It was therefore evident that the tensile test did not completely indicate the way in which the metal would act in practice.

The efforts of metallurgists have, therefore, been directed to the investigation of methods which will test the various properties of a metal independently of each other, and further to obtain some knowledge

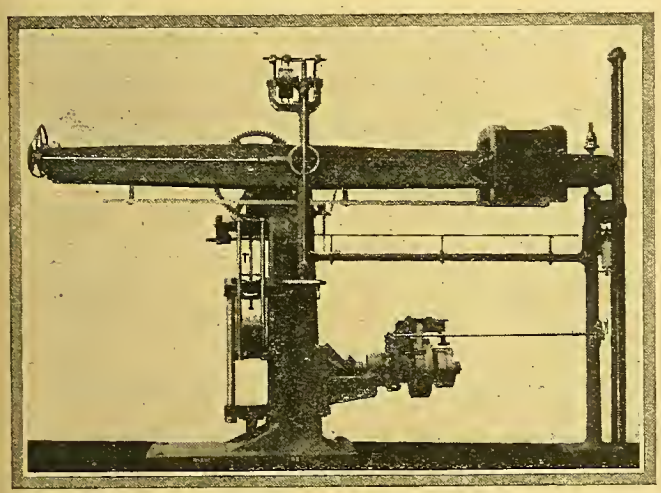


Fig. 1.—Tensile testing machine.

of the relation which each property (*e.g.*, hardness, ductility, malleability) bears to the general "strength" of the metal as the engineer understands it.

In this respect, which is scientifically the correct way of attacking the subject, it cannot be said that much progress has been made, but, on the other hand, tests have been evolved which, whilst not measuring a single property whose relation to the strength of the metal is known, do give us much more complete evidence of the strength of the metal than we have had before.

These tests may conveniently be grouped under the headings of static (tensional, compressive, transverse, torsional, and shearing), alternating, shock, and hardness. We shall endeavour to see what structural changes occur in each case.

Static Fracture.

The machines for carrying out the static tests are of two types—the lever machine and the hydraulic machine. In the former a lever is used with a travelling weight which, as it is moved along, exerts

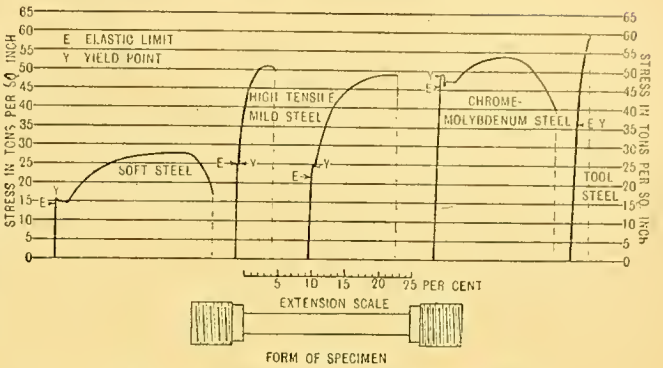


Fig. 2.—Stress strain diagrams for special steels.

a gradually increasing stress upon the piece of metal which is being tested. In the latter a direct pull is put upon the specimen of metal by hydraulic means, the pressure exerted being measured upon a suitable gauge.

Fig. 1 shows a photograph of a lever machine arranged for conducting tensile, bending, and shear tests made by Messrs. Buckton and Co., of Leeds, to whom the writer is indebted for the photograph and diagram arranged for taking a tensile test. The piece of metal T has been carefully turned up and its diameter measured. Two punch marks are made on the specimen 10in. apart, in order that the stretching may be measured after the specimen has broken. One end of the specimen is then clamped by means of wedges to the holder suspended from the lever, and the other end clamped in a similar manner to the screw shown at the bottom of the photograph. Any stretching which occurs in the test piece is taken up by lowering the screw, and thus the lever is kept in the "floating" position and always horizontal. The photograph also shows the jockey weight and mechanism for moving it along the lever, with the scale graduated in tons from which the pull exerted can be read off.

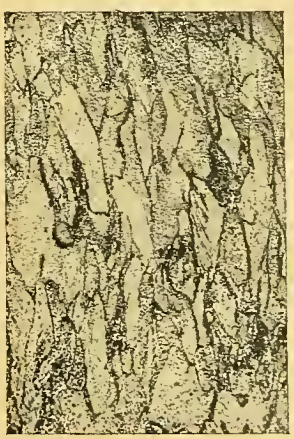


Fig. 3.—Elongated crystals of steel under stress.

On subjecting the specimen to the gradually increasing pull, it first stretches slightly according to Hook's

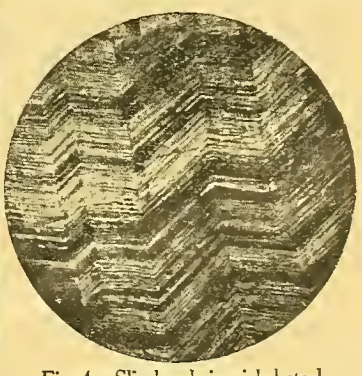


Fig. 4.—Slip bands in nickel steel (Edwards and Carpenter).

The Mechanical Testing of Metals.—

law—the stretch being proportional to the stretching force. During this period the metal is elastic, and will return to its original length if the pull is taken off. When the load reaches a high value the metal will change from the elastic to the plastic state. This particular load is known as the yield point for the metal (Y, fig. 2). A period of instability now ensues, during which the minimum load is taken as the elastic limit of the metal (E, fig. 2). The specimen now rapidly stretches under increasing load until finally local stretching occurs and the test piece breaks. The course of these changes is shown in fig. 2 for several steels, the curves showing the relation between the stress in tons and the stretching or strain calculated as a percentage of the original length.

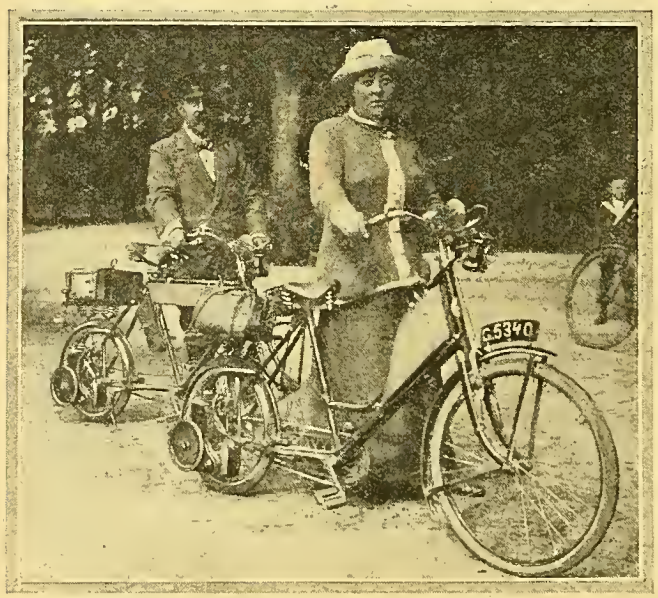
Examining the metal microscopically, we see that the original metal consists of an aggregate of crystals. The crystals are gradually elongated under stress (fig. 3), and accommodate themselves to the new conditions by a process of slip along the gliding planes. Fig. 4 shows the slip bands which develop in the metal as a result of the slip. As an illustration of what takes place, we may notice how the leaves of a book accommodate themselves by sliding over one another when the book is bent.

During the process of slip it is now considered that the metal on the surfaces of slip loses its crystalline character and becomes amorphous. In this state it is of the nature of glass—*i.e.*, non-crystalline—and is harder and stronger if the amorphous metal is allowed to set. If the stress is maintained the temporary mobile amorphous metal allows the slip to reach its limit, when fracture follows, and the metal exhibits a fibrous appearance due to the elongated crystals.

(To be continued.)

A "LAPSUS PENNÆ."

WE are in receipt of a copy of "The Harley-Davidson Dealer," of which the most imposing feature is the whole-page photograph of a number of Harley-Davidson sidecars outside Shakespeare's birthplace in Stratford-on-Avon. The enterprising Englishman who wrote the short article entitled "A Ride through Historic England" has been guilty of two fearful howlers, which have been the source of much amusement to his colleagues. In the first place, he points out that the cross at Banbury is one of the historic chain of crosses which stretch from the North of England to London, and goes on to say that "when Queen Elizabeth died her husband—one of the early Edwards, I think—brought her body to London, and on the spot where the bier rested at the conclusion of each day's journey he afterwards erected a cross to her memory." Banbury Cross is merely a market cross, and Queen Eleanor's body followed a different route altogether. It is interesting to note that Charing Cross, the last resting-place of Queen Eleanor before the *cortège* reached its destination, derives its name from the French *Chère Reine*. The words, however, according to Dr. Brewer, do not refer to the Queen, but to the Virgin Mary.

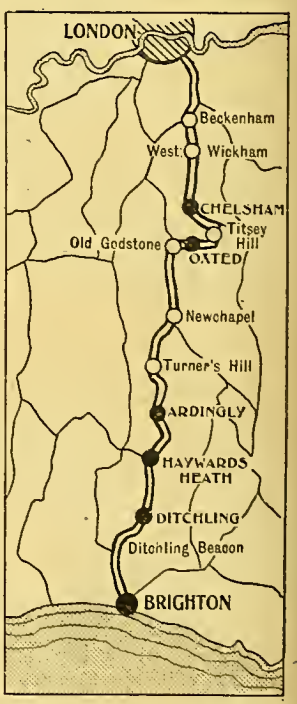


AN AUTO-WHEEL MODIFICATION.

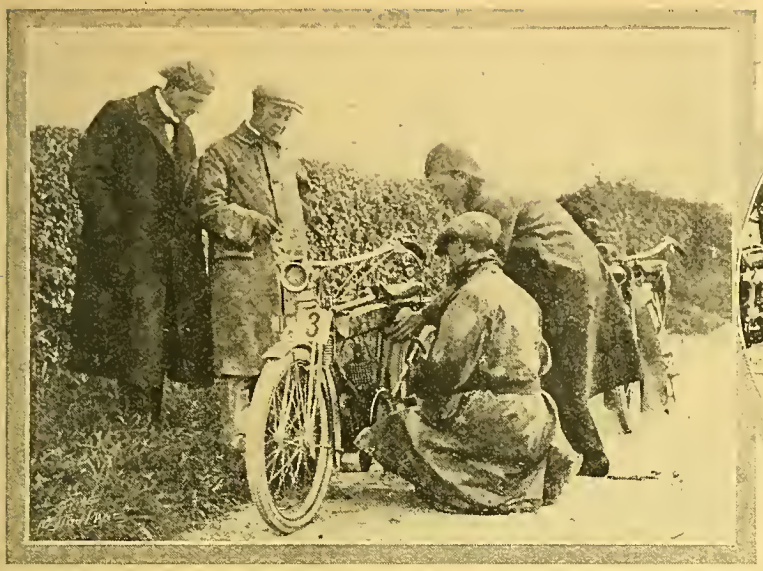
Two Dutch cyclists who, instead of attaching the Auto-wheel to the back wheel of the bicycle, have made it take the place of the back wheel itself. The petrol tanks are located as on motor cycles, a spare tin being strapped to the carrier of the man's machine. The photograph was taken at the start of a tour.

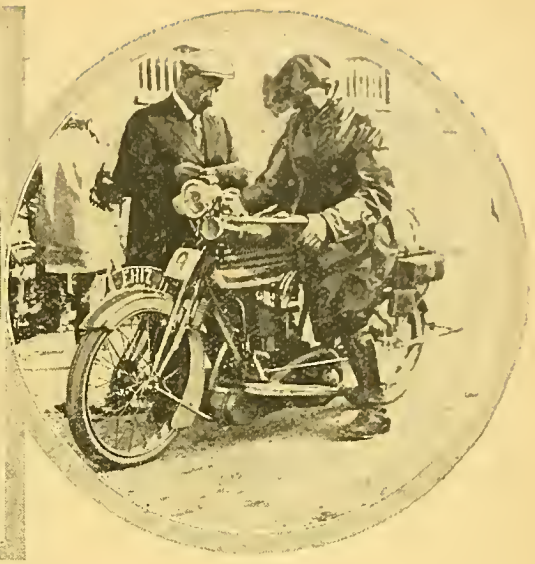
AN UNFREQUENTED AND PLEASANT ROAD TO BRIGHTON.

THE accompanying sketch map shows a road from London to Brighton which is far pleasanter than the more usual routes. The correspondent, LO 3009, who sends us this route, tells us that on a recent trip he only passed two sidecars, one on Titsey Hill and the second on the main Eastbourne Road, between Godstone and Newchapel, and one car on Turner's Hill, and met about ten motor vehicles, while he was passed by none. The scenery on this route is unrivalled. Those whose machines have plenty of power and ground clearance can further improve the route given by going over Ditchling Beacon instead of through Clayton and Patcham.



There must be many of these by-way routes in different parts of the country which are often far pleasanter than the main roads, while the surfaces are generally not much inferior, and in some cases superior, to those of the more important highways.



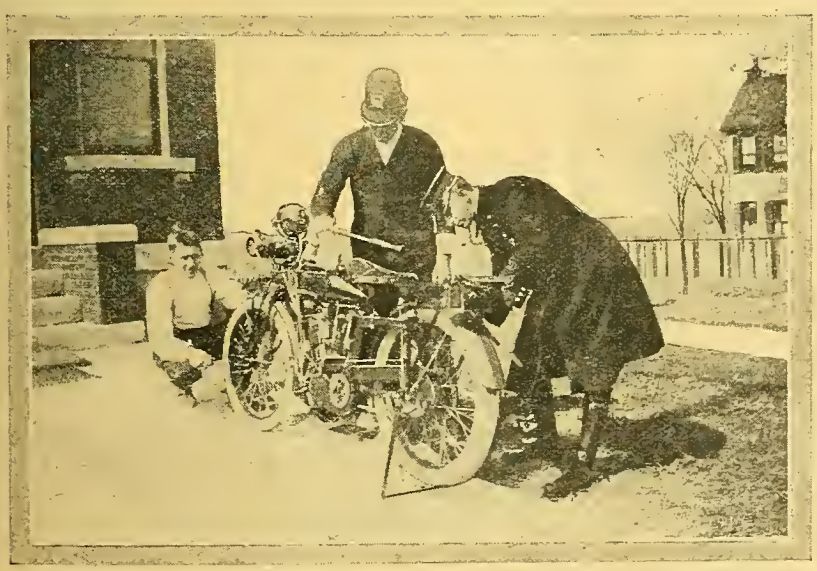


THE IRISH ONE DAY RELIABILITY TRIAL. (See page 234 of last week's issue.)

R. W. Stevens (2½ h.p. Sun) makes an adjustment with plenty of assistance. George Roche (3½ h.p. Rover) checking in at a control.

CHASING BURGLARS BY MOTOR CYCLE.

WE are all familiar, by name, with the American "speed cop," who, armed with a revolver and riding a high-powered motor cycle, chases motorists who are exceeding the speed limit. Throughout the United States the police use motor cycles to a great extent, the latest use to which they are put being in Cincinnati. Special buildings have been set up in various parts of the city and suburbs, each of which has accommodation for two or three motor cycles, besides the necessary police. These men are used for special emergency work, such as burglaries. By this means Cincinnati is now freer of burglars and other wrong doers than at any time in her history.



American motor cycle police tuning up a "speed cop's" mount. The photograph was taken at Cincinnati.

IRISH ONE-DAY TRIAL RESULTS.

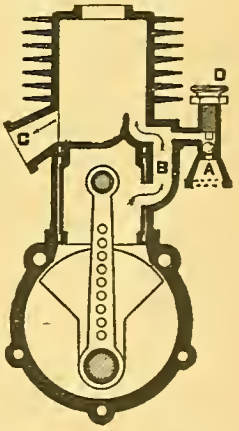
THE following competitors received first-class awards in the one-day trial of the Dublin and District Motor Cycle Club, held on the 28th ult., and reported in our last issue:

J. E. Greene (6 Bradbury sc.).
W. J. Henderson (7-9 Harley-Davidson sc.).
V. J. "Farren" (5 Indian).
P. H. Hurse (4¼ B.S.A.).
G. Mayne (10 Calthorpe).
R. W. Stevens (2¼ Sun).
G. A. M. Curtis (7-9 Indian sc.).
D. Allen (2¼ Sun).

The following completed the course:
A. Mooney (6 Bradbury sc.).
S. Allen (3½ James).

AIR SCAVENGING DEVICE FOR TWO-STROKES.

A SIMPLE device for obtaining better scavenging on two-stroke engines is a little air valve manufactured by the Portway Cooper Manufacturing Co., of Braintree. It consists of a ball valve A fitted with an adjusting screw D to regulate the amount of air admitted. The principle of working is as follows: On the commencement of the upward stroke of the piston a partial vacuum is produced in the crank case and transfer passage B, which sucks open the air valve A, filling the passage with pure air. As the piston proceeds on the upward stroke the inlet port is uncovered, admitting a fresh charge of gas to the crank case, the piston then descends, opening the exhaust port C, and also the transfer port. The fresh charge which is compressed in the crank case is forced through the transfer port into the cylinder, preceded by the air which is already in the passage. In a two-stroke the incoming gas has to assist in forcing the burnt gas through the exhaust port, and in the ordinary way a certain amount of the fresh charge is exhausted with it. When, however, the air valve is fitted, it is claimed that none, or very little, of the fresh charge comes into contact with the exhaust gas, thereby causing a considerable saving of gas, and not only increasing the power but saving petrol.



Portway Cooper air valve for two-stroke machines.

USEFUL HINTS AND TIPS.

WITH APOLOGIES TO ROAD RIDER.

COMPRESSION TAPS.

The compression tap is a decorative brass knob, fitted in the cylinder head. Those that work usually leak, so the ordinary non-working type is to be preferred.

STANDS.

These are made in two types—the kick-up and the fall-down, the latter being most popular. They are chiefly used for spoiling the engine. A front wheel stand makes a somewhat inefficient substitute for a brick under the crank case.

KICK STARTERS.

It has been frequently urged against motor cycling that it provides the rider with no exercise, and to remedy this defect the kick starter has been introduced. When the kicker has got comfortably warm, the engine may be started by pushing on the low gear in the usual way.

CARBURETTERS.

The carburetter is fitted primarily to amuse knuts, as no other part is capable of being so easily faked to spoil the running of the machine. Control is nominally effected by slides, pulled in one direction by cables, and thrust in the other by springs, means being provided for the ingress of grit, which effectually stops the action. Much amusement is derived from re-threading cables which have sprung out of place when this occurs.

GENERATORS.

The simple drip generator being generally satisfactory and reliable, manufacturers are now turning their attention to the production of complicated automatic regulating devices; the automatic generator furnishes much entertainment through its pleasing habit of watering the road, wasting the gas, and allowing the light to go out suddenly. It should be added that automatic generators burn beautifully in the maker's showroom.

The connection between generator and lamp is usually a tube of thin rubber, with one or more kinks in it. Good rubber tubing might be had, but is not worth while, as the sharp edges of tanks, spring fork links, and the other things it rubs against cut it into short lengths in quick time. The generator is usually carried on a bracket inside the curve of the handle-bar, so as to foul the pump handle and prevent access to the petrol filler.

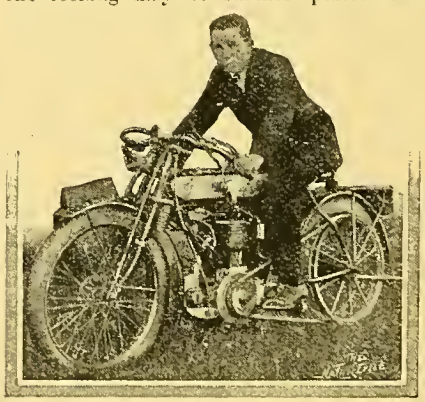
PETROL.

Alleged to be distilled from petroleum; it is treated in process of manufacture by the addition of paraffin and dirt, and sold at enormous prices. In the old days it was highly volatile and inflammable, but of late has not shown so much propensity to burn or explode rapidly, especially in an engine.

MAGNETOS.

It having recently occurred to magneto manufacturers that water is apt to cause trouble on an unprotected machine, various types of water-tight magnetos have been introduced. As a means of carrying a spare supply, however, they are not very satisfactory, and it is better to put it straight into the generator.

The toolbag is a device for polishing off the sharp corners of nuts, the thread of bolts, the jaws of adjustable spanners, and the points of sparking plugs. The heavier patterns are attached to the carrier with $\frac{3}{16}$in. bolts and nuts, so as to facilitate detachment. If insufficiently distorted by its contents, the toolbag may be further pulled out of shape by a strap fastened round its middle. The smaller the capacity, the more dusters have to be crammed in to keep the contents tight.



H. Bott, a New Zealand rider who has had a great run of successes on a 3½ h.p. Overseas touring model. In competitions this year of the Southern Hawkes Bay Motor Cycle Club he has on four successive occasions made fastest time and best performance on formula in hill-climbs, besides winning premier awards in other events.

UNIONS.

Fitted to a pipe which would otherwise be petrol-tight, these serve to indicate whether any petrol is actually passing. On the carburetter inlet pipe, they act as additional air ports to keep the engine cool; and on a twin, these unions vary in number from three to five, as two cylinders naturally require more air than one. A twin engine which proves too powerful may be made to run on one cylinder by slightly tightening one union; there is no known method of tightening both or all. The union on the exhaust pipe is to relieve back pressure.

ENGINES.

Anything that revolves with a stuttering sound. An apparatus for burning trouser-legs. An oil-slinger. The subject of engines is too extensive to be dealt with here, but a few points may be touched upon.

The engine is fitted into a cradle, attached to the frame by long bolts, threaded through holes so drilled as not to register with those in the lugs. Some engines are fitted with bearings during the first few miles. The average engine will get well run in in about five hundred, its owner sometimes at an earlier stage. Compression is a desirable quality in an engine, and may be readily counterfeited by making the piston a tight fit. It is said that an engine runs better if properly lubricated, but no actual data are available on this point. An engine will climb anything excepting when a dispassionate onlooker is present, and travel at any speed up to sixty when no stop-watch is available. More remarkable stories are extant about engines than about fish, and the narrators suppress the fact that Ananias heads their family tree.

THE SPEEDOMETER.

An instrument for enccuraging the terminological inexactitude industry. A common fallacy is to suppose that the rider fits one in order to discover the speed at which he travels: the reverse is the case. The most accurate speedometers are those in which the hand waggles over a space of five miles an hour either way, as this leaves a sporting

"Little things that help to kill big trouble."

Bates-built accessories are just as famous for excellent service as are Bates-built tyres. Everything from a belt to a puncture patch is thoroughly reliable and can be depended upon to do its job.

Bates

SUPER-RUBBER BELTS & TUBES.

Send for booklet and list, free on application.

W. & A. BATES, LTD.,
ST. MARY'S MILLS, LEICESTER.
Depots: LONDON, GLASGOW, and NEWCASTLE.

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I have ridden several machines in the past twelve years but have never had one which gives me so much satisfaction as the

QUADRANT Combination.

Its even running is really remarkable and proves the sound way the Quadrants are built.

I have now ridden 427 miles since I left your factory, and it has never caused me one moment's anxiety. I have had no occasion to adjust any part, which is another proof of the Quadrant's sterling quality.

Those words were penned by an enthusiastic Quadrant rider — E. P. D., of Thornton Heath.

You, too, will share his enthusiasm if you ride the "query-less Q," for its service is always sure and none of those irritating "unexpected happenings" will ever mar the full enjoyment of the Tour.

Ask for particulars of our several models, including the 4½ h.p. **Sidecar Combination with B.S.A. Countershaft three-speed gear—£66 11 0.**

QUADRANT WORKS,
Lawley St., Birmingham.
London Depot: 78, Gt. Queen St., Kingsway.

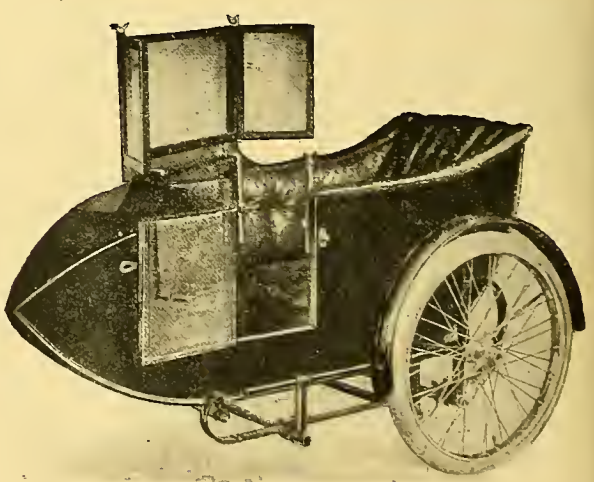
The above and all other Quadrant prices are now advanced by 5%.

DUNHILLS TRIPLE WINDSCREEN

(Provisionally Protected).

A complete protection from all draughts by reason of its being placed so close to the passenger. The side wings are detachable, and the screen can be tilted to any angle. It will fit any make of car.

A twist of a wing nut is sufficient to release the catch and let the screen swing across and allow the passenger to alight.



In Polished Walnut with Nickel Fittings.

Price, complete with side wings .. .. .. £3 : 0 : 0

Price of single screen £2 : 1 : 6

359-361, EUSTON RD., LONDON, N.W.
—42-43, LOMBARD STREET, E.C.—

MANCHESTER: 90-92 Cross Street.

GLASGOW: 72, St. Vincent St.

Useful Hints and Tips.—

chance that it may sometimes touch the correct figure. When telling your friends about it, take the highest figure; in a police court, the lowest. The maximum hand is a source of danger, and should be reset to zero before leaving the machine anywhere near a policeman.

REGISTRATIONS AND LICENCES.

Although it is said that some lawyers understand the regulations governing the issue of licences and registration of machines, there is considerable doubt as to their names and addresses. It is, however, common knowledge that registration is done by one authority, the issue of driving licences by another, and that the licence to keep a machine is obtained elsewhere; whilst the transfer of an old number to a new machine can be made for something or other, and from one owner to another for something else. Whether this information is correct the writer is not sure, and issues it without any personal guarantee.

CARBURETTER JETS.

The wise rider will experiment with different sizes of jet until he gets the best results, but it is not commonly known that jets are marked in the following way: A number of mixed sizes are put in a bag and shaken up; boys then take turns to dip for them, and pass them on to others, who have meanwhile drawn certain numbers from a second bag, which numbers are subsequently stamped on the corresponding jets. This information is derived from a comparison of jets and numbers, and it is now apparent why some carburetters burn less petrol with a .046 jet than with a .027.

HEAD LAMPS.

Manufacturers, recognising the desirability of making their accessories universally adaptable, take great pains to ensure that no lamp shall fit any other maker's bracket. Brackets are supplied with ⅞in. fittings for a 1in. bar, and *vice versâ*. Some lamps are designed to swivel sideways, to facilitate tyre repairs at night, but no special apparatus is necessary to effect this movement. The burner should be provided with a focussing device. When properly focussed, an inverted magnified image of the flame will be seen, dancing in the air a little ahead of the machine, which is pleasing, though some riders find it confusing.

Practical experience and scientific research have resulted in lamps being so greatly increased in efficiency that the 12in. size is beginning to supplant the smaller patterns. A new type will shortly be placed on the market, fitted with windows in the hood, through which the rider can see where he is going.

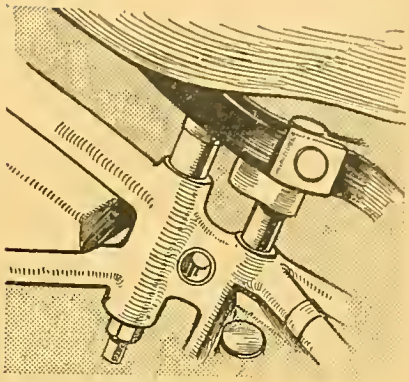
CLUTCHES.

Various principles are incorporated in the design of clutches, those most commonly employed being the cone and the plate system; expert opinions are divided as to which is the more unsatisfactory. Some clutches make up in fierceness what they lack in size; others atone for excessive bulk by want of grip. A clutch can be relied upon to grip when it is desired to effect a hurried disengagement in traffic; and to free itself easily when climbing a stiff hill in a non-stop trial.

As a form of humorous entertainment, the spectacle of a clutch start by a novice takes a lot of beating.

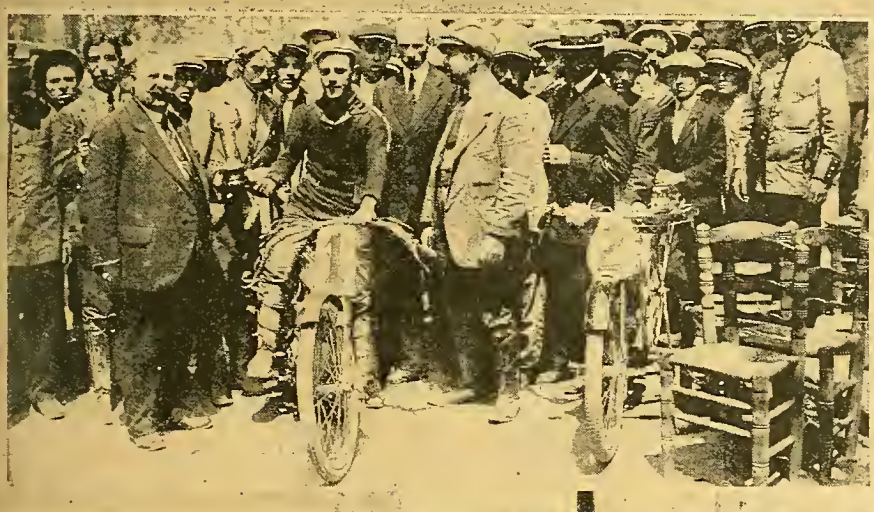
S.J.T.

REAR SPRINGING SYSTEMS.



Spring saddle pillar on the 8 h.p. Thor—the latest American arrival.

WINNER OF THE KING OF SPAIN'S AWARD AT THE SPANISH NATIONAL TRIALS.



A motor cycle race was included in the recent Spanish National Trials, and our pictures show the winner of King Alphonso's Cup, Senor Josquin Barnola, in full flight and surrounded by an admiring group. Although competing against machines of considerably higher power, Senor Barnola, who is mounted on a 3 h.p. Royal Enfield, succeeded in accomplishing the fastest time of the day.

Letters To the Editor

The Editor does not hold himself responsible for the opinions of his correspondents.
All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Patriotism.

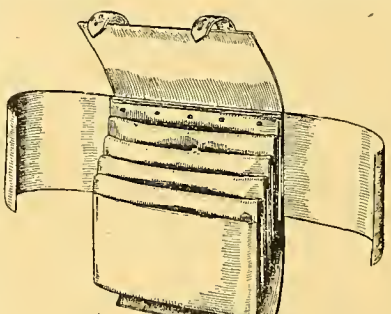
Sir,—A small, and yet great, point in "Ixion's" dissertation of August 26th deserves more prominence than the context provides for it. It is that he has foregone the pleasure of a Yankee mount on patriotic grounds.

Though I cannot obtain my fancy, I have also refused to purchase an imported machine. Quite apart from any opinion I may hold concerning American manufactures in general, or motor cycles in particular, it behoves every purchaser (for pleasure) to decide whether he will wait, if necessary, for delivery of a "native," and thus keep his money in this country, or buy abroad. If he experience difficulty in making the choice, let patriotism have a say, for it requires no lecture in economics to point the path of duty here.

H. J. SADLER.

A Tool Case.

Sir,—I have seen, with interest, the tool carrier suggested by "Uhique" in *The Motor Cycle* of August 19th. It would no doubt eliminate rattle, but the cost of fitting to existing machines would be rather high. The subject of tool kits is a sore one with me. When my motor bicycle was delivered to me last year it boasted a single tool-bag, suspended by two straps from the rear end of the carrier, and containing a King Dick spanner, valve cap spanner, screwdriver, and a sixpenny bicycle repair outfit. Of course, there was not much left of the lot after the first twenty miles, and I was rather amused when I saw "Ixion" praising the equipment of French motor cycles in the same issue.



Tool wallet described in accompanying letter.

To overcome the difficulty, I made a tool kit as follows: A strip of strong canvas (two plys) a little broader than the broadest tool carried, and of sufficient length, is folded every 3in. first one way and then the other, like a concertina, and the sides are sewn up almost to the top of the folds, forming pockets to receive the tools. Flaps are sewn on the first fold, and the upper edge of the canvas is riveted through a thin wooden board to a strip of leather as wide as the canvas. Straps are used to close the kit, and the tools, firmly held between canvas layers, never rattle. The tool kit is securely fastened to the carrier by clips and small bolts passing through leather and wood. The flaps are folded over the canvas pockets and held by the pressure of the leather cover: they prevent the loss of tools should the pockets wear through. When opened the pockets are at different levels owing to the lengths, not sewn, which is most convenient when putting the tools back in their respective pockets.

This tool kit has given me excellent service and great satisfaction, and I have found it much more convenient than the ordinary tool roll.

J. W. PARTRIDGE.

Paris.

Piston Rings.

Sir,—The attention of our clients Messrs. Allen and Simmonds, engineers and piston makers, of Reading, has been drawn to the description of a piston packing which appeared in your issue of August 12th. In this packing the rings were divided into segments, and closed at the joints by slotted plungers carried in recesses in the piston head, and forced outwards radially by springs.

It may interest your readers to know that Messrs. Allen and Simmonds are the original patentees and sole manufacturers of segmental packing rings, closed at the joints and expanded by slotted spring-pressed choke pieces or plungers of cylindrical form, in which the ends of the segments fit.

Our clients have created an extensive market for this type of packing, which, however, has now been almost entirely superseded by their well-known pressure-balanced type of segmental packing.

WHEATLEY AND MACKENZIE, Patent Agents.

The Position of the Brakes.

Sir,—I notice in your issue of July 15th a letter from "L.G.S.," in which he advocates the use of two foot-operated brakes in preference to the usual hand and foot brakes fitted to most modern machines.

At the start I must take it for granted that "L.G.S." intends that both brakes should be rear ones, as a foot brake operating on the front wheel is a great danger to the rider, since it cannot be applied as slowly as is necessary for safety.

Also, as "L.G.S." will know if he has ever ridden a machine with two back brakes, one good brake is just as effective in stopping any machine as two are. Besides which, when necessity arises for the brakes to be put on hurriedly there is a far smaller chance of side-slip if both front and back brakes are applied simultaneously.

In conclusion, I may add that two foot brakes are rather a lot to manage, especially if there is a clutch, or even a siren to be fitted on to the footrest and to be foot-worked.

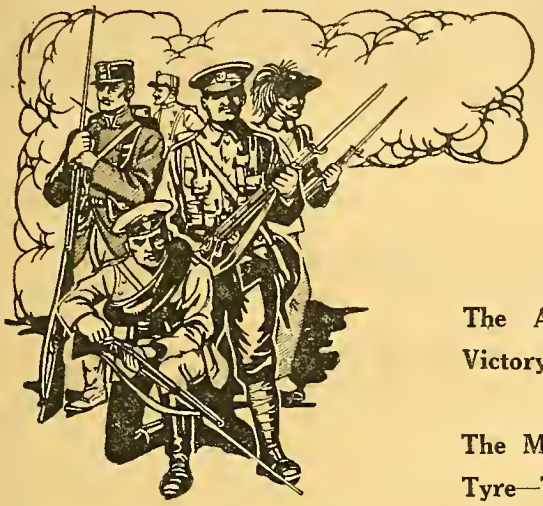
I feel that an apology is needed for having written so late after "L.G.S.'s" letter, but the case of a motor cycle with two foot-operated rear brakes has just come before me, and so I thought a remark on the subject would not be amiss.

A. STATHAM.

Double Countershaft Pulleys.

Sir,—I shall be much obliged if you will allow me space in your columns to make a few remarks upon the article which appeared recently in *The Motor Cycle* on the "Variable Pulley Countershaft Speed Gear." I am writing on behalf of my son, who is at resent doing his duty to his country somewhere in the Gallipoli Peninsular, and is therefore himself unable to reply to any criticisms directly referring to our patent No. 25,050, 1912, to which you have made reference.

We do not claim to have invented the expanding or double slidable pulley, which in itself has hitherto been a failure so far as its use on motor cycles is concerned; but this failure has been owing to previous attempts not suitably adapting the double-slidable pulley to the requirements and limited space of motor cycles. What we claim in our invention is that we have solved this difficulty, and are now putting on the market a simple and efficient multi-speed countershaft belt pulley gear which can be attached



To one End!

The Allies are fighting to one end—Victory and Freedom.

The Manufacturers of the Great British Tyre—The Clincher, are also working to one end—Victory over inefficiency and Freedom from Tyre Troubles.

The allied forces behind this Tyre are, keen business ability, high quality materials, expert labour, and the wonderful machinery and organization of the largest Rubber Factory in the British Empire.

For bed rock Tyre value

CHOOSE

CLINCHER

THE FIRST DETACHABLE PNEUMATIC TYRE

Motor Cycle Tyres.

THE NORTH BRITISH RUBBER COMPANY, LTD.,

169, Great Portland Street, LONDON, W. Factories—Castle Mills. EDINBURGH.

ROYAL ENFIELD
MADE LIKE A GUN

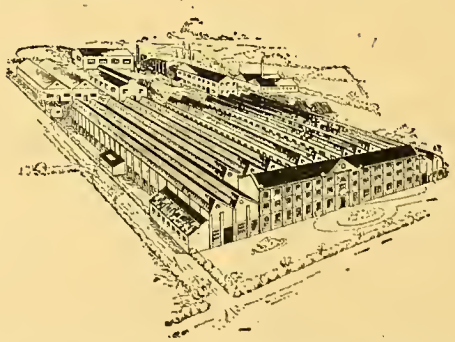
62,000 Square Feet Additional Floor Area

represents the size of the new buildings now in course of erection at the Royal Enfield works. Although Government requirements are now taxing our resources to the utmost, we shall have this addition to our present large factories to augment our future output for the private buyer.

Full particulars of all our motor cycles in the complete Royal Enfield catalogue, sent free on request. Mention "The Motor Cycle" when writing.

The ENFIELD CYCLE CO., LTD., Redditch,
and 48, Holborn Viaduct, London, E.C. Agents Everywhere.

Contractors to His Majesty's Government, the Belgian Government, and the Russian Imperial Military Authorities.



B1 *In answering this advertisement it is desirable to mention "The Motor Cycle."*

to nearly every make of single-geared belt drive motor cycle in about half an hour without constructional alteration to the motor cycle.

With our patent the belts are always in perfect alignment and tension under all variations of gear, and this fact disposes of all the objections you raise with the exception of the question of the short belt.

Now, unless I have misunderstood you, I am at variance with your views on this question. I presume that your objection applies chiefly to the front short belt, and not to the rear short belt which is now being so universally used on chain-cum-belt driven machines. In this latter class of machine the countershaft pulley is larger in diameter than it is possible to have the engine pulley on the direct-drive single-geared machine, and therefore the objection to the shorter belt is disposed of. This is exactly the same in our patent, as the countershaft pulley is 6in. diameter.

Now we come to the front short belt. First, let us consider what are the objections to a short belt. I think the most important question is the one of "grip" of the belt on the pulley sides; but this only applies to the case where the driving and driven pulleys are of unequal diameter. The greater the difference in the diameters of these pulleys, the greater is the objection to the short belt; as the closer these pulleys are together, the less contact has the belt on the pulley faces, and therefore less "grip," with its consequent liability to slip. This, however, does not apply where the pulleys are both of equal diameter, as, whether the belt is a mile long or only a foot long, it has exactly the same frictional surface on both pulleys.

With our patent the difference in the diameters of the engine and countershaft pulleys is so little that the belt has the frictional surface of almost half the circumference of the pulley, even at the maximum variation of the gear. We have had this gear in practical test for the past twelve months, and over some of the worst hills in England, and the short belt (we adopted the Whittle because it is so pliable) has stood the test well and given no undue trouble; and having given the gear such a long trial with such satisfactory results, we feel justified in claiming that, if the previous attempts to utilise the double or sliding pulley on motor cycles have been a failure, then the difference between those patents and ours is just the difference between failure and success. W. WILBERFORCE WALL.

'Midst Scottish Crags.

Sir,—I should like to express my appreciation of an article which appeared in *The Motor Cycle* of November 19th last year from the pen of Mr. George D. Abraham entitled "Autumn 'Midst Scottish Crags." Having a week's holiday, and not being able to make up my mind where to go, I was looking over some back numbers of *The Motor Cycle*, and I came across this article, and, after calculating mileage and time, decided to make the trip. I was accompanied by my wife in sidecar and a friend and his wife and boy of four years of age on a similar combination. Our machines were the 1915 Matchless, and I may say that from start to finish of the 768 miles they gave every satisfaction. We set out on Saturday, August 14th, and, after spending the night at Penrith, reached Glasgow on the Sunday afternoon, and on the Monday we set forth for the mountains and lochs. Taking the advice of a friendly garage man, we did not go through Dumbarton, but turned off the tramlines to the right just before reaching this place, and thence on to Balloch, where we again joined Mr. Abraham's route. With this exception and a short deviation from Connel Ferry to Oban and back, we followed the route given in the article right round to Edinburgh. At Connel Ferry Bridge the charge was 4s. for each combination and 2d. each passenger. Mr. Abraham gives his charge as 5s. 4d. The road from here was very stony and loose. In places loose slate covered the road to a depth of three inches or more, but, fortunately, with the exception of a puncture from a sharp flint in my friend's back tyre near Loch Creran, we were free from tyre troubles till, at the end of 600 miles, I got a hob-nail in my front tyre. We were also very fortunate in having fine weather, no rain falling while we were riding from the time we left Glasgow till the following Sunday, when we were nearly home. The road by Loch Laggan was mostly very bumpy, and on arriving at Laggan bridge we had no difficulty in following Mr. Abraham's short cut over the moor to Dalwhinnie, where the road became first-class again. Callander to Stirling and part of the way to Edinburgh was not so good, pot-holes abounding. After spending a day in Edinburgh, we returned to Penrith by way of Galashiels, Selkirk, Hawick, and Carlisle, which was a splendid road, except near Edinburgh. All the party agreed that it was the finest holiday they had ever spent, and, although a good deal of rough road had to be covered, the scenery amply compensated for it.

In conclusion, I should say that anyone attempting this trip should carry a spare tyre or two, and a strong machine and sidecar is essential. Anything like a light combination would, I am sure, get shaken to pieces.

JOHN GIBSON.

Pay Day with the M.M.G.S.

Sir,—As your valued journal has been first and foremost in stimulating and aiding the recruiting for the Motor Machine Gun Service, I do not think it too much to ask you to use your influence again on behalf of those same recruits.

I understand from young men who have joined that a pay-day would be welcomed with no little joy. Evidently there must be a slackness somewhere, for young fellows who have left good homes, sacrificed good livings, and who always had plenty of cash, to be kept five or more weeks without so much as being paid a halfpenny, leaving them to be continually drawing on their savings or home finances.

We are not unpatriotic, but surely, Mr. Editor, this is no stimulus to young men intent on serving King and Country, and surely your paper can do something towards amending these financial difficulties.

Certainly this should never have been allowed, and if there is any material reason for such a state of affairs to hear of it through the columns of your paper would oblige

G. MAIN RUSSELL.

[THIS LETTER WAS SUBMITTED TO THE COMMANDING OFFICER OF THE M.M.G.S., WHOSE REPLY IS APPENDED.—ED.]

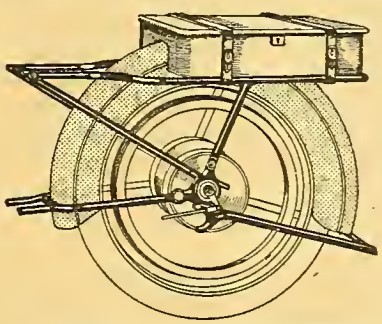
The statements contained in the above letter are entirely false. All men of the M.M.G.S. present in this camp, or in outlying camps with their batteries, are paid regularly every Friday.

If G. M. Russell will come here any Friday he can see things for himself. Meanwhile, it is his duty to substantiate his statements or make an ample apology.

Bisley, 3/9/15. R. W. BRADLEY, Lieut.-Col.

A Roomy Tool-box.

Sir,—Seeing correspondence on the subject in a recent issue of *The Motor Cycle*, I should like to draw attention to a good tool-box (in which I am not interested), the present pannier bag being, undoubtedly, too small.



Tool-box referred to in the accompanying letter.

I have an 8 h.p. Rex, which machines are fitted with a large metal tool-box. It is lined with rubber, and into it can neatly be packed a full tool-roll, chain parts, tyre outfit, spare tube, engine valve, oilcan, etc. A lock and two straps hold the hinged lid firmly, and the "rattle bogey" is non-existent. This tool-box is very strong, capable of carrying very heavy luggage, and is very neat and weatherproof. The frame is made of D tubing, and is fixed to the cycle frame, not the mudguard. In combination with a spring carrier it should approach the ideal. F 8768.

Motor Cycle Volunteers.

Sir,—Although not a member of the Motor Cycle Volunteer Corps, I am very interested in the movement, and I should feel very much obliged if I might trespass on your valuable space to reply to "M.B.'s" last letter.

First, as to the corps "playing themselves" at the foot of Style Kop, I may state that they were carrying out a

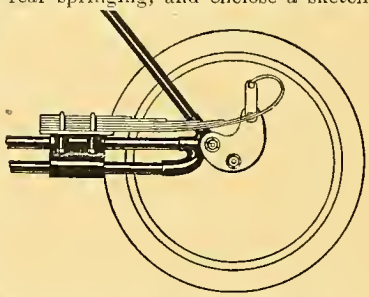
manœuvre previously arranged and advertised in the programme, and were not merely casually "acting the goat," as the tone of "M.B.'s" letter seems to suggest.

Secondly, with regard to the back door enlistment, not only has the letter from the M.M.V.C. answered this, but also it must be obvious that men who are sufficiently sporting to give up their spare time and money to carry out reconnaissances, despatch rides, etc., often under adverse conditions, must surely be sporting enough to enlist in the Regulars if possible. If "M.B." would see the corps at their usual work at any week-end he would be certain to alter his opinions. If the Regular Army were only seen at a tent-pegging competition, or the Navy only seen when giving a display for some charitable purpose, as was the M.M.V.C. at Style Kop, a different idea of their real duties would be formed.

Lastly, as to the "toy pistol" affair, does "M.B." object to anyone calling the attention of a friend who was passing by a little noise? AN UPHOLDER OF THE M.M.V.C.

Rear Springing.

Sir,—I am interested in the letters published in *The Motor Cycle* concerning rear springing, and enclose a sketch of an idea that has occurred to me. You will see that the only oscillating parts are the side plates carrying the back axle. I think this is an advantage over types with moving seat and chain stays. If sufficient support is given to the pivots connecting the side plates to the chain stays there should not be any side play. Double shackles or links could be used at the top if there was sufficient wheel clearance. The seat stays would have to be bent or split in order to clear the leaf spring. Also, as the side plates raise the chain stays rather much in relation to the axle, and a bent stay to lower the engine level would weaken the stay, double stays would make a stronger job of it.



M. L. HADINGTON.

Eliminating Weaknesses.

Sir,—Referring to your leaderette on this subject in *The Motor Cycle*, we can scarcely agree with your idea of sending out a commission to study the weaknesses of the various machines in use with the Expeditionary Force.

As you are no doubt aware, the various firms who are supplying motor cycles to the War Office have quite a number of qualified men in the A.S.C. who are effecting repairs to their particular make of machines. Surely these men (many of them well-known competition riders), who have been out here for a considerable period, and who have a peculiar knowledge of the conditions of use and of the machines, are better qualified to suggest weaknesses which should be eliminated than any commission which could be formed in England for this purpose.

A. B. WADE, Lce.-Corpl.
F. G. BALL (A.S.C.).

(B.E.F., France.)

[A properly constituted commission would have more authority than an artificer-mechanic, though doubtless the latter are capable men, and the very fact that the weaknesses have not yet been removed proves our contention that something more is needed.—ED.]

Mind and Machine.

Sir,—Has it occurred to you or to any of your readers that a psychic relationship may exist between the rider of a motor cycle and his engine, or, indeed, between the human mind and any piece of running mechanism? We speak of the sympathy between man and machine, of the response of the latter to the driver's will, without realising the literal sense of these expressions. I am convinced that the volition of the driver, together with a kind of affection for the engine under his control, is a positive force in the efficient running of a motor. It has often struck me that an engine accelerates, without mechanical inducement or manipulation, in direct reply to the mental suggestion of the driver. Neither is the theory unscientific. The influence of the mind on things termed inanimate is admitted by psychologists.

Inversely, the machine reacts on the consciousness of the driver. A sensitive motorist is aware of what is going to happen in the engine before obvious symptoms declare themselves. Just recently I was forewarned that my engine was about to knock, without the least mechanical indication, and with the motor running fast and smoothly.

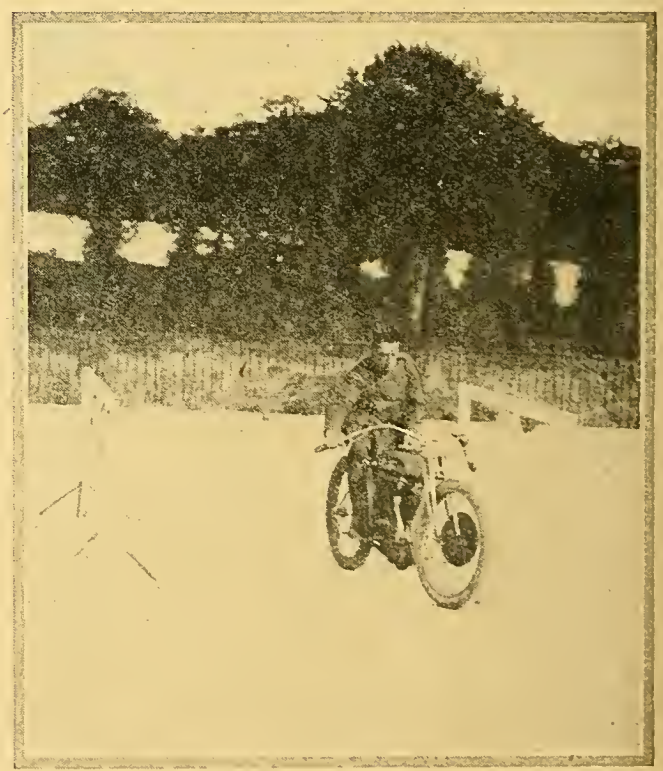
Again, it is not to be denied that a piece of mechanism has temperament and moods. There are certain qualities in engines which we cannot explain by mechanical reasoning. Some motors possess definitely moral attributes. A man whose temper is rough and uneven is never a successful motorist, and this is probably due quite as much to the fact that he lacks mental sympathy with the motor as it is to his violent manipulation. The cry of a slipping clutch plate is more than a mere noise of misused metal—it is the voice of pain!

In short, the question of the influence of the mind on machinery, and *vice versâ*, is an extremely interesting one, well illustrated by the experience of observant drivers, and opening up a new field of research and experiment. It may be noted, in conclusion, that *confidence* in an engine is an essential to its satisfactory running.

C. E. VULLIAMY.

The Supply of Sparking Plugs.

Sir,—One result of the present shortage of the best-known makes of sparking plugs, due to the demands of the war, has been a flooding of the market with cheap and little-known brands, hurriedly constructed and designed solely from the salesman's point of view. Such plugs can scarcely give satisfaction in use, and we particularly recommend caution in the purchase of plugs to-day. The safest plan is only to buy plugs of known worth and permanent reputation, even though it may mean a little delay in getting delivery. THE LODGE SPARKING PLUG CO., LTD.



BROOKLANDS MEETING FOR ARMY AND NAVY MEN.

Mechanic M. Newnham (R.F.C.), who rode a 7 h.p. Yale in the serpentine race. This new American arrival had huge handle-bars, which would alone have attracted attention.

The United Services Motor Cycle Race Meeting.

Great Success of the Second Army and Navy Meeting at Brooklands. 195 Entries

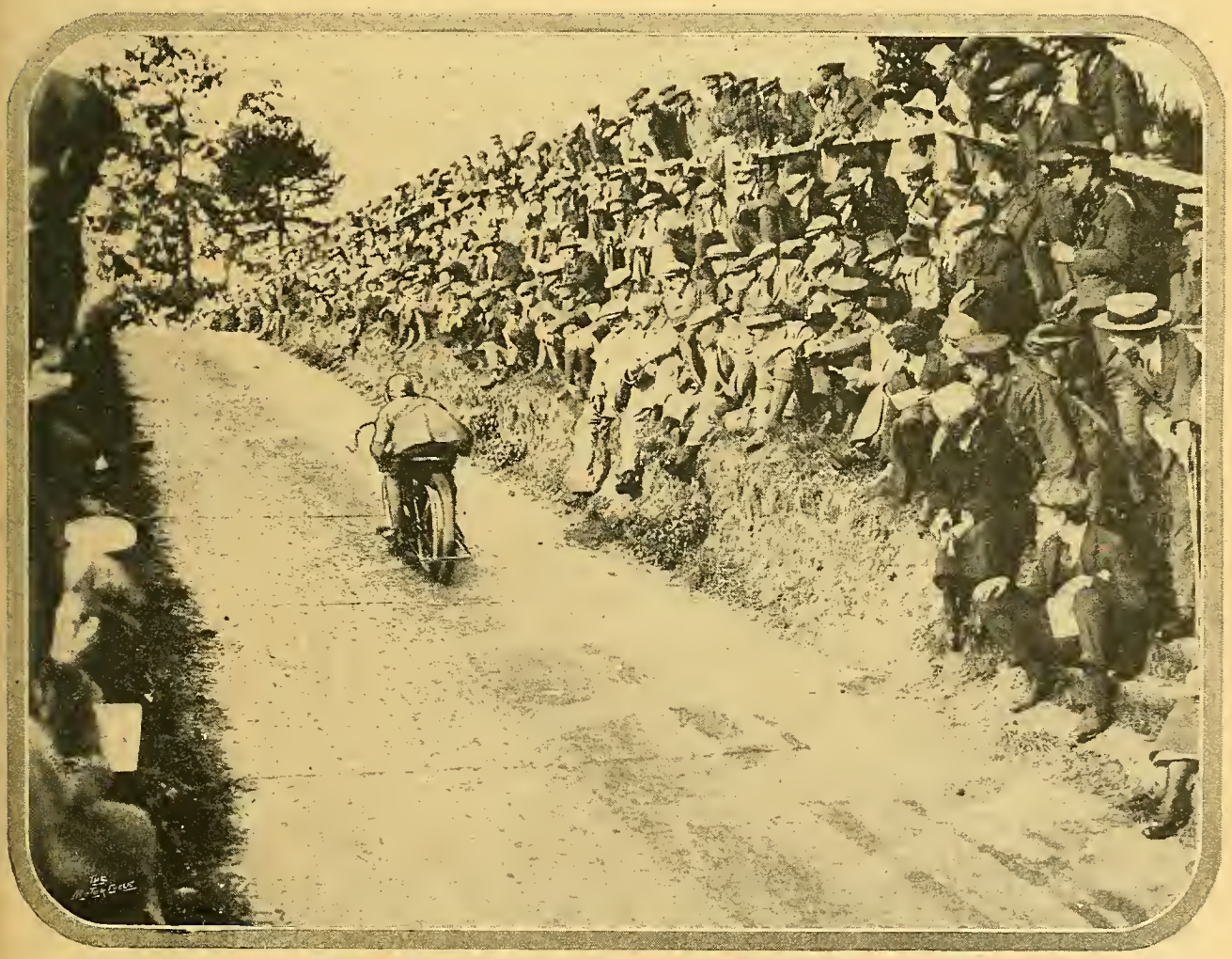
PEOPLE were kind enough to say that the All-khaki race meeting was a success; if this is so, the United Services competition was little short of a triumph. Shortly after 2 p.m. the paddock was packed with motor cycles, cycle cars, and cars, of all makes, sizes, types, and dates. Viewed from afar, the crowd assumed that drab neutral tint which showed that it consisted mainly of the soldier element. Nevertheless, the dull, businesslike colour was relieved by the bright dresses of the ladies, the blue of the brave wounded from St. George's Hill, the uniform of a Royal Naval officer, and the light blue-grey of a Flying Corps man of the French Army.

The general organisation of the meeting was excellent, and the work of the officials considerably simplified owing to the fact that the half-mile sprint races could be held on the finishing straight: this meant that the actual finish was opposite the bottom of the test hill, and therefore in full view of the two grandstands on each side of the track. Mr. Houghton's stalwart sergeants of the 25th Divisional Cyclist Company performed their duties splendidly, and kept the gates leading from the paddock to the track even as Horatius kept the bridge in the brave days of old. It was quite a "brain wave" on the part of Mr. T. W. Loughborough to send the competitors, after they had finished, back to the starting point under the members' bridge and behind the hill.

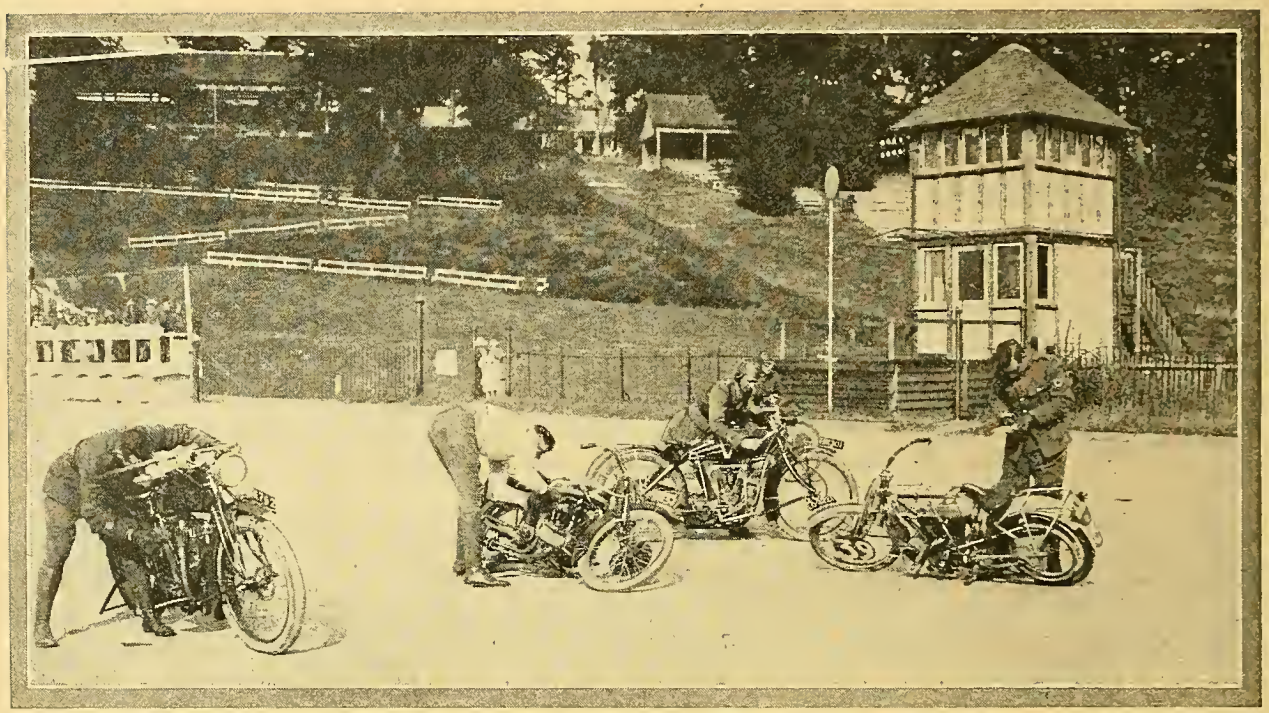
The start took place beyond the houses at the top of the straight, the unmended portion of the track being railed off by barriers. This was, unfortunately, rather narrow, and necessitated some of the events being run off in two, if not three, heats. There were no finals, the fastest men being accounted the winners, and in this way a certain amount of time was saved.

A Punctual Start.

If any fault could be found with the organisation, it was that the results and starters were not clearly and speedily announced to the public. Southcomb May, the hon. secretary of the M.C.C., and now of the M.M.G.S., did his best, but through lack of time, adequate assistance, and a proper notice board on the other side of the track, his efforts were of little avail. However, the meeting was organised chiefly for the competitors, who were all of the fighting forces (on this occasion the Royal Navy was well represented), and they really enjoyed themselves. The weather, too, was kind, and glorious sunshine favoured the whole of the meeting.



General scene at the hill-climbing contest, looking towards the top of the hill. Lieut. F. M. C. Houghton (the officer who suggested the All-khaki event to "The Motor Cycle") is seen at full speed on his Rudge.



AN AMUSING EVENT. Busy with really hot sparking plugs in the Plug Changing Contest. Most of the competitors wisely wore thick gloves.

The first event, which was down in the programme for 2 p.m., started punctually to the minute. It was the TWO-STROKE HALF-MILE SPRINT for motor cycles fitted with two-stroke engines not exceeding 270 c.c. There were six entries, and Sergt. Milner won easily. Result :

		mm.	c.c.	m.p.h.
1.	A. Milner, Sergt. R.E. (Levis)	60×70	198	38.7
2.	J. C. Bramwell, Pte. Bradfield O.T.C. (Calthorpe)	67×69	245	
3.	R. J. Slade, Flight Sub.-Lieut. R.N. (Villiers)	70×70	269	

The next event was the LIGHTWEIGHT HALF-MILE SPRINT for motor cycles with engines not exceeding 350 c.c. In this race too many competitors, considering the small amount of space available, were started together, and it was only thanks to the wonderful skill of the winner—Milner—that an accident was averted. Result :

1.	A. Milner, Sergt. R.E. (1-cyl. Diamond)	75 × 79	349	42.86
2.	F. H. Edwards, Pte. Artists Rifles (2-cyl. Douglas)	60.5× 60	350	
3.	C. L. Scott, 2nd Lieut. A.S.C.,M.T. (2-cyl. Douglas)	60.5× 60	350	

Next followed the MEDIUM-WEIGHT HALF-MILE SPRINT for TOURING MOTOR CYCLES with engines not exceeding 550 c.c. At the start Second-Lieutenant Guy, R.E., stripped the thread on a sprocket of his Scott and had to give up. The event was run off in two heats. S. R. Axford, R.N.A.S., suffered a derangement in the bottom gear of his Matchless, and could not start. Result :

1.	H. G. Hodgson, Corpl. R.E. (2-cyl. A.B.C.)	70×64	492	44.78
2.	S. W. Wright, Corpl. A.S.C.,M.T. (1-cyl. Triumph)	85×97	550	
3.	J. Bluhm, Sergt. Artists Rifles (1-cyl. Zenith)	90×77.5	498	

In the second heat of this race MacColl, who was riding a Sunbeam, had a nasty fall owing to his front tyre bursting. He rolled over and over, but fortunately escaped injury.

The next event was the MEDIUM-WEIGHT HALF-MILE SPRINT for RACING MOTOR CYCLES with engines not exceeding 550 c.c. This was run in two heats. In the second heat, in which, by the way, Lieut. Houghton, the joint secretary of the meeting, ran second, Sergt. Bluhm finished trailing his exhaust pipe on the ground. The first three in the first heat made the fastest times. Result :

1.	G. Kendall, Pte. D.L.O.Y. (1-cyl. Norton)	79×100	490	49.72
2.	H. G. Hodgson, Corpl. R.E. (2-cyl. A.B.C.)	70× 64	492	
3.	S. Wright, Corpl. A.S.C.,M.T. (1-cyl. Triumph)	85× 97	550	

Burning their Fingers.

Then followed the QUICK-CHANGE PLUG RACE for solo motor cycles of any description. The competitors had to ride a quarter of a mile, change a sparking plug lying in an envelope bearing their number, and return a quarter of a mile to the starting point. Some little confusion was caused by the arrangements being slightly altered at the last moment. On this occasion the competitors had to place the plug they had replaced in their own envelope. The competitors whose empty envelopes were left on the track were disqualified. The event was run in two heats. In the first heat Lce.-Corpl. Thompson (Douglas) was easily the best. In the second heat Pte. Charlesworth (Zenith) was quite the smartest both at arriving and getting away. The plugs were placed opposite the grand stand, and in full view of the spectators. Result :

		mm.	c.c.	Time.
1.	R. Charlesworth, Pte. N.L. O.T.C. (2-cyl. Zenith)	76×83	752	1m. 50s.
2.	H. F. Edwards, Pte. Artists Rifles (2-cyl. Douglas)	60·5×60	350	1m. 50⅗s.
3.	T. Thompson, Lance-Corpl. R.E. (2-cyl. Douglas)	60·5×60	350	

Then came the UNLIMITED HALF-MILE SPRINT for motor cycles of any description not exceeding 1,000 c.c. This event was run in four heats. It was noted in this and other races that at the start Hodgson's A.B.C. accelerated in a most extraordinary manner. In the first heat the first and second men were first and third in the final, while the winner in the fourth heat was second in the final classification. Result :

				m.p.h.
1.	G. Kendall, Pte. D.L.O.Y. (1-cyl. Norton)	79 ×100	490	50.28
2.	Noel Brown, Sergt.-Major (2-cyl. Indian)	82.5× 93	994	
3.	H. G. Hodgson, Corpl. R.E. (2-cyl. A.B.C.)	70 × 64	492	

The next event, the SIDECAR HALF-MILE SPRINT, was by no means well supported, as there were only six entries, and of these MacColl and Barker were knocked out before the event was run. C. L. Scott, Second-Lieut. A.S.C., ran a Singer light car unofficially, and came in second, but, of course, was not placed. Result :

1.	C. P. Openshaw, Flight Sub.-Lt. R.N. (2-cyl. Zenith)	90 ×77.5	986	46.15
2.	H. F. Edwards, Pte. Artists Rifles (2-cyl. Zenith)	85.5×85	976	
3.	G. J. Pidgeon, R.E. (Martin)			

A Test of Skilful Riding.

The SERPENTINE FAST RACE, open to solo motor cycles of any description, was a most interesting affair, and called for an excessive amount of skill. Barriers six feet apart were placed in sets of four at two intervals on the half-mile available, and competitors had to ride between them. Touching the ground with the foot was forbidden. Lieut. Boston, G.H.Q. Staff (A.J.S.), stopped and dropped his machine. Lce-Corpl. Thompson, R.E. (Douglas), rode with consummate skill and was heartily cheered. His perform-

The United Services Motor Cycle Race Meeting.—

ance was quite the neatest, and he was only beaten by engine power. Sergt. Milner, R.E. (Diamond), touched a barrier. Corpl. Hodgson, R.E. (A.B.C.), also failed. P. O. Kingdon, R.N.A.S. (Douglas), stopped his engine. Corpl. Wright, A.S.C. (Triumph), made quite a good performance. Art. Mech. C. F. Mossman (Zenith) touched a barrier. 2nd Lieut. F. M. C. Houghton, 25th Div. Cyclist Co. (Rudge), rode well, scraping the ground at intervals with his foot-rests. Assistant-Paymaster C. P. Marcel, R.N.R. (Indian), rode with considerable skill. Pte. Charlesworth, N. London O.T.C. (Zenith), fell. 2nd Lieut. O. J. F. Scholte, 3rd Beds. (Indian), made an excellent performance, which was heartily applauded. Of the two remaining competitors, one touched the ground with his feet, and the other stopped his engine. Result :

	mm.	c.c.	Time.
1. O. J. F. Scholte, 2nd Lt. 3rd Beds. (2-cyl. Indian)	82.5×93	994	1m. 24s.
2. T. Thompson, Lance-Corpl. R.E. (2-cyl. Douglas)	60 ×60	349	
3. C. P. Marcel, Asst.-Paymaster R.N. (2-cyl. Indian)	82.5×93	994	

Fast Speeds on the Test Hill.

The JUNIOR HILL-CLIMB for motor cycles of any description, with engines not exceeding 350 c.c., was won by the constantly victorious Sergt. Milner, whose Diamond, though it missed fire, was exceedingly fast. Result :

				m.p.h.
1. A. Milner Sergt. R.E. (1-cyl. Diamond)	75	×79	349	29.29
2. G. S. Boston, Lieut. G.H.Q. Staff (1-cyl. A.J.S.)	70	×91	349	
3. F. H. Edwards, Pte. Artists Rifles (2-cyl. Douglas)	60.5	×60	350	

Boston, like several other competitors in the hill-climbing events, approached the starting point with his engine running, and started by engaging the clutch.

Then came the MEDIUM-WEIGHT HILL-CLIMB, for motor cycles of any description not exceeding 550 c.c. In this event the performances of the A.B.C. and a Premier were most noteworthy. Result :

	mm.	c.c.	m.p.h.
1. H. G. Hodgson, Corpl. R.E. (2-cyl. A.B.C.)	70 × 64	492	32.6
1. G. W. Huntbach, Capt. M.M.G.S. (1-cyl. Premier)	83 × 85	493	
3. S. Wright, Corpl. A.S.C., M.T. (1-cyl. Triumph)	85 × 97	550	

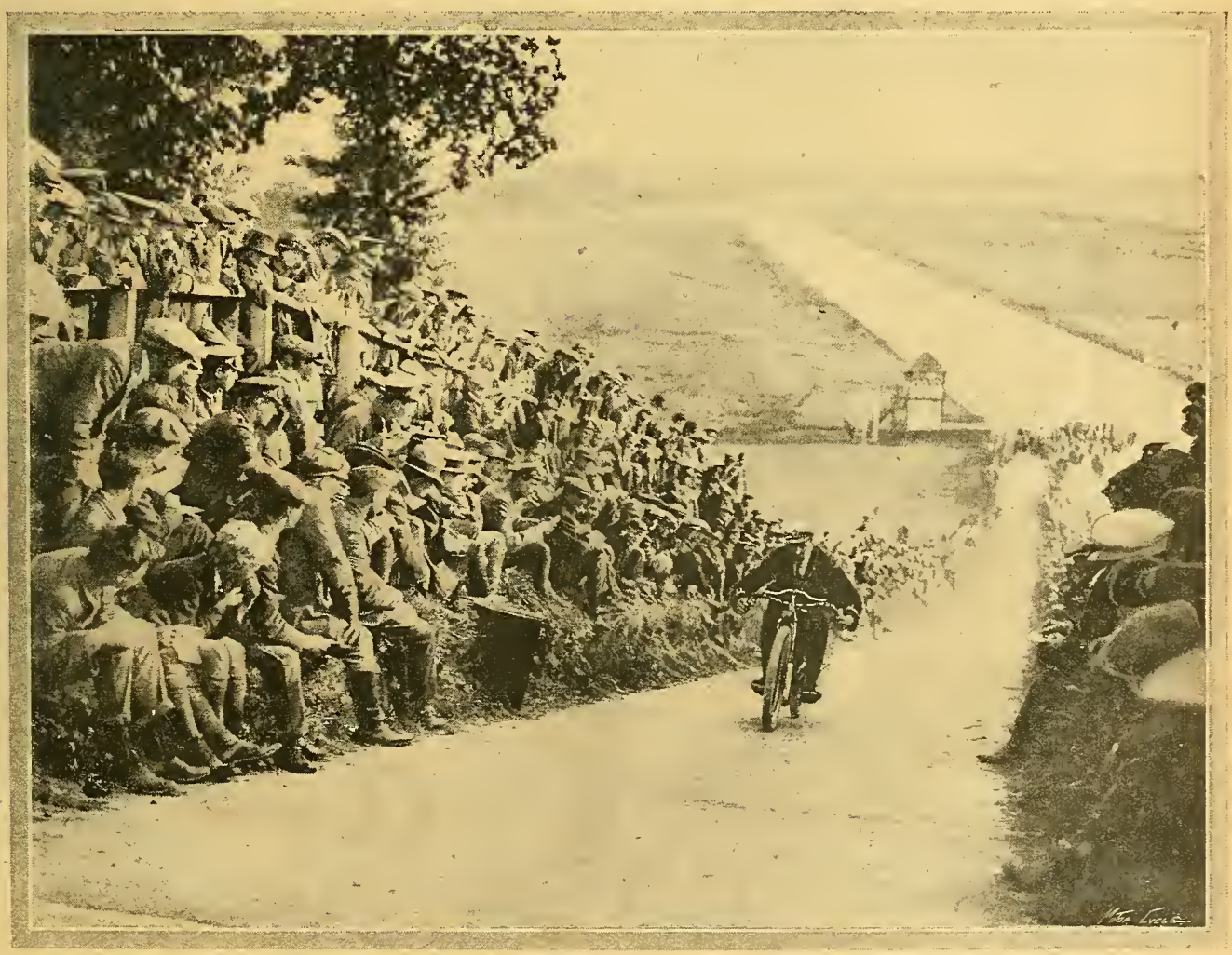
The final event was the UNLIMITED HILL-CLIMB, for motor cycles of any description, with engines not exceeding 1,000 c.c. Result :

1. O. P. Openshaw, Flight Sub.-Lt. R.N. (2-cyl. Zenith)	90 × 77.5	986	44.48
2. R. A. Waddy, Pte. Oundle O.T.C. (2-cyl Indian)	82.5 × 93	994	42.85
3. Noel Brown, Sergt.-Major (2-cyl. Indian)	82.5 × 93	994	

After the meeting the prizes were distributed by Mrs. D. F. Nicholl, wife of Major Nicholl, D.S.O., D.A.A., Q.M.G., one of the stewards. *The Motor Cycle* Cup was won by H. Graham Hodgson (A.B.C.), 9 points; next came A. Milner (Levis and Diamond), 6 points, who tied with O. P. Openshaw (Zenith), 6 points. This, the last Naval and Military motor cycle race meeting of the season, terminated with three cheers for Mrs. Nicholl.

NORTH COUNTRY HILL-CLIMB.

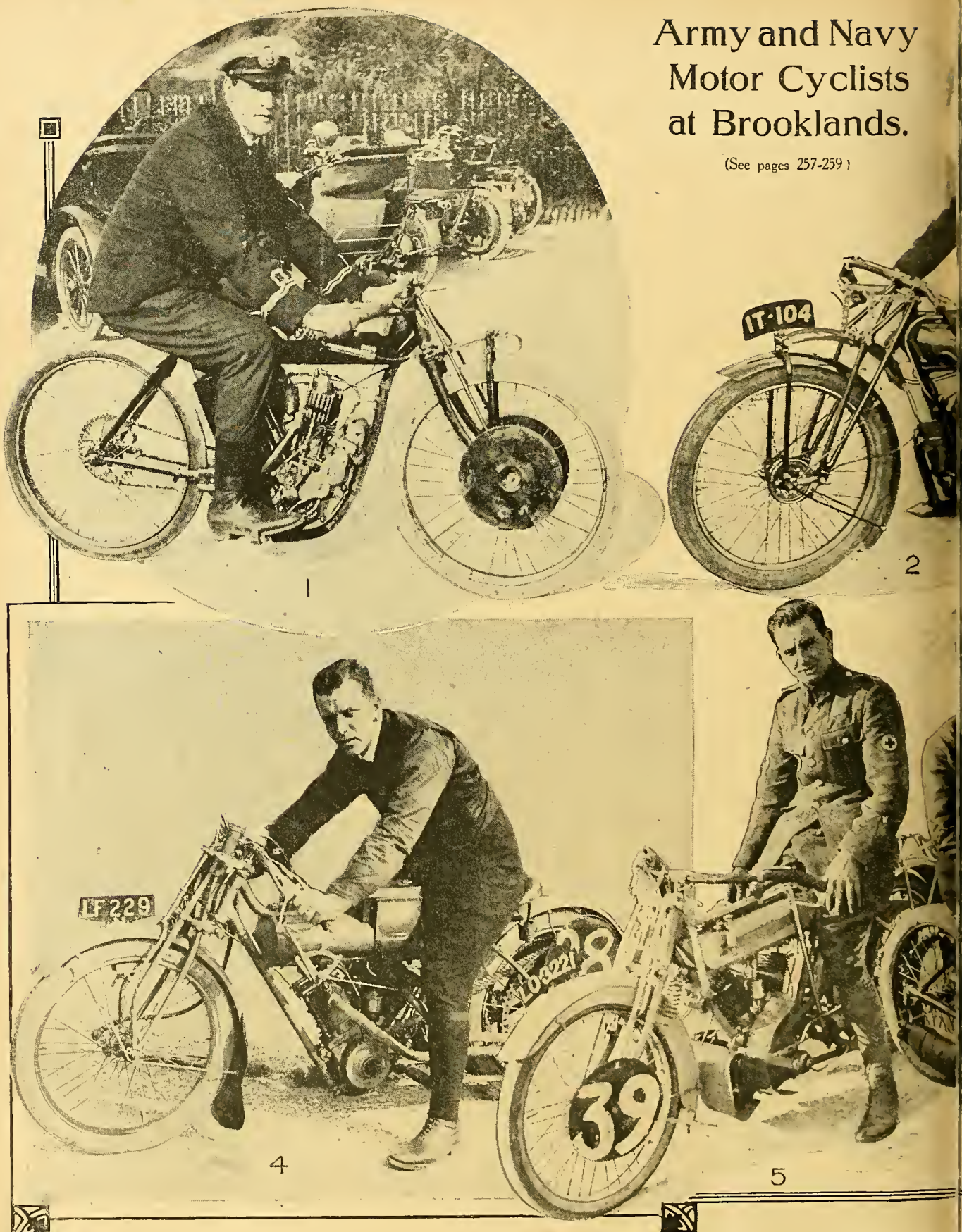
There is good promise in the way of entries for the Pen-y-ball open hill-climb on the 18th inst., writes Mr. Bullock, hon. sec. of the Liverpool Motor Club. There are nine classes to be decided on time only, the prizes will consist of War Loan vouchers, and the entire profits will be handed over to war charities.



A DASH UPHILL. Lieut. F. A. McNab, R.N.V., on the 1 in 6 stretch of the Brooklands test hill. He was riding a 3½ h.p. twin-cylinder Indian.

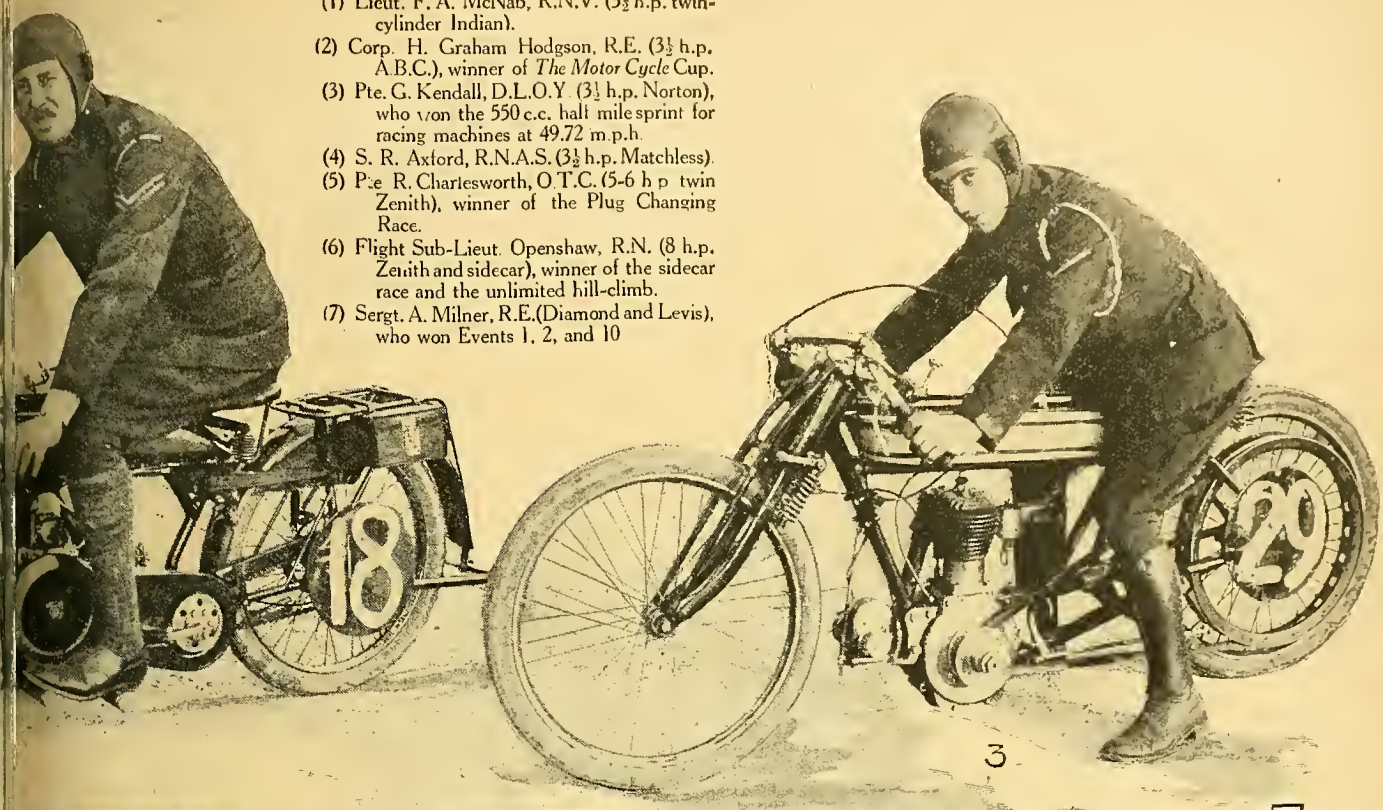
Army and Navy Motor Cyclists at Brooklands.

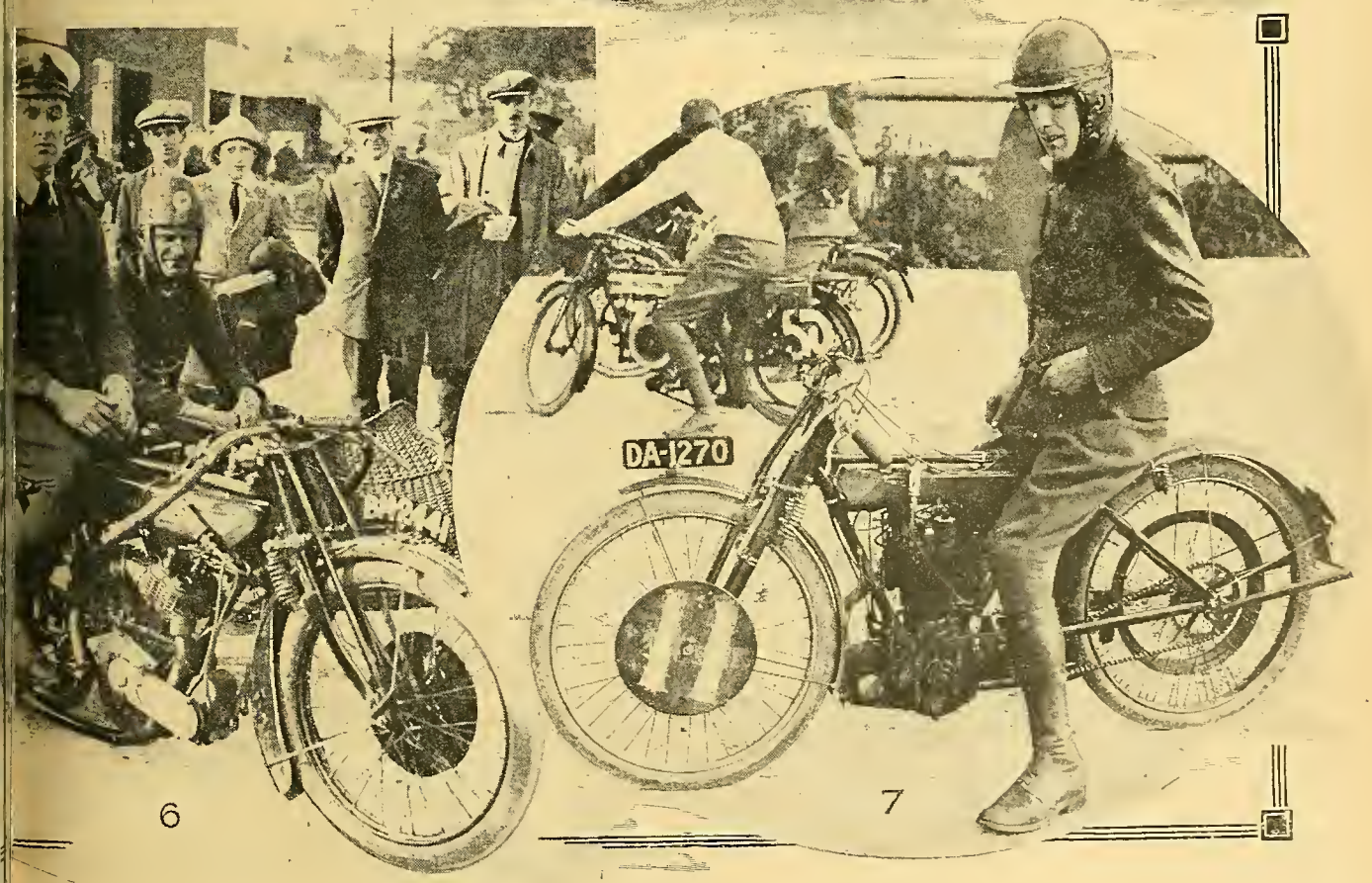
(See pages 257-259.)

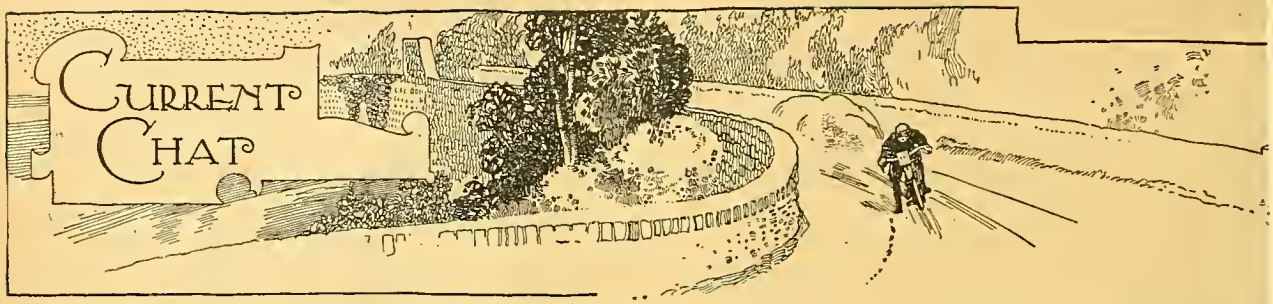


1 2 4 5

(1) Lieut. F. A. McNab, R.N.V. (3½ h.p. twin-cylinder Indian).
(2) Corp. H. Graham Hodgson, R.E. (3½ h.p. A.B.C.), winner of *The Motor Cycle* Cup.
(3) Pte. G. Kendall, D.L.O.Y. (3½ h.p. Norton), who won the 550 c.c. half mile sprint for racing machines at 49.72 m.p.h.
(4) S. R. Axford, R.N.A.S. (3½ h.p. Matchless).
(5) Pte. R. Charlesworth, O.T.C. (5-6 h.p. twin Zenith), winner of the Plug Changing Race.
(6) Flight Sub-Lieut. Openshaw, R.N. (8 h.p. Zenith and sidecar), winner of the sidecar race and the unlimited hill-climb.
(7) Sergt. A. Milner, R.E.(Diamond and Levis), who won Events 1, 2, and 10







TIMES TO LIGHT LAMPS.

Sept.	9	... ...	7.30 p.m.
,,	11	... ...	7.25 ,,
,,	13	.. ...	7.21 ,,
,,	15	... ...	7.16 ,,

In London half an hour earlier.

Motor Cyclists with the Colours.

Last week we met R. V. C. Brook, a leader in Midland motor cycle club circles, who is now a lieutenant in the R.N.V.R., and acting as inspecting engineer in the Royal Naval Air Service.

The National Relief Funds.

At the week-end the principal relief funds stood as follows:

	£	s.	d.
The Prince of Wales' Fund	5,471,473	0	0
The Queen's Work for Women Fund ...	164,393	5	11
The Weekly Dispatch Tobacco Fund ...	82,418	15	2
The Times Fund for Sick and Wounded	1,658,914	0	0
Belgian Relief Fund (exceeds)	835,000	0	0

A Motor Cyclist Aviator.

Mr. R. L. Charteris, who is a director of A.B.C. Road Motors, Ltd., was in the Royal Flying Corps Reserve when war broke out. He went over to Flanders in February last and sustained severe injuries to his head owing to a fall, caused by the engine of his aeroplane stopping while he was leaving the aerodrome. He is now back in England, and has received an appointment entailing the inspection of aeroplanes for the War Office. Mr. Charteris is an enthusiastic motor cyclist, and looks forward to the time when his company will be again in a position to supply the public with A.B.C. motor cycles without undue delay.

The Navy v. Army Hill-climb.

The above event will be run by the Streatham and District M.C.C. The date has been provisionally fixed for Saturday, September 25th. The hill on which the event will take place will be easy of access from London, Chatham, Bisley, and Aldershot.

CLASS 1.—Two-strokes up to 270 c.c.
CLASS 2.—Motor cycles up to 350 c.c.
CLASS 3.—Motor cycles up to 600 c.c.
CLASS 4.—Motor cycles up to 1,000 c.c.
CLASS 5.—Sidecars up to 600 c.c.
CLASS 6.—Sidecars up to 1,000 c.c.
CLASS 7.—Cycle cars up to 1,000 c.c.
CLASS 8.—Open to riders of Douglases.
CLASS 9.—Open to riders of Indians.

Entries, which cost 2s. 6d., should be forwarded to Mr. J. H. Jeffery, 2, Beemead Avenue, Streatham, S.W.

Progressing Slowly.

Mr. R. H. Lea, of Messrs. Lea-Francis, Ltd., who sustained an unfortunate accident some months ago which resulted in a broken leg, is now, we are glad to state, out of hospital, and is able to take drives in the country on a car.

The United Services Meeting.

THE NAVAL FLYING WING.—The naval wing was well represented. We noticed as a spectator Flight Sub-lieutenant W. G. McMinnies, and Flight Sub-lieutenant C. P. Openshaw, formerly secretary of the Oxford University M.C.C., was a competitor. By the way, it was not Openshaw who was mentioned in "Eye-Witness's" description of the aviator who fell out of his machine, hung suspended from a strap, climbed back to the seat, righted his aeroplane, and came safely to earth, but someone else altogether. Openshaw told us he had never been out of England since the war started.

THE ROYAL ENGINEERS (MOTOR CYCLISTS).—Sergt. Milner, who is at an R.E. training centre, was riding both his old love the Levis and a Diamond. He was well in the running for *The Motor Cycle* Cup, as regards marks, but he could not have won it, as he rode two machines.

THE ARMY SERVICE CORPS (M.T.)—Sergt. F. E. Barker was, unfortunately, a non-starter in all the events as he broke a connecting rod before the meeting began. Corporal W. Pratt did valuable work as a chief marshall.

"THE MOTOR CYCLE" CUP.—This time the aggregate prize presented by the proprietors of *The Motor Cycle* took the form of a handsome rose bowl. It was won by H. Graham Hodgson on an A.B.C., of which he was a private owner. The machine which, to outward appearance, was of standard design, was delivered in March this year. It is another triumph for a young and well-deserving firm, who, but for the war, would this year have assumed a well-merited place among our most successful makers.

THE PRIZE WINNERS.—The meeting was for officers and men. On this occasion the non-commissioned officers and men shone conspicuously as prize winners.

"MOTOR CYCLES AND HOW TO MANAGE THEM" is recognised everywhere as the standard handbook on the motor cycle. The sixteenth edition (revised) is now ready, and can be obtained from "THE MOTOR CYCLE" Offices, 20, Tudor Street, London, E.C. Post paid, 1/3 per copy.

SPECIAL FEATURES.

UNITED SERVICES MEETING AT BROOKLANDS.

THE MECHANICAL TESTING OF MET.

HINTS FOR BEGINNERS.

THE NAVAL ELEMENT.—The naval ment was far more pronounced on Sa day than on the occasion of the ". khaki" meeting. We were glad see it.

ENTRIES.—Twenty additional ent were accepted after the official clos date. This brought the total num to 195.

THE OFFICIALS.—Col. Holden, Assist Director Mechanical Transport, Capt. A. H. Loughborough, R.G. stewards, were unable to be prese We were, however, delighted to Col. F. Lindsay Lloyd and his fri Lieut. N. C. Neill, R.N.V.R., w turned up as spectators. Major D. Nicholl and Dr. A. M. Low, Lie R.F.C., did valuable work as stewar

MACHINES IN THE PADDOCK.—T variety of makes was extraordinary, novelties were few and hard to fi Quite the rarest vehicle there was 2 h.p. landau. Another type, t time a genuine motor cycle, was American newcomer, the Yale, ridc by an R.F.C. man. It had m peculiar handle-bars, and plated radi ing fins cast horizontally like the Mo sacoche. The overhead inlet valve neatly enclosed.

THE R.N.V.R.—The best kno member of the Royal Naval Volunt Reserve was our old friend Lie F. A. McNab. He has a real taste the sea, and looks a real sailor. was riding poor Jake de Rosier's twin-cylinder Indian.

Manufacturers and Government Requirements.

A week or two ago the two firms w have been supplying all the despat riders' motor cycles for the Governme (which, be it understood, has never qu represented their maximum outp received notice of a reduction in the W Office requirements, which means that larger number of motor cycles have be released for other channels. We belie we are right in stating that the surpl is enabling these firms partly to satis urgent Overseas orders.

The Clyno and P. and M. compan are apparently the only firms whc entire output of motor cycles is absorb by the British Government, and it wou appear that there is little prospect of change for some time to come.

Useful Special Constables.

Two Berkshire special constables who had had warning that a German was travelling by motor cycle from Gloucester to London, successfully waited and arrested him. He is now, we understand, interned.

Lightweights at North-country Hill-climb.

Class I. of the Liverpool Motor Club's hill-climb on the 18th inst. has been extended to include machines up to 275 c.c. Originally 250 c.c. was the limit imposed.

A Ride over Hardnott and Wrynose.

Since Mrs. Riley made her trip into Peel-land, as recounted in our last issue, she has accomplished a more ambitious trip, viz., the first sidecar crossing of Southern Lakeland from East to West. An account of this trip (with photographs) by Mr. G. D. Abraham will appear in our next issue.

Those Troublesome Tail Lights!

John R. Ashworth, of Rossendale, was summoned at Reedley Police Court, on August 26th, for driving a motor cycle without rear light. Defendant said he had been to Glasgow for a week's holiday, and when returning had an accident. He could not get anyone to repair his machine, and he had to sit up all night doing the work himself. When he looked to the rear light he found he had lost the generator. He purchased an electric light, and it answered for a time, but when he got to Kirkby Lonsdale it would not act. He then purchased a cycle oil lamp, and this acted until he got to Gisburn. It then went out, and it took him four hours to come from Gisburn to where he was reported. He used two boxes of matches in trying to get a light and spent 15s. 6d. He had to be at his work at six o'clock in the morning, but on account of the regulations he had to stay until it was light. Defendant pointed out he had lost two nights' sleep, and he was compelled to be at his work, for the firm were on Government work.

Supt. Thompson: I wish to withdraw the case. Defendant seems to have been punished enough.

The case was, accordingly withdrawn.

Some Indian, What?

The following advertisement has been extracted from the *Belfast Evening Telegraph* and sent to us by Mr. J. H. Welsh:

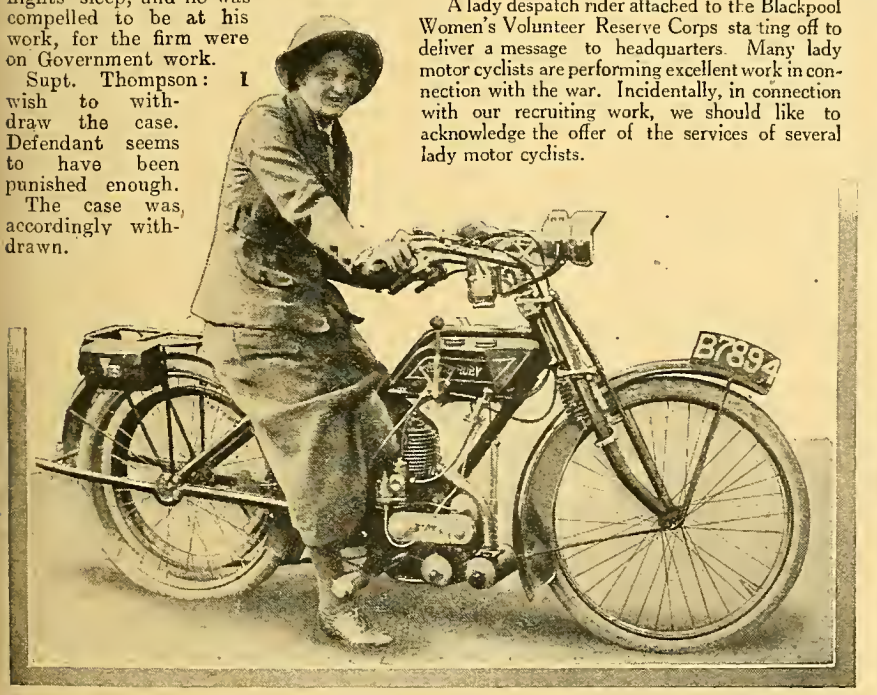
"For Sale.—1914 2¾ 3-speed A.J.S.; 1915 2¾ 2-speed A.J.S., new; *1915 h.p. Indian, new.*—Apply, Box 6,442."

Remarkable Recoveries of Speech and Sight.

The remarkable recovery of a despatch rider's speech and hearing has occurred in the case of Corporal Robert Beck, of the Army Service Corps, who became deaf and dumb whilst fighting in France. At the Palace Cinema, Aintree, he witnessed a humorous film which tickled him so much that he had to laugh heartily. Suddenly he felt a burning in his throat and a curious sensation in his ears as though they were about to burst. Then he heard a shout, and, to his surprise, found it was his own voice. Grasping the arm of a comrade he exclaimed, "Come on out, I've got my voice again." When leaving the hall, Beck seized the hand of the manager and thanked him for the funny picture; then, taking from his pocket the notebook and pencil which had been used for the purpose of carrying on his conversations in writing, he tore it in two and threw the pieces away. "No need for that now," he said, "I am speechless no longer." He then made his way to the military hospital to report his remarkable recovery.

Apropos of the above is the case of an invalid soldier who, according to report, was returning home blind, per the Allan liner *Hesperian* which was torpedoed last Saturday night. The soldier was upset from the lifeboat into the water and the shock was such that his sight was completely restored. So astonished and overjoyed was he that while still in the water he kept shouting that he had regained his sight.

A lady despatch rider attached to the Blackpool Women's Volunteer Reserve Corps starting off to deliver a message to headquarters. Many lady motor cyclists are performing excellent work in connection with the war. Incidentally, in connection with our recruiting work, we should like to acknowledge the offer of the services of several lady motor cyclists.



A.C.U. Repairer in Darkest Africa.

We do not suppose that many people make motor cycle tours in Uganda, but it is interesting to know that a repairer in that far off country has applied to the A.C.U. for official appointment.

Average Prices.

We give below the average prices for the various second-hand models offered for sale in *The Motor Cycle*. We quote those models of which at least five weekly averages have appeared during the past two months. Where it is possible to obtain a sufficient number of each model we also give the average for the past week:

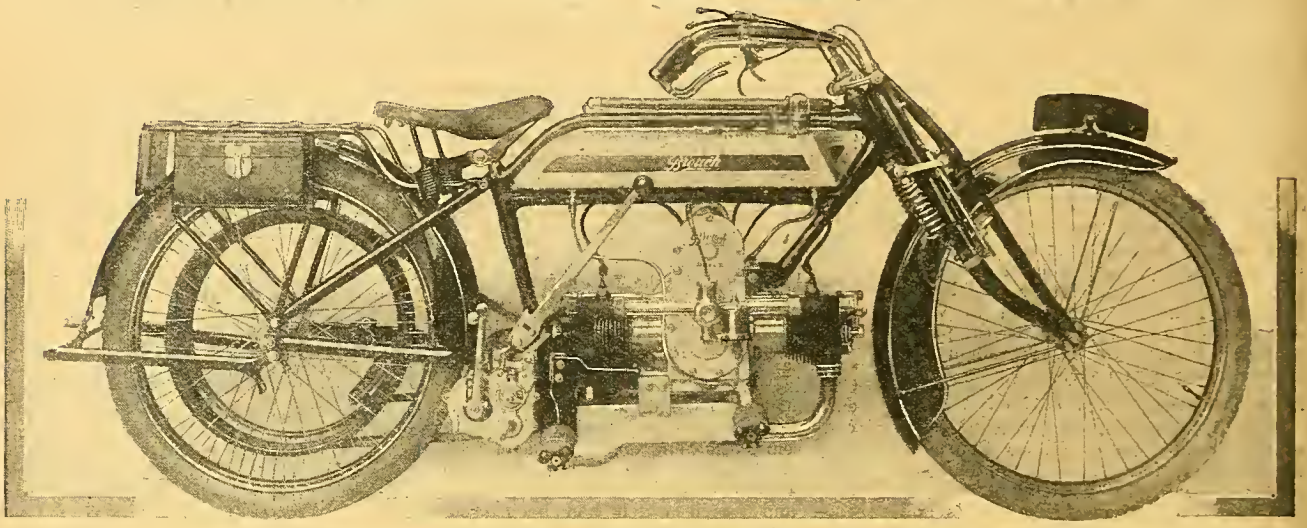
Make.	Year.	H.P.	Last week's average.	Average for past 8 weeks.
A.J.S.	1914	6 3-sp. sidecar	£76	£75
"	1913	6 3-sp. sidecar	£54	£57
"	1914	2¾ 3-speed	—	£45
Ariel	1914	6 3-sp. sidecar	—	£65
Bat	1914	8 3-sp. sidecar	—	£60
"	1913	8 2-sp. sidecar	—	£49
Bradbury	1914	6 3-sp. sidecar	—	£70
"	1914	4 2-sp. sidecar	—	£47
B.S.A.	1914	4 3-sp. sidecar	—	£54
"	1915	4 3-sp. sidecar	£73	—
Calthorpe	1914	2 2-speed	£21	£19
Chater-Lea	1914	8 3-sp. sidecar	£60	£65
Clyno	1914	6 3-sp. sidecar	£67	£69
"	1913	6 3-sp. sidecar	£47	£55
"	1914	2½ 2-speed	—	£29
Douglas	1914	2¾ 2-sp. T.T.	£42	£41
"	1914	2¾ 2-sp. kick start	£46	£43
"	1914	4 2-sp. sidecar	—	£63
Enfield	1914	6 2-sp. sidecar	£66	£64
"	1914	3 2-speed	£38	£38
Humber	1910	3½ 3-sp. sidecar	—	£39
Indian	1914	7 2-sp. sidecar	£57	£61
James	1914	4½ 3-sp. sidecar	£55	£55
"	1914	3½ 3-speed	£43	—
Lea-Francis	1913	3½ 2-speed	—	£48
Levis	1914	2½ 2-speed	—	£29
Matchless	1914	7 3-sp. sidecar	£74	£75
"	1913	7 3-sp. sidecar	£57	£55
New Hudson	1914	6 3-sp. sidecar	—	£58
"	1914	4 3-sp. sidecar	—	£50
"	1913	4½ 3-sp. sidecar	—	£40
Norton	1914	4 3-speed	£41	—
N.U.T.	1914	6 3-sp. sidecar	£62	£60
O.K.	1914	2 2 speed	£24	—
Premier	1914	3½ 3-sp. sidecar	£50	£51
"	1913	3½ 3-sp. sidecar	—	£38
P. & M.	1914	3½ 2-sp. sidecar	—	£55
Rex	1914	6 3-sp. sidecar	—	£59
"	1913	6 3-sp. sidecar	£44	—
Rover	1914	3½ 3-speed	—	£47
"	1914	3½ 3-sp. sidecar	£62	£54
"	1913	3½ 3-sp. sidecar	£46	£40
Royal Ruby	1914	3½ 2-speed	£45	£44
"	1914	2½ 2-speed	—	£24
Rudge	1914	3½ multi sidecar	—	£45
"	1914	3½ multi	—	£38
"	1914	5 multi sidecar	—	£52
Scott	1913	3¾ 2-sp. sidecar	£45	£43
"	1914	3¾ 2-sp. sidecar	£55	£57
Sunbeam	1914	6 3-sp. sidecar	—	£75
"	1914	3½ 3-speed	—	£57
Triumph	1914	4 3-sp. sidecar	—	£56
"	1914	4 3-speed	£46	£44
"	1913	3½ 3-sp. sidecar	£45	£46
Williamson	1914	8 2-sp. sidecar	£63	£74
Zenith	1914	6 Gradua sidecar	—	£60
"	1913	6 Gradua sidecar	—	£45

"A Terrible Speed."

A motor cyclist was recently fined for travelling 34 m.p.h. on the Portsmouth Road at Thames Ditton. We know the trap quite well. It is justifiable when worked from east to west, as it comprises a dangerous cross-road. Travelling in the reverse direction, however, both sides of the cross-road are clearly seen, and there is absolutely no danger. Twenty-six miles an hour is enough to carry a conviction, whereas 30 m.p.h., provided the road is clear, is absolutely safe; 34 is certainly too fast. The Chairman of the Kingston Bench, when the case came on, said it was "a terrible speed for a Sunday afternoon!"

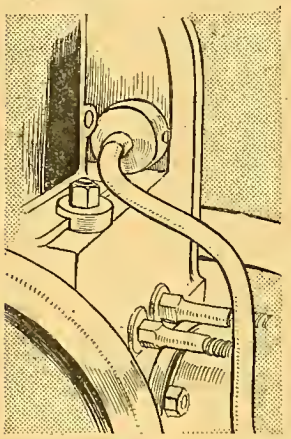
THE LATEST BROUGH.

Twin-cylinder Horizontally Opposed Engine, Three-speed Countershaft Gear.



The latest horizontal-engined Brough, fitted with Sturmey-Archer countershaft gear.

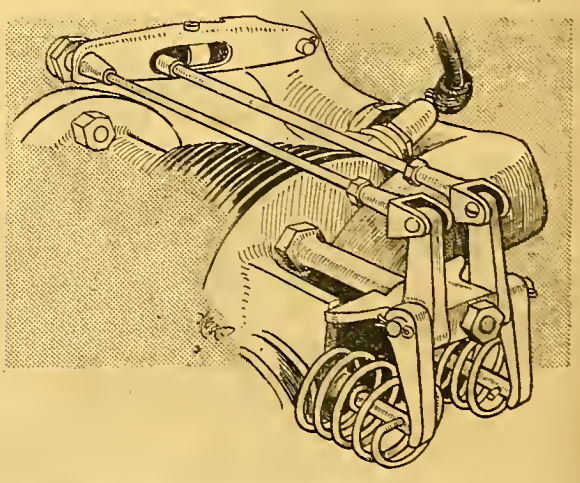
THE 3½ h.p. horizontally-opposed twin-cylinder Brough has undergone some slight modifications, and is now fitted with a Sturmey-Archer countershaft three-speed gear. The engine has a bore and stroke of 70 × 64.5 mm., 497 c.c. The cylinders are so designed as to be absolutely free from distortion by heat, the valve ports being made detachable and the exhaust ports provided with cooling flanges. The overhead valves are of large size, and make the engine very efficient. Provision is made to prevent the valve head from falling into the cylinder in the unlikely event of breakage. The pistons are specially light, and provided with three rings; in the case of the T.T. engine, light steel pistons are fitted, and the T.T. model is guaranteed to be capable of a speed of 65 m.p.h. on the road. The connecting rods and crankshaft are constructed of high tensile steel; the crankshaft is balanced and runs on large roller bearings, while the big end bearing is of phosphor bronze and adjustable. Special attention has been given to the camshaft, which runs on ball bearings, and the cams. The internal rockers are fitted with rollers to prevent wear, and Messrs. Brough claim that, after many months of research and experiment both on the road and on the bench, they have succeeded in designing a really silent valve gear combined with great efficiency. Riders who have been worried by noisy tappets do not need to be told how great an advantage that is. The tappets are, of course, adjustable.



Release valve and pipe from crank case, conducting waste oil away to the ground.

The lubrication has been carefully carried out, the oil being taken direct to the big ends and supplied equally to each cylinder. The oil sump beneath the crank case holds one and a half pints, and provision has been made for the lubrication of the overhead rockers. The method of holding the engine to the frame is by three bolts; these can be withdrawn, and the entire power unit, consisting of engine, carburetter, magneto, and silencer, can be removed from the frame in five minutes; on the other hand, the cylinders can be detached for cleaning purposes with the engine in position. The great accessibility of all parts is worthy of special attention; for instance, the contact breaker is quite clear of the flywheel, and the magneto itself, being driven through a dog clutch, is easily detachable and can be quickly replaced without disturbing the timing.

It is stated that the engine will start at the first kick even in the coldest weather, and will then tick over



Combustion head of 500 c.c. horizontal twin Brough, showing general arrangement of valve operating gear

Eleven Hundred Miles

in 3 days

from Inverness-shire to the West of Ireland with heavily laden sidecar and carrier, over the worst roads possible without one involuntary stop (except for a puncture), constitutes no mean performance even for

The Silent Grey Fellow

This remarkably fine achievement was accomplished last month by a HARLEY-DAVIDSON rider residing at Knappach, Kingussie. The magnitude of the test on frame and engine will be fully appreciated by riders who are familiar with the appalling condition of the roads in the West of Ireland

Full Marks and 1st Class Award

was won by THE HARLEY-DAVIDSON and Sidecar entered for the Dublin and District M.C.C. One Day's Trial

Proof again that THE HARLEY-DAVIDSON is the best all-round machine with powers far above the average. The seven mile grind up the Mourne Mountains and the roughness of the roads made no impression on the Silent Grey, which romped home without any trouble

The Only Motor Cycle with One Year's Guarantee

Model 11J, equipped with electric lighting and warning system is the motor cycle *sans pareil*. Fully described in the Grey Book, which will be sent on request

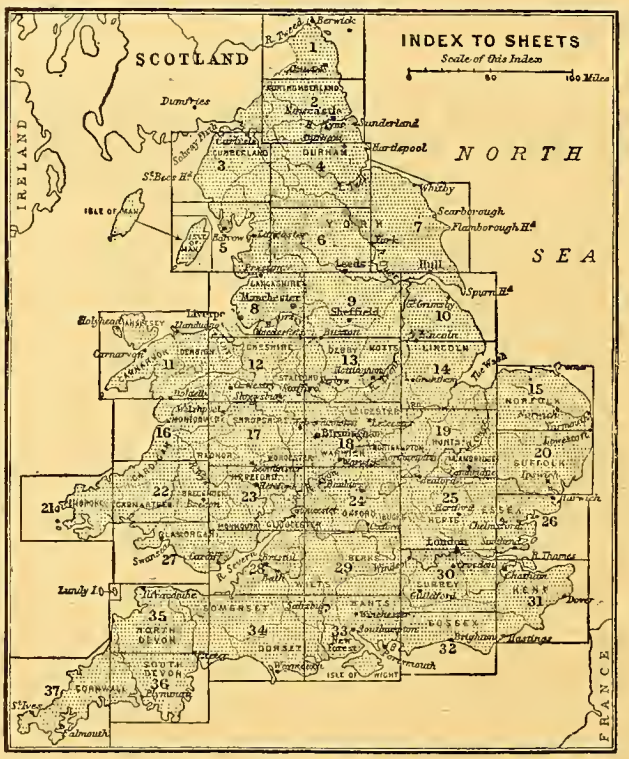
HARLEY-DAVIDSON MOTOR COMPANY

Phone: Museum 2070 (3 lines). **59, Newman St., London, W** 'Grams: "Hardaymocy-Ox-London."

The Autocar

HALF INCH MAP
of ENGLAND and WALES.

(Bartholomew's.)



Please order section or sections required from this Key map.

Recognised everywhere as the best large scale map for motorists and motor cyclists.

(Scale 2 miles to an inch.)

¶ Roads are coloured red to distinguish First-class, Secondary, and Indifferent Roads for motoring, etc. Roadside Inns and Hotels are indicated.

¶ Contours of altitude are shown by various colours.

"THE TIMES" says of these Maps:

"They are beautifully clear and with every detail for all practical purposes."

England and Wales is divided into 37 sections, each section being dissected and mounted on cloth.

Price per Section, 2/6.

By post 2/8.

Price of complete set of 37 sections, £4 12 6.

Obtainable from—

ILIFFE & SONS LTD., 20, TUDOR STREET, LONDON, E.C.

(Remittance should accompany order.)

The Latest Brough.—

quite slowly, or if required exert as much as 7 h.p. for hours at a stretch.

So far we have dealt with the engine as being the most interesting part, but the cycle work is also attractive. The chain sprocket is mounted outside the flywheel; this design simplifies considerably the problem of encasing the chain in a really satisfactory manner. Two pairs of footrests are fitted. The rear brake is operated by the left foot, the front brake and the clutch by hand; Druid forks are fitted, and the front mudguard nicely valanced. Other standard fittings are Brooks saddle and toolbags, Amac carburetter, Dunlop tyres, Renold chain, and John Bull belt.

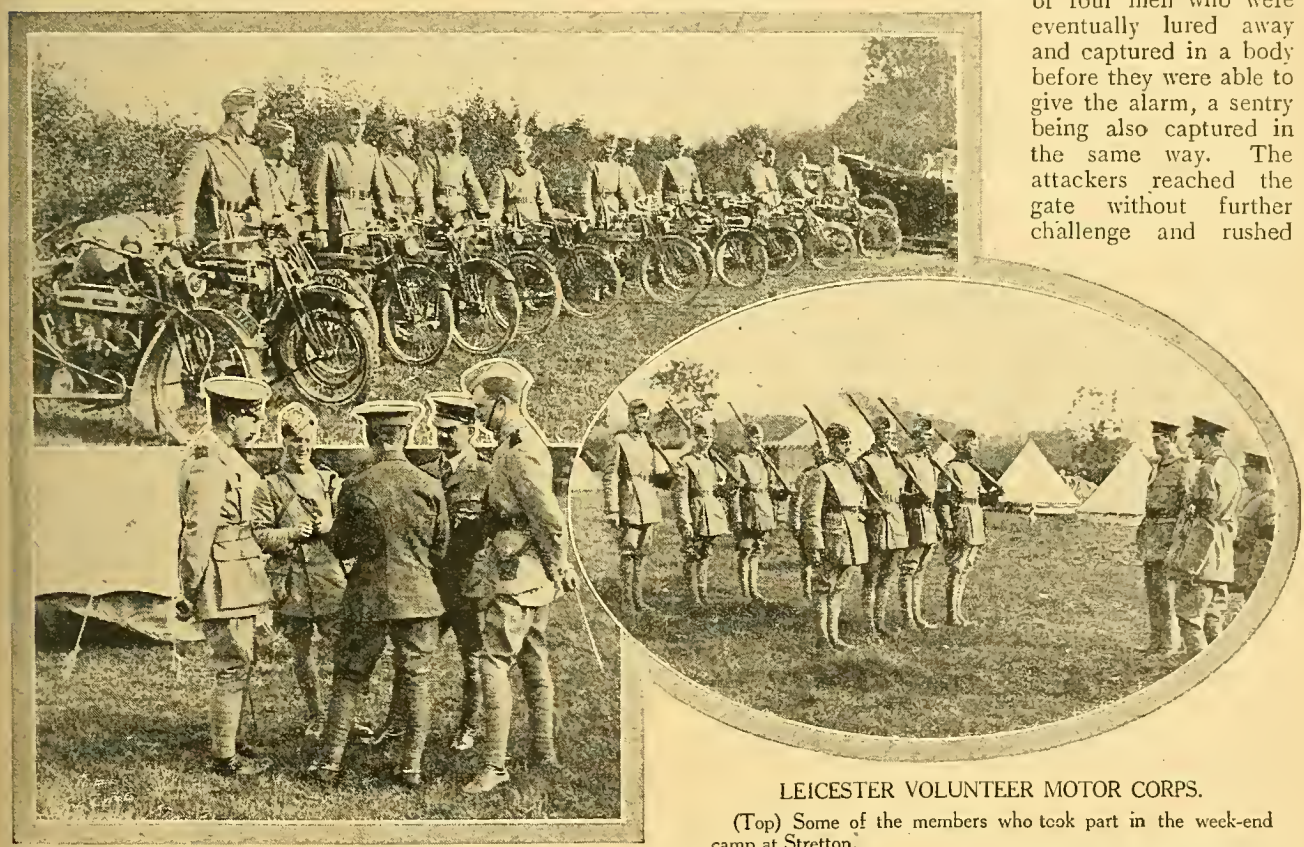
Messrs. Brough are busy making munitions, and have no Government contract for motor cycles, but yet they can number over 100 officers and men who are using their machines with every satisfaction.

With the Leicester Volunteer Motor Cyclists.

THE Leicester Volunteer Motor Corps recently spent a very interesting week-end with the Leicester Citizens Training Corps at the Little Stretton Camp. After parading at the Magazine on Saturday afternoon the contingent, under Commander C. F. Bray, proceeded to the camp.

After three hours' guard duty the corps took part in a "strategical reconnaissance" which was carried out on Saturday night. An attack on the camp was to be made by a large body of the motor corps, assisted by some of the citizens, while the defending party consisted mainly of citizens helped by a smaller section of the Motor Corps. The attack was conducted by Platoon Commander F. B. Roberts (acting adjutant), and the defence by Commander Blackney, with whom was Commander C. F. Bray.

Having assembled at Great Glenn, the attacking party commenced their operations at nine o'clock, taking advantage of all available cover, as the moon, continually breaking through the clouds, threatened to disclose their movements. It had been previously arranged that two sides only of the camp—the front and right flank—should be open to attack, so detaching a small contingent of men to act as a decoy to the enemy on the right flank, Commander Roberts with the remainder of his force made a wide *détour* to the extreme point on the left. Some clever scouting discovered the position of an enemy outpost consisting of four men who were eventually lured away and captured in a body before they were able to give the alarm, a sentry being also captured in the same way. The attackers reached the gate without further challenge and rushed triumphantly into camp. On Sunday Major-General Lord Ranksborough (formerly Major-General Brocklehurst) paid a surprise visit to the camp for the purpose of inspection, the men being paraded before him under Commander Clements. The former expressed himself as pleased with all he had seen, mentioning especially the drill and bayonet fighting of the Motor Corps.



LEICESTER VOLUNTEER MOTOR CORPS.

(Top) Some of the members who took part in the week-end camp at Stretton.

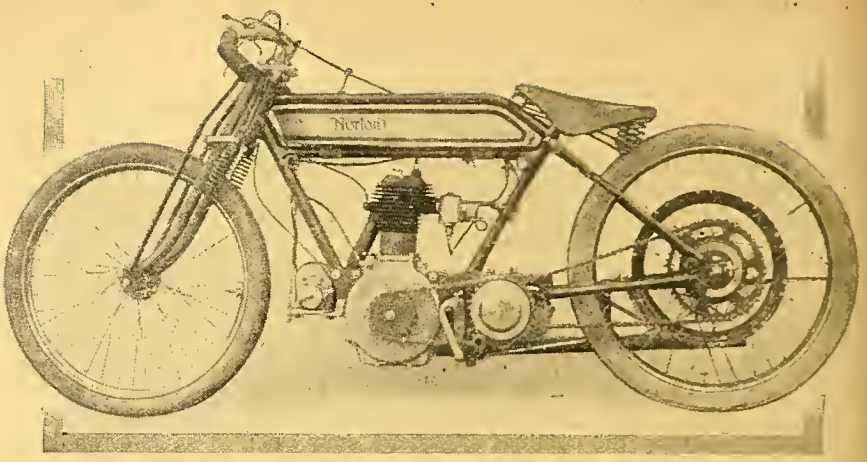
(Left) A council of war. On left is C. F. Bray (Commandant), on right F. B. Roberts (Adjutant), discussing with officers of the Leicester Citizens Volunteer Corps a scheme for the night operations.

(Right) Members of motor corps being inspected by the commanding officer of the camp before mounting guard.

B2T

A CHAIN-DRIVEN RACING NORTON.

ON the occasion of a recent visit to Brooklands we were lucky enough to meet with D. R. O'Donovan, the well-known Norton exponent, who showed us his latest chain-driven racing model. As the photograph indicates, it is a most attractive machine. Being designed purely for racing purposes, it is provided with a dummy gear box, serving merely as a support for the bearings of the countershaft. It will be noted that a large Binks racing carburetter is fitted, and a dummy belt rim for the brake, which is of ample dimensions. The machine is to be used for record-breaking.



A 500 c.c. chain-driven racing Norton has made its appearance. It is single-geared but has a countershaft drive.

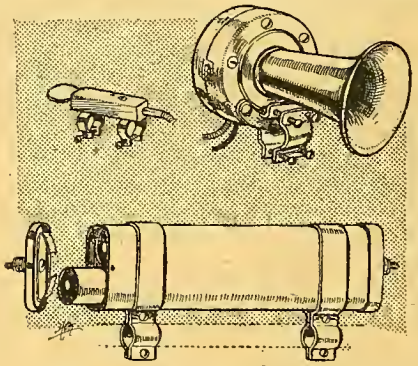
A NEW PLUG.

AN exceptionally neat and well made sparking plug specially designed for motor cycles is the A.C. Cico, which is now sold by Messrs. Brown Bros., Ltd., 15, Newman Street, W., at the moderate price of 2s. The insulator is large and substantial. The plug has a short body, consequently will conveniently go on any make of motor cycle. The electrodes, which are of efficient design, are claimed to be unaffected by over-oiling. The workmanship is good, and the plug is well finished.

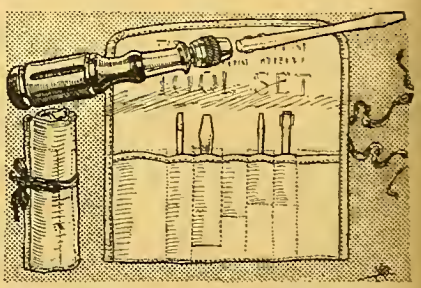
TWO DESIRABLE ACCESSORIES.

WE illustrate herewith two interesting accessories which are sold by the Benjamin Electric, Ltd., 1a, Rosebery Avenue, E.C. The electric horn is an excellent piece of work, well finished, and substantially made. This is a familiar feature, as numerous American motor cycles are fitted with it, such as the Indian, Excelsior, Thor, Harley-Davidson, and others. In cases where suitable electric equipment is not carried a battery, consisting of two dry cells enclosed in a neat metal case, is supplied, which can be fitted to the top, or any convenient tube. The interior parts of the horn are accessible for adjustment.

Another useful accessory sold by this firm is a set of screwdrivers, which form a handy addition to any motor cyclist's garage. The screwdriver is provided with a chuck end, and in the case are supplied screwdrivers of four different sizes, one of which is specially designed for reaching inaccessible screws.



The Benjamin Electric Horn, showing battery and switch.



The Benjamin friction drive tool set.

WOUNDED SOLDIERS IN THE PEAK DISTRICT.

THOSE employees of Messrs. Rolls-Royce, Ltd., who own sidecars recently took a party of wounded soldiers and some members of the nursing staff for a run into the Peak District. A start was made from Derby barracks at about 1.30 p.m., and, headed by a Rolls-Royce car, the party set off for Duffield, encountering a severe thunderstorm on the way. Thence the route led to Cromford and Grange, where a stop was made for tea. Haddon Hall was visited and the party returned through Matlock.

A sidecar outing for wounded soldiers was recently arranged by employees of the Rolls-Royce works at Derby, many of whom are enthusiastic motor cyclists.

ACCESSORIES FROM LONDON'S MOST FAMOUS MOTOR HOUSE.

THE "GAMAGE" PLUG.

Extra strong Electrodes and best porcelain. British Make. Does not soot up Every Plug Guaranteed. Price, **1/9.** Post free.

Special Motor Cycle or Aviation Goggles

These Goggles consist of an extra strong rubber mask in which are fitted the Triplex unbreakable glasses. They are also fitted with specially wide elastic and strong fasteners. As being used by the Military and Naval Flying Men. Price **10/6.** Ordinary pattern, with spare glasses, **1/9.** Second quality, without extra glasses, **9d.**

Complete Catalogue post free.

GAMAGE PLIERS

GAMAGE PLIERS.
English make and guaranteed. A very handy tool for military motor cyclists. Pliers, wire cutters, burner nippers and side cutters combined.
Nickel-plated, 2/9. Post 3d.

A. W. GAMAGE, LTD.

SPECIAL OFFERS.

Motor Cycles in Stock.

IMMEDIATE DELIVERY.

7/9 h.p. Harley-Davidson, Model 11F. Price, £68 5 0

4¼ h.p. James, combination, 3-speed Model, with sidecar, Price, £76 13 0

2¼ h.p. Radco, 2-speed Model, Price, £32 0 0

2½ h.p. "New Imperial," J.A.P. engine, 2-speeds, kick starter, clutch, Price, £43 1 0

Auto-Wheel, Price £14 14 0

"Watsonian" de Luxe sidecar, black and gold finish, £16 16 0

HOLBORN, LONDON, E.C.

"ROM" MOTOR CYCLE TYRES.

The latest pattern "ROM" hard wearing and non-slipping tyres, combination rubber and steel.

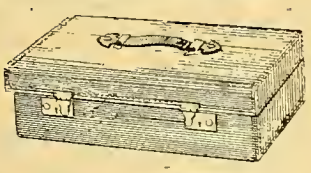
"ROM" Tyres.

24 × 2¼	50/6
26 × 2	49/6
26 × 2¼	52/6
26 × 2½	55/-

Special MOTOR CYCLE CARRIER BAG.

Made in Canvas, Tweed, and Leather. Size 16½ by 10 by 5in.

In Tweed **11/6**
Canvas **12/9**
Best Leather **16/-**
.. Carriage paid.



WHITELEY'S
FOR
MOTOR CYCLES

We offer from Stock:

COMBINATIONS.

7 h.p. **INDIAN** Combination ..	£93 10 0
4¼ h.p. **JAMES** Combination ..	£76 13 0
3½ h.p. **RUDGE** Combination	£75 11 0
3 h.p. **OMEGA** 2-stroke Combination	£48 6 0

SOLO MACHINES.

8 h.p. **ZENITH**, Clutch Model "H"	£81 11 8
7 h.p. **11J HARLEY-DAVIDSON** (electric lighting)....	£76 13 0
7 h.p. **11F HARLEY-DAVIDSON**	£68 5 0
6 h.p. **ZENITH**, Clutch Model "F"	£80 9 8
4-5 h.p. **ZENITH**, Clutch Model "D"	£70 11 3
4¼ h.p. **JAMES**, 2-spd. **ZENITH**	£59 10 0
3½ h.p. **ZENITH**, Model A. ..	£59 10 9
3½ h.p. **HAZELWOOD J.A.P.**, 2-speed	£63 0 0
3 h.p. **OMEGA** 2-stroke, 2-sp.	£37 16 0
2¾ h.p. **ROYAL RUBY**, Lady's Model, 2-stroke, 2-speed ..	£38 13 3
2¾ h.p. **HOBART**, 2-stroke, fixed gear	£30 9 0
2½/3 h.p. **WOLF**, 2-stroke, fixed gear	£25 8 3
2½/3 h.p. **WOLF**, 2-stroke, 2-sp.	£31 7 0
2½ h.p. **CALTHORPE J.A.P.**, 2-speed, (variable ignition)	£38 0 0
2¼ h.p. **O.K.** Mark, 2-speed....	£33 1 6
2 h.p. **GRANDEX PUP PRECISION**, 2-speed	£28 10 0

Early deliveries of most other well-known makes' including 5 h.p. **INDIAN**, 2¾ h.p. **T.T. NUT' CALTHORPE** 2-stroke, **COVENTRY EAGLE' LEVIS, INVICTA, ALLEN, IXION, NEW IMPERIAL**, 3½ h.p. **JAMES TWIN**, etc.

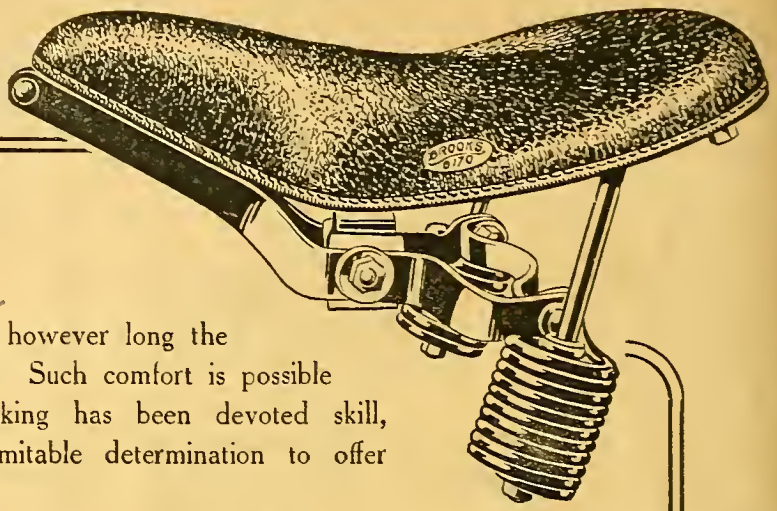
ANY MACHINE SUPPLIED UPON DEFERRED TERMS.

Write for particulars.

Packing Free. Carriage paid to any address in the United Kingdom.

WM. WHITELEY, LTD.,
Queen's Road, London, W.

Telephone: Park One, Telegrams: "Whiteley, London."



Comfort.

The perfect comfort that endures, however long the ride, and however bad the road. Such comfort is possible only on a saddle to whose making has been devoted skill, special knowledge, and an indomitable determination to offer only a faultless article.

BROOKS

have the skill, the knowledge, and the determination; they will not offer you a Saddle that they do not know will give you perfect ease.

J. B. BROOKS & CO., LTD., 49, CRITERION WORKS, BIRMINGHAM.

IN THE

LODGE

PLUG

the sparking points give the full heat of the spark up to the gas to be ignited

That is one of the great secrets of its success as a power producer.

Price **4/-** each.

of all Dealers.

Packed in sealed red metal box.

THE LODGE SPARKING PLUG CO., LTD.,
BIRMINGHAM and RUGBY.

THE "ZILLA" BELT
LEATHER & RUBBER.
(COMBINATION).

The BELT that is breaking ALL RECORDS. The ONLY Belt on the market which carries a GUARANTEED MILEAGE.

ANOTHER UNSOLICITED TESTIMONIAL.

88, High Street, Wincobank, Sheffield, 22nd July, 1915.

Sirs—I cannot speak too highly of the "Zilla." My machine is an 8 h.p., and I have done over 2,000 miles in the worst of weathers with the "Zilla" Belt with the greatest of satisfaction.

I might say I have tried each of the following (here follow the names of five well-known makes of belts), but only found success when I started using yours. I have put it to the severest of tests in Derbyshire and the Peak district, but have not known it to fail.

Yours faithfully, J. SMITH.

Now is the time to buy a belt that will PULL in all WEATHERS. SEND AT ONCE FOR NEW CATALOGUE and PRICE LIST.

Selling Agents for London—
SAMUEL H. TAYLOR & CO., 21, Mincing Lane, E.C.
'Grams: Taylor, Jeycebe, London. 'Phone: London Wall 5193.

The ZILLA PATENT BELT COMPANY, Ltd., 82, Great Western Street, MANCHESTER.

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

How to Descend a Hill.

Will you kindly let me know which is the correct method of driving down hill? I have a 1913 single-cylinder and sidecar, and have had the misfortune to break two exhaust valves in about three months. My friends say it is through lifting my exhaust when going down hill and not shutting off the gas.—B.F.

When descending a hill there is no objection to your raising the exhaust valve. The only danger is in partially raising the exhaust valve and allowing the engine to fire weakly, when the flame of the explosion attacks the edges of the valve and stem.

Motoring for an Invalid.

Will you kindly tell me what I can have fitted to a Bath chair to render it easy to push? My mother is an invalid, and we want to have some form of motor attachment, if possible, fixed to her chair to assist the pusher.—S.G.

We know of no motor attachment suitable for the purpose you suggest, though we have illustrated invalid chairs propelled by Auto-Wheels. Under the circumstances, we should say that the most satisfactory method of taking out an invalid would be a good sidecar fitted to a first-class machine. This would be much better than a Bath chair, and would be quite as comfortable. You could also have a windscreen and Cape cart hood.

The Legal Requirements re Brakes.

The other day, whilst engaged in a repair by the roadside, a constable noticed I had no front brake to my motor cycle. He took particulars from my licence, and said he should report me, as the law required two brakes. (1.) Am I liable to any penalty for only using one brake? (2.) Is this regulation generally enforced, *i.e.*, are there often proceedings taken?—J.M.H.

(1.) You are liable to a penalty for having only one brake fitted, but there is no need that the second brake should be fitted on the front wheel. On some machines two brakes are fitted to the rear. (2.) We do not think that this regulation is very often enforced, possibly because it is hard to tell, when the machine is in motion, how many brakes may be provided.

Insurance.

My motor cycle and sidecar is covered against all risks by a comprehensive policy issued by one of the leading insurance companies. I recently had the misfortune to break one of the chain stays of the frame through driving over rough roads with large pot-holes. The policy covers damage to the motor cycle and sidecar caused by "the direct result of accidental collision or impact with any object, etc., or by other accidental external means." Do you consider the case of my broken chain stay would be covered by the policy?—L.W.H.

It is not usual for insurance companies to pay compensation for accidents caused by rough or badly repaired roads. If your machine had been damaged by collision or a fall due to side-slip, you would have been covered by your policy.

Ignition Timing and Excessive Vibration.

(1.) How must I time the spark in the most efficient way for use with a 4 h.p. and sidecar? (2.) What would be the cause of vibration? Thinking it may have been through the small end or big end being worn, I removed the cylinder and found that by holding the connecting rod I can move it from side to side, but cannot see that it has any vertical play to speak of, although in the doing of this I get a noise which resembles what I notice when travelling.—W.J.W.P.

About the most satisfactory position for the spark to be timed is as follows: Piston dead centre (top) firing stroke; contact breakers two-thirds advanced; contact points just breaking. This setting is usually about right for any machine, but in some cases it may be found an advantage to set it a fraction more advanced, and in others slightly more retarded, but this can only be found by experiment. (2.) Excessive vibration may be caused by a number of causes, the chief being as follows: Loose flywheels; loose pulley; worn big or small end bearings; engine loose in frame. Side play in the connecting rod does not matter; it is up and down play that matters. Before trying this you should wash the engine out with paraffin. This removes all oil, and you are able to tell exactly how much play there is.

Damages in a Garage.

My motor cycle and sidecar were stored at a garage, when a gentleman driving in with a big car smashed into it, causing over £10 worth of damage. The outfit has to go back to the works for repairs. Have I any claim for hire of another machine while the other is away? His insurance company repudiates such a claim, and so I am placing it in the hands of my solicitors.—G.H.W.

We have submitted your enquiry to our legal adviser, who replies as follows: "Assuming that your correspondent is able to prove that the damage to his motor cycle and sidecar was done through the negligent way in which the big car was driven into the garage, then I certainly think that your correspondent would be entitled to recover, in addition to the actual damage, the cost of hiring another machine pending repairs. Decided cases show that damages may not necessarily be limited to the actual amount of injury done to the goods, but may also include compensation for consequential losses arising out of the deprivation of user. Your correspondent's solicitor will doubtless advise correctly on this point, which is dealt with in page 151 of 'Clerk and Lindsell on Torts,' a leading work on the subject."

Unsuitable Plugs.

(1.) My mount is a 2¼ h.p. two-speed two-stroke. I have done 900 miles, and up to the first 500 I did not seem to have any trouble, but now when I start up from cold the engine pulls well until I have done about five miles at 30 to 35 m.p.h., and then it starts backfiring. Can you please tell me the cause of this? (2.) Is 30 to 35 m.p.h. too great a speed to expect the motor bicycle to keep up, say, for two hours? (3.) How many drops of oil per minute should be given with drip feed at 30 m.p.h.?—L.J.B.

(1.) The trouble is probably due to your using an unsuitable plug, the points of which get incandescent, and cause pre-ignition after you have been running hard. Use a good single point plug with substantial electrodes. (2.) Of course, the speed is rather high for such a small machine. (3.) At 30 m.p.h. if kept up for a prolonged period, the oil drip should be kept running in an almost continuous stream.

Repairing a Blow-hole.

Having had my cylinder reground and new piston fitted, I find now a small hole about the size of a pin prick on the joint between the fourth and fifth flange from the top, probably a flaw in the casting. Would you recommend any of the following remedies: (1.) Filling up with iron cement? (2.) Could it be welded? (3.) Could it be drilled and riveted, being countersunk on each side?—E.S.L.

If the hole goes right through the cylinder steps should be taken to remedy it. (1.) We should hardly think that iron cement would be suitable. (2.) Welding would be much better. (3.) We do not think this would be at all satisfactory, welding makes a much stronger job of it.

READER'S REPLY.

Carrying an Extra Passenger.

My experience of a two-seated sidecar may be of interest to "J.F.K.," who writes in your issue of August 12th enquiring if a 6 h.p. Enfield is of sufficient strength to pull a tandem two-seat sidecar and two passengers. I have ridden a 6 h.p. Clyno, with a Millford tandem sidecar attached, for the past two years, covering some 10,000 miles, with splendid results. I have gone over roads of all descriptions, my preference being for unfrequented roads far from the madding crowd. At the present time I am holidaying in the Cockbridge district, in Aberdeenshire, where, as some of your readers doubtless know, river bed surfaces and single figure gradients abound. Particularly is that the case between Grantown-on-Spey and Ballater, which road I have covered more than once with my normal load of three in the sidecar—two children in the front seat and my wife in the back seat. The normal human load which the machine carries is within a few pounds of 30 stone, and to this has to be added the weight of spare wheel, spare tube, jack, tools, lighting outfit, and all the paraphernalia that provident motor cyclists should always carry. The sidecar is also fitted with a hood and windscreen. I have renewed my front driving chain twice and my back driving chain once, about a month ago. I had roller bearings fitted in the engine last winter. I have broken two exhaust valves. Beyond that I cannot remember any trouble that was not easily righted by a "mechanical amateur." With regard to the sidecar, the back carrier plate originally fitted was not strong enough, and it broke. This plate was replaced by a stronger one, which has now been in use for more than a year, and I have no doubt it is absolutely safe. In addition, I had an auxiliary sidecar connection fitted from the near front corner of the chassis to the Clyno lug right below the petrol tank. This stay counteracted the closing up tendency in taking left-hand corners and the spreading apart tendency in taking right-hand corners, which was quite noticeable when there was only one front connection. It should also be noted that the front sidecar seat is not comfortable for a tall passenger, but the back seat is as luxurious as that of any sidecar I have seen. —LF 2278.

EXPERIENCES WANTED.

"R.E." (Stafford).—General experience of Harcourt radiators.

"P.W.T." (Southsea).—Grade multi-pulley for use with a 3½ h.p. Precision.

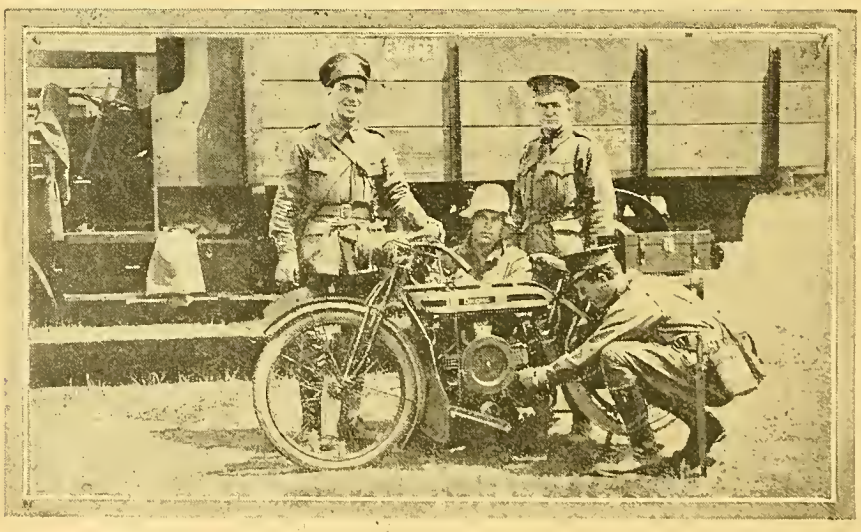
"J.E.S." (I.O.M.).—2½ h.p. Torpedo. Reliability, speed, hill-climbing, and consumption.

"Sapper" (Woolwich).—8 h.p. Zenith (clutch model) for solo work. Reliability, highest average speed, and hill-climbing.

"E.M." (Birmingham).—2¾ h.p. Douglas (ladies' model) and sidecar. Reliability, comfort, and ease of starting.

"S.W." (Hants.). — Adjustment of B.S.A. carburetter for ease of starting. General experience of Binks carburetter.

"J.M.W." (Birmingham). — 7 h.p. Indian (clutch model D) and sidecar. Tractability, hill-climbing, consumption, and suitability of 4 to 1 gear.



Australian despatch riders tuning up a Douglas. The photograph was taken in the Near East.

RECOMMENDED ROUTES.

RIPON TO SALISBURY.—AMBULANCE DRIVER (RIPON).

Ripon, Leeds, Wakefield, Barnsley, Sheffield, Chesterfield, Derby, Ashby-de-la-Zouch, Tamworth, Stonebridge, Kenilworth, Warwick, Wellesbourne, Halford, Shipston-on-Stour, Chipping Norton, Burford, Lechlade, Swindon, Marlborough, Pewsey, Amesbury, and Salisbury.

SUDBURY TO ABERYSTWYTH AND BARMOUTH.—L.A.J.

Sudbury, Haverhill, Cambridge, St. Neots, Bedford, Newport Pagnell, Buckingham, Deddington, Chipping Norton, Stow-on-the-Wold, Tewkesbury, Ledbury, Hereford, Willersley, New Radnor, Penybont, Rhayader, Llangurig, Dyffryn Castell, Aberystwyth, Machynlleth, Dolgelly, Barmouth.

CASTLEFORD TO PETERSFIELD, avoiding big towns.—H.M.C.

Castleford, Doncaster, Retford, Newark, Fosse Way to Leicester, Lutterworth, Rugby, Dunchurch, Southam, Banbury, Deddington, Oxford, Dorchester, Wallingford, Streatley, Pangbourne, Reading, Swallowfield, Odiham, Alton, Greatham, Petersfield. Approximately 215 miles.

BRISTOL TO MANCHESTER.—C.F.M.

Bristol, Pilning, train through Severn tunnel, Chepstow, Monmouth, Hereford, Leominster, Ludlow, Church Stretton, Shrewsbury, Wem, Whitchurch, Tarporley, Northwich, Mere, Altrincham, Stretford, Manchester.

HOLYHEAD TO FOLKESTONE.—G.I.

Holyhead, Bangor, Bettws-y-Coed, Corwen, Llangollen, Shrewsbury, Much Wenlock, Bridgnorth, Kidderminster, Worcester, Pershore, Chipping Norton, Woodstock, Oxford, Dorchester, Nettlebed, Henley, Wokingham, Ascot, Chertsey, Weybridge, Leatherhead, Dorking, Reigate, Redhill, Westerham, Leigh, Tonbridge, Pembury, Goudhurst, Biddenden, Tenterden, Brensett, New Romney, Hythe, Sandgate, Folkestone. Approximately 315 miles.

DOVER TO WROXHAM.—E.H.P.

Dover, Canterbury, Sittingbourne, Chatham, Rochester, Gravesend. (This route entails a certain amount of traffic through Chatham and Sittinghourne, but it can be avoided by going through Folkestone, Sandgate, Hythe, Ashford, Maidstone, Trottersciffe, Meopham to Gravesend.) From Gravesend cross by ferry to Tilbury, and then Billericay, Chelmsford, Witham, Colchester, Ipswich, Scole, Long Stratton, Norwich, Wroxham.

CHATHAM TO WIMBORNE, avoiding bad roads.—A.J.B.

Chatham, Aylesford, Ightham, Seal, Riverhead, Westerham, Oxted, Redhill, Reigate, Dorking, Guildford, Hog's Back, Farnham, Alton, New Alresford, Itchen Abbas, Kingsworthy, Winchester. After last-named town continue along the Southampton Road until reaching a pond about two miles out, where turn right, and go through Bassett and Shirley on to the Totton Road, then *viâ* Totton, Cadnam, and Ringwood to Wimborne. Approximately 136 miles.

JOHN PIGGOTT'S

MOTOR CLOTHING

The Famous "J.P." Tourist Overall Motor Suit. Strong and Waterproof. Double Texture Fawn Twill.

34/9 Full particulars and patterns free.

The "J.P." Ideal Waterproof Motor Overall Suit. Double Texture Fawn Paramatta. Complete with Leggings.

Complete Motor Cycle List Free. **25/-**

'PETER UNION'

MOTOR CYCLE COVERS,

LEATHER AND STEEL STUDDED,

26 x 2¼ **40/-**, 26 x 2½ **42/-**

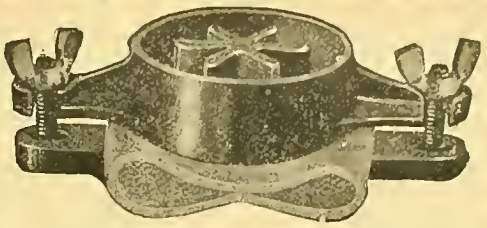
26 x 2¼ **26/3** **RIBBED PATTERN** 26 x 2½ **27/6**

26 x 2¼ **28/9** **RUBBER STUDDED** 26 x 2½ **31/-**

JOHN PIGGOTT, LTD.,

117 & 118, Cheapside, and Milk Street Buildings, London.

CATALOGUE FREE.



How do you manage about punctures

Whether your tyres are brand new or badly worn get a Simms Universal Vulcaniser and always carry it in your toolcase. Even the best of tyres puncture, so get a

SIMMS VULCANISER

Then you will be able to repair them at once. It only takes 20 minutes. The repair is permanent. Simms Vulcaniser is safe, automatic, and foolproof. Anyone can use it. You will find it an excellent investment and such a convenience.

Price, ready for instant use - - 19/6.
Smaller size for inner tubes only, 10/6.

Of all dealers, and from:

SIMMS MOTOR UNITS, Ltd., 191, Wardour St., London, W.

E.I.H.

The .. Harcourt Radiators

THE PERFECTION OF AIR-COOLING.

The Harcourt Radiators maintain the full efficiency of engine under the worst conditions: OIL CONSUMPTION HALVED, OVERHEATING ABOLISHED.

WHAT USERS SAY.

MR. MONTAGUE B. MILLIGAN, Nether Edge, Sheffield, writes, Nov. 9th, 1914:

"It is now a good time since I fitted the 'Harcourts' to my machine (Rex), and must say I am more than pleased with them, and will never have an air-cooled engine without fitting them. As an engineer I consider them to make an air-cooled engine (when running—not standing) as good as, and in many cases better than, water-cooled. The saving in oil pays the price you charge."

PRICES: Motor Cycles (singles) 15/-, (twins) 18/-
Cycle Cars 18/-.

FULL PARTICULARS ON APPLICATION.

WYLIE & LOCHHEAD, Ltd.,
Byers Road, GLASGOW.

Agents—The Service Co., Ltd., 289-293, High Holborn, London W.C.
J. Barran-Ackroyd, 147-9, Hyde Park Road, Leeds.
H. V. Prescott, 199, Deansgate, Manchester.
Robins & Day, Ltd., The Motor House, Rochester.

Put *Your* Advertisement

in

THE MOTOR CYCLE

—and be *sure* of speedy and satisfactory results.

"Must be Hard to Beat."

"I may say your paper as an advertising medium must be hard to beat, as a single advertisement brought me thirteen replies for a free-engine wheel, which I disposed of. You may use this if you desire." HAROLD E. MONTEITH.
12, Gladstone Place, Stirling.

"Sold within half-an-hour."

"I should like to mention that a few weeks ago I advertised a second-hand machine in *The Motor Cycle* and had eighteen enquiries, and sold the motor within half-an-hour of the issue of your paper." F. J. MAW.
47, Skelton Road,
Forest Gate, London.

"A Shoal of Replies."

"One insertion in Miscellaneous column of *The Motor Cycle* brought a shoal of replies, and every article sold. We are unable to answer every one."
BARKER & CO.
Automobile Engineers,
Bradford Road, Huddersfield.

"Could have Sold Gear 40 times over."

"I deeply regret to disappoint Mr. —, but through the advert. (in *The Motor Cycle*) I could have sold gear about forty times over. Several wire money orders received, also cheques."
A. G. GARTON.
140, Porter Street, Hull.

"Each advert. a Great Success."

"I have had several advertisements in your paper, and each has been a great success. A short time ago I advertised an F N. engine, and as a result spent quite a small fortune returning postal orders. It was sold by wire the day *The Motor Cycle* was published, and about six weeks afterwards I had an enquiry from India. One advertisement in *The Motor Cycle* is worth half-a-dozen in any other paper." JOHN W. WALKER.
Buchlyvie, Stirlingshire.

"Forty Answers."

"I was very pleased with the advert. in your paper, having had about forty answers." (Miss) D. JACKSON.
Fairfield, Birchington, Kent.

There is
NO DOUBT
as to the
SUPERIORITY
of
THE MOTOR CYCLE
for
Miscellaneous Advertisements

It is proved week by week that quicker and better results are obtained through this journal than any other medium. :: ::

Read
THE EVIDENCE
of
ADVERTISERS

¶ **This remarkable success of "The Motor Cycle" is attributable to the fact that it has the largest circulation of any paper of its kind and is read by the right sort of people.**

"Results of ad. Excellent."

"*Re* my advt. in *The Motor Cycle* of the 10th inst., No. 6839. Although the machine was sold before issue, I received through your paper thirty replies—some of these from York, Derby, Wilts, Hants, Dorset, Sheffield, Cardigan, etc. — and several callers, two of which arrived at the same time, and were willing to bargain. I consider the results of advt excellent." E. H. COLE.
4, De Castro Terrace, Canterbury.

"Undoubtedly IT."

"A fortnight ago I advertised a side-car, which I sold the same morning as your paper came out; also a B.S.A. motor cycle, which I sold directly afterwards. I could have sold it five times over again. Your paper is undoubtedly IT." F. MERRIMAN.
"Highbury," Beech Tree Lane,
Cannock, Staffs.

"The Usual Success."

"Following the sale of my B.S.A. combination through the medium of your valuable paper, I advertised a cover and tube, and am pleased to say that the *usual success* was attained, same being sold next morning following day of issue. I was compelled to return several cheques and money orders." F. MERRIMAN.
Beech Tree Lane, Cannock, Staffs.

"Very pleased with result."

"I thought I would like to acquaint you with the success of my advertisement appearing in *The Motor Cycle*.
The same evening I received several calls; the second caller purchased machine at quite a satisfactory figure! You can guess I am very pleased with such a result, and more so as it is the second machine I have sold through your paper with similar dispatch."
EDWIN T. DEACON.
"Falconhurst," Blagdon Road,
New Malden.

N.B.—The rates for paragraph advertisements are given on page 26

MOTOR CYCLES FOR SALE.

Ariel.

3½h.p. 3-speed Ariel and sidecar, full range of accessories; £35.—Colmore Depot, 31, Colmore Row, Birmingham. [X5970

3½h.p. Ariel and Swan sidecar, countershaft gear, lamps, and spares, perfect condition; £45.—Brown, 47, Newland Av., Hull. [X6215

Arno.

ARNO, 1914, 3½h.p., 2 speeds, and sidecar, in perfect order; £28.—Percy and Co., 337, Euston Rd., London. [2308

Auto-Wheels.

AUTO-WHEEL (1914), perfect running order; £8.—Mackay, 54, Castle Hill Rd., Ayr. [X6039

AUTO-WHEEL De Luxe, £15/15, or 28/3 monthly.—Seen at 248, Bishopsgate, London, E.C. [2432

AUTO-WHEEL, perfect condition, several spares; £7, or nearest.—Miss Stobart, Chadstone, Ryton-on-Tyne. [2120

1914 Auto-Wheel, perfect order, spares, and number plates; £8.—9,224, *The Motor Cycle* Offices, Coventry. [X6058

WALL Auto-Wheel, second-hand, perfect order, overhauled by makers; £10.—Seen at 248, Bishopsgate, London, E.C. [9126

AUTO-WHEEL and New Hudson for sale, perfect condition, new rubber studded tyre, all spares; £10/10, or offer.—Reply, Box L1,298, *The Motor Cycle* Offices, 20, Tudor St., E.C. [2094

Bat.

BAT, 1914, T.T., 5-6h.p., 2-speed gear box, as new, perfect; £36.—Percy and Co., 337, Euston Rd., London. [2315

1912 8h.p. Bat-Jap 2-speed Combination, re-bushed July by makers; bargain, £38.—Brown, Somerby, Oakham. [2086

5-6h.p. Bat, Xmas, 1913, been cared for like a phial of radium, close cane Millford, and abundant accessories, all as new; cost £100, accept £60.—Bunting, Harrow. [2245

4h.p. Bat-Jap, spring frame, P. and M. 2-speed gear, new condition; £25.—Tuke and Bell, Ltd., Motor Department, Carlton Engineering Works, 599, High Rd., Tottenham, N. [1712

BAT-J.A.P., 8h.p., registered 1913, 2-speed gear box, free engine, kick start, 1914 Amac, engine re-bushed, Bradbury sidecar; bargain, £40; appointment.—Hawkins, 53, Cambridge Rd., Aldershot. [2284

BAT-J.A.P., 1913, 6h.p., 3-speed, free engine, excellent condition, perfect order, little used; owner active service; commodious sidecar, with door, new tyres, accessories; £44.—Ridler, 35, Dartmouth Park Rd., N.W. [2209

BAT-J.A.P., Dec., 1914, 3½h.p. twin, 3-speed, low frame, cylindrical tank, front and rear lamps, special light pistons, very fast, and in excellent condition; £45, no offers.—Box L1,303, *The Motor Cycle* Offices, 20, Tudor St., E.C. [2111

NEW 8h.p. 1915 Bat and Bat Sidecar, the combination complete, just delivered from works, 3-speed countershaft gear and chain drive, and free engine, sidecar 5-point fixing, the complete combination £98/8/9 cash, or exchange; also a new No. 1 model 4h.p. twin, same make, £60/7 cash, or exchange.—Wauchope's, 9, Shoe Lane, London. [X6149

Blackburne.

BLACKBURNE, 1915, 3 months old, 499 c.c., 85×88, 3 speeds, 12in. flywheel, adjustable pulley, perfect and as new; £47.—Randall, Jun., Elm House, Chatham. [2169

Bradbury.

BRADBURY, 4h.p., 1913½, splendid condition; £26.—Gilbert, 14, London Rd., Kingston. [2327

1910 Bradbury, 4h.p., variable pulley, good condition; £20.—Scott, William St., Stockton-on-Tees. [X5698

BRADBURY, 1915 models; lists free.—Agents, Bright and Hayles, Church St., Camberwell. [1972

6h.p. Bradbury Twin, 3-speed countershaft gear, chain drive, as new, only ridden 600 miles; £55.—Percy Penfold, Arundel. [X5929

BRADBURY, 4h.p., 1911; £25; fitted with 1915 Fitall 2-speed gear; any trial; Sergt.-Major Nurton, Nothe Fort, Weymouth. [2325a

4h.p. Bradbury, free engine, £20; also sport model coachbuilt body, £2; both in grand condition; want seeing.—80, Dorset St., Leicester. [X6322

1914½ 6h.p. Bradbury Combination, lamps, horn, and spares, new back tyre, excellent condition.—Mr. Straughen, 24, Mount Rd. West, Sunderland. [X6166

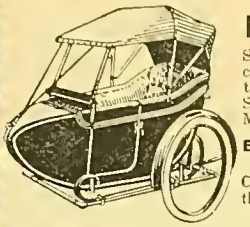
1912 4h.p. Bradbury, N.S.U. 2-speed, Supreme coachbuilt sidecar, with wind screen, and apron; £30 or near offer.—224, Wood St., Walthamstow. [2096

BRADBURY, 1911, 4h.p., 2-speed, F.E., lamp, wicker sidecar, screen, spares, good condition; £29, offer, or exchange lightweight and cash.—10, Burlington Av., Kew. [2343

BRADBURY, Bradbury, Bradbury, 1913, 3½h.p., and cane sidecar, lamp, generator, in good condition; £37/10.—Cass's Motor Mart, 5, Warren St., Euston Rd., W. Museum 623. [2138

CORONET Sidecar Chassis

is designed for long life, and has a wonderful reserve of stability, and is safe on greasy roads. Luggage carrier built into frame. Cannot shake loose, and is a boon when touring.



From £6 6s.

Send for illustrated catalogue describing these well known Sidecars. Several Models

Easy Payments or Exchanges.

Can be supplied through any dealer.

We can give immediate delivery of all models, and suitable for any make of machine.

WE CAN DELIVER FROM STOCK

THE WORLD'S RECORD MACHINE.
THE WORLD'S V A L U E MACHINE.

We will make a special allowance for your machine in part payment. Write for terms, as we are large contractors.

7-9 h.p. Harley-Davidson.

The most improved sidecar machine made. Fitted with automatic mechanical oil pump like a car, 3-speed sliding countershaft gear, fool-proof, both hand and foot control to clutch, spring seat, 3in. tyres, silent running engine, will just tick over when in free engine, double stem handle-bar made from rolled cold steel, carrier one steel stamping, spare petrol tank; in fact, refinements not found on any other machine. Full detailed catalogue upon application.

PRICE—7-9 h.p., 3-speed model £68 5
ditto, ditto, electrically equipped £76 13

You cannot beat us on exchanges. Yorkshire dealers supplied.

Coronet Sidecars for Harley-Davidsons.

We make a special Sidecar, enamelled French grey to match, 28 × 3in. tyre, apron to cover entire body, and fourth point attachment £13

BOOTH'S BIG BARGAINS.

4½ h.p. **JAMES**, 1914, 3-speed, kick starter, complete with Sidecar £49 10
6 h.p. **REX**, 1912, 2 speeds, complete with new coach Sidecar £33 10
7-9 h.p. **HARLEY-DAVIDSON**, 1915, 3-sp. model with coach Sidecar to match, nearly new £72 10
2 h.p. **CALTHORPE** Lightweight, 1914 model, Precision engine, countershaft 2-speed gear, easy starter, nice condition £18 10
3½ h.p. **N.S.U.**, 1914, twin model, 2-speed, with coach-built Sidecar, all finished red £30 0
2¼ h.p. **VELOCETTE**, 1915, 2-stroke model, 2-speed gear, nearly new £28 10
3 h.p. **LINCOLN-ELK**, 1910 model, M.O.V., magneto, B. & B., h.-b. control, enamel and plating in splendid condition £12 15
8 h.p. **CHATER-LEA**, 1912, J.A.P. engine, 3 speeds, complete with coach Sidecar £48 10
8 h.p. **BRADBURY** Tricar, water-cooled, open frame, 2 speeds, magneto, coach-built, spare tyres and tubes £18 15
4 h.p. **BRADBURY**, 1911, 2-speed gear, complete with Sidecar £30 0
3½ h.p. **L.M.C.**, 1913, countershaft gear .. £25 0
3½ h.p. **REX**, 1909 Millennium 2-speed .. £18 10
MOTOSACOCHE Lightweight, magneto .. £8 15
6 h.p. Twin **REX**, spring forks £11 10
6 h.p. **ENFIELD** Com., coach Sidecar; little worse than new £59 15

MISCELLANEOUS.

New Trouser Overalls, usually £1 ..... 12 6
Brand New Waterproof Magneto £3 15
New Accumulators, 10 amps. 6/11; 40 amps 12/6
New 21/- Glare Brass Electric Tail Lamp . 4/11
New 2 h.p. Gray Stationary Petrol Engine, electric ignition, 2 flywheels £10

BOOTH'S MOTORIES,

PORTLAND PLACE, SKIRCOAT ROAD,

HALIFAX.

'Phone 1062. Close at 6 p.m.

MOTOR CYCLES FOR SALE.

Bradbury.

BRADBURY, 3½h.p., 3-speed, countershaft gear, entire chain drive; £32; with Millford sidecar £37, accessories included; any trial.—Colmore Depot, Colmore Row, Birmingham. [X5973

Brown.

3½h.p. Brown, flush battery ignition, all parts guaranteed in good condition, powerful engine, and easy starter; a bargain, £8.—1, Bradford St., Ancoats, Manchester. [2412

B.S.A.

1913 B.S.A., 3½h.p., 2-speed, and sidecar; cheap, £40; perfect.—Jones, The Broadway, Muswell Hill. [2300

LATE 1912 Hub 2-speeds B.S.A., new condition, just overhauled makers; £35.—Letters only, Phipps, Sunnyside, Andover. [X6211

B.S.A., 1912, 3½h.p., 2-speed, Watford speedometer, Lucas lamp, horn; £30.—The Castle Motor Co., Ltd., Showroom, Kidderminster. [X6178

B.S.A., 1914 model K, countershaft, kick start, chain belt drive, good order, low mileage, complete, lamp; £47.—Willard, Ascent, St. Leonards. [2335

1914 3½h.p. B.S.A., fully equipped, new condition, Gloria cane sidecar; £56; exchange; wanted, fast T.T. machine, speed gear.—Dosser, Slingsby, York. [X6070

B.S.A., 1913½, 2-speed, coachbuilt Bramble sidecar, condition as new; £49 (or separately).—Williams, Erylfan, Penrhyndeudraeth, Merioneth. [2372

1913 B.S.A., free engine, any examination, Lucas head and rear lamps, Lucas horn, Cowey speedometer, etc.; £39.—Loader, 92, South Park Rd., Wimbledon. [2117

1915 Chain Drive Sporty B.S.A. Combination, every necessary; cost £90: as new; reasonable offer, or lightweight part; photo: Midlands.—9,223, *The Motor Cycle* Offices, Coventry. [X6061

4½h.p. B.S.A., chain drive model, 3-speed gear, fitted with lamps, horn, etc., and complete with Millford sidecar; cost £80 July, 1914, price wanted £65.—Robbins, Garage, Rugby. [X6172

B.S.A. Coachbuilt Combination, 1913, not used for last 12 months, 3½h.p., 2-speed, F.E., Cowey, Lucas lamps, accessories, in splendid condition; £42.—15, Warwick Court, Holborn. [2355

B.S.A. Combination, magnificent Empress sidecar, special lightiog set, speedometer, few weeks old; cost £90, accept £70; appointment.—Oak Cottage, Bell-well Lane, Mere Green, Four Oaks, near Birmingham. [X6169

B.S.A., 1914, 4½h.p., model H, chain drive, 3-speed countershaft gear, kick starter, Lucas lamps, horn, black, Swan sidecar de luxe, hood, screen, Cowey speedometer, watch, tools, spares; £55.—30, Russell Terrace, Leamington. [X6193

B.S.A., 1914, 4h.p., 3-speed countershaft, all chain drive, large coach sidecar (with child's seat), wind screen, Lucas horn, speedometer, big F.R.S., Lucas rear spares, first-class condition; £65.—46, Glenhouse Rd., Eltham, S.E. [2292

B.S.A., luxurious 1915 4½h.p. chain-belt combination, £16/16 B.S.A. sidecar, hood, screen, grid Stewart speedometer, Lucas dynamo lighting, 3 lamps, horn, 2 months old, 600 only, every fitment; £93, or offer.—Taggett, Sacnville, Cecil Av., Wembley. [X6160

B.S.A., 1915, 4½h.p., model K, 3-speed, chain-cum belt drive, Binks carburetter, Palmer cord tyres, lamp set, Lucas horn, new spare tube, only done 500 miles, practically new condition, perfect throughout; private owner; £53.—Seen at The Morris Garages, Queen St., Oxford. [X6205

Brown.

BROWN, 3½h.p., tubes and covers new, Amac, in good running order; £11, or offer.—Ashbee, 62, Magpie Hall Rd., Chatham. [X6017

Calthorpe.

CALTHORPE Junior, late 1914, 2 speeds, as new; £18.—101, Aylesbury Rd., Walworth, S.E. [X6026

1914 Calthorpe Junior, 2h.p., 2 speeds, perfect; £16/10.—Matthews, Pawnbroker, W. Croydon. [X6213

CALTHORPE-J.A.P., 1915, 2¾h.p., 2-speed, as new, accessories; bargain.—52, Gaskarth Rd., Balham. [2229

CALTHORPE- J.A.P. immediate delivery; cash or exchange; no waiting.—Colmore Depot, 261, Deansgate, Manchester. [2180

CALTHORPE 1915 latest 2-speed lightweight models in stock; cash or exchange; no waiting.—Eagles and Co., High St., Acton, W. [X6230

CALTHORPE Junior, 2-speed, condition nearly new; any trial by appointment; price £15.—Wilton, 8, Crescent Terrace, Beckton, E. [2133

CALTHORPE Motor Cycles, J.A.P.'s and 2-strokes, from £27/14; send for list and easy payment terms.—Storey's, 118, Gt. Portland St., W. [0647

CALTHORPES.—Any of this famous trio delivered from stock; extraordinary value.—Agents, Colmore Depot, 31, Colmore Row, Birmingham. [X3026

CALTHORPE Junior, 1914, 2-speed, excellent condition throughout, Michelin tyres; bargain, £18; exchanges.—Ideal Cycle Co., Thundersley, Essex. [2185

MOTOR CYCLES FOR SALE.

Calthorpe.

CALTHORPE, 3½h.p., 2-speed, thoroughly overhauled by makers, lamp, horn, and generator; price £30.—Seen at 248, Bishopsgate, London, E.C. [9126

3½h.p. Calthorpe, White and Poppe engine, and sidecar, Millennium 2-speed and F.E., Bosch mag., just overhauled; £18.—Clark, Garage, Long Melford, Suffolk. [2237

CALTHORPE, 1915, J.A.P., Enfield 2-speed, just arrived from works; immediate delivery; £36/15.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [2084

1915 Calthorpe-Jap, 2¾h.p., 2 speeds, free engine, not done 100 miles, suit overalls, spare belt and tube, lamp, horn, accessories; £30, bargain.—1, Queen Anne's Villas, Queen's Rd., Newbury. [X6162

1915 Calthorpe-J.A.P., 2-speed and clutch, £34/15; also 2¼h.p. 2-stroke, 2-speed, 35 gns.; delivery from stock; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6409

Campion.

CAMPION-J.A.P., 4h.p., Roc 2-speed, coachbuilt sidecar; bargain, £28.—Hilton, Sharp, and Co., Ltd., Foxhall Sq., Blackpool. [X6157

1915 6h.p. Campion, J.A.P. engine twin, beautiful coachbuilt sidecar, show model, complete, all accessories, speedometer, insurance policy, practically new and unscratched; what offers?—Falconer, 18, Whitehall Place, Aberdeen. [2033

Centaur.

CENTAUR 1914 Lightweight, twin-cyl., 3 speeds, in new condition, very little used, and reason for selling given, tyres unscratched; cash £30; would entertain exchange for small car.—H., Winslow, Mulgrave Rd., Sutton. [2110

Chater-De Dion.

3h.p. Chater-De Dion and Millford Sidecar, lamps and accessories, complete; bargain, £18, or £15/10 without sidecar, or offers.—Warne, 64, Braemar Rd., South Tottenham. [2230

Chater-Jap.

6h.p. Chater-Jap, 1912, coach sidecar, 1914 Roc 2-speed; £48.—22, Kennerley Rd., Stockport. [X5966

Chater-Lea.

CHATER-LEA, No. 7, 8h.p., 1912, coachbuilt sidecar, lamps, speedometer, etc.; £48.—C., 4, Talbot Rd., Tottenham. [2396

CHATER-LEA Genuine No. 7 Combination, condition perfect; price 50 gns.—P. M. Harris, 20, Kingswood Rd., Clapham Park, London, S.W. [2092

NO. 7 8h.p. Chater and Sidecar, 26×3 all round, gear box renewed last month, fine condition, and reliable; £46.—11, Garnies St., Peckham. [2351

8h.p. Chater-Lea, No. 7, 3-speed, coachbuilt sidecar, underslung chassis, excellent tyres all round, speedometer, accessories; bargain, £45.—16a, Woolwich Rd., Belvedere, Kent. [X6045

1915 No. 7 Chater-Lea, 8h.p. (enclosed chains), cane tandem sidecar, hood, screen, 3in. Palmer light car cords, accessories; £80, no offers.—65, Oglander Rd., East Dulwich Station. [2228

CHATER-LEA, No. 7, 8h.p. J.A.P., 3-speed countershaft gear, Bowser 2-seater sidecar, lamps, speedometer, etc.; £50; any trial; seen evenings.—54, Whitbread Rd., Brockley, S.E. [2235

CHATER-LEA No. 7 8h.p., late 1914, 3-speed, in first-class condition, spare tyre and tube, electric horn, watch, speedometer, Canoelet sidecar, P. and H. lamp; £70, or close offer; exchange good lightweight and cash.—33, Winslade Rd., Brixton. [2132

CHATER-LEA, August, 1913, 8h.p. combination, 1914 spring wheel coachbuilt sidecar, 3-speed gear box, clutch, wind screen, big hood, luggage grid, speedometer, spare tyre, splendid condition; £60, or exchange good solo mount and cash.—Hurd, 61, Beckton Rd., Canning Town. [2431

Clyno.

CLYNO, 2½h.p., 1915, 2-stroke machine, splendid condition; £25.—A. Hollaod, Earlsdon, Coventry. [X6297

CLYNO, 1914, coachbuilt sidecar, 3 speeds, perfect condition; sacrifice £68.—Speechley's, 45, Church Rd., Acton. [2410

1915 6h.p. Clyno, spare wheel, 2 tubes, very little used; any trial given; £75.—Mortimer, Hornyold Arms, Malvern Wells. [X5932

CLYNO 2-stroke, 1914, 2 speeds, clutch, accessories, splendid condition; £34.—Auto Mart, 133, Hammersmith Rd., W. [2192

CLYNO Combination, 1912¾, 6h.p., 2 speeds, just overhauled, perfect; bargain, £39; after 7.—2, Vale Terrace, Hook Rd., Surbiton. [2233

CLYNO 6h.p. late 1913 Combination, 3-speed, countershaft gear, in perfect order; £53; good lightweight part.—15, Warwick Court, Holborn. [2354

CLYNO, late 1914, 2-speed, 2-stroke, very fast, little used; best offer on £30 accepted.—Crole-Rees, 21, Highbury Quadrant, N. 'Phone: North 1508. [X6187

CLYNO, 6h.p., 2-speed, kick starter, sidecar, and lamps; £50, or nearest offer; officer going abroad.—Davis, The Old House, Farnham Royal, Slough. [2105

NEW MODELS.

INDIAN, 5 h.p., 3 speeds, semi-T.T.	£63 0
SUN-VILLIERS, 2½ h.p., 2-str., single-speed	£27 11
INDIAN, 7 h.p., clutch T.T. model	£57 0
REX, 6 h.p., 1914, Combination, 2-sp., new	£70 0
JAMES, 3½ h.p., twin, 3 speeds, all-chain ..	£66 6
SUN V.T.S. engine, 2 speeds	£37 9
JAMES, 4½ h.p., 3-speed, Combination	£80 0
HENDERSON, 4-cylinder, 2 speeds	£81 18
HARLEY-DAVIDSON, 7-9 h.p., 3 speeds ..	£68 5
NEW RYDER-J.A.P., 2½ h.p., fixed gear ..	£30 19
J.H., 3½ h.p., T.T. model, M.A.G. engine ..	£55 10

SIDECARS.

MILLFORD, CANOELET, and WATSONIANS ex actual stock.

All the above actually in stock at the time of going to press.

EXCHANGES ARRANGED.

SECOND-HAND BARGAINS.

SIDECAR OUTFITS.

B.S.A., 3½ h.p., 2-speed, cane Sidecar	£41
HARLEY-DAVIDSON, 1915, 7 h.p., 3 speeds	£71
RUDGE, 1914, 5 h.p. Multi, Rudge Sidecar ..	£48
P. & M., 1912, 3½ h.p., 2-speed, 2-seater Sidecar	£45
REX, 1914, 8 h.p. Spacke engine, 3 speeds....	£58
REX, 1912, 6 h.p., 2-speed, Sidecar, handle start	£26
REX, 1914, 6 h.p., 3-speed, coach Sidecar.....	£55
REX, 1913 6 h.p. 2-speed cane Sidecar.....	£40
WILLIAMSON, 1913 8 h.p., 2-sp., coach Sidecar	£58
BAT, 1913, 6 h.p., 3 speeds, coach Sidecar	£53
INDIAN, 1915, 5 h.p., 3 speeds, Sidecar, only done 200 miles	£76
ENFIELD, 1913, 6 h.p., 2 speeds, as new	£55
DOUGLAS, 1914, 3½ h.p., 2 speeds, Canoelet sidecar, speedometer, three lamps, horn, disc wheels, outfit like new throughout.....	£69

SOLO MOUNTS.

DOUGLAS, 1915, 2¾ h.p., 3-speed, all accessories	£50
ZENITH, 1913, 3½ h.p., clutch, and Gradua gear	£40
MARTIN, 1914, 2⅞ h.p., T.T., overhead valves	£30
INDIAN, 1914, 7 h.p., dynamo model	£54
P. & M., 1914, 3½ h.p., 2-speed, and kick start	£55
P. & M., 1913, 3½ h.p., 2-speed, all accessories	£45
COVENTRY EAGLE, 1915, 2-stroke, lightweight	£24
REX, 1909, 3½ h.p., 2-speed, free engine	—
DOUGLAS 2¾ h.p., single-speed	£16
BROUGH, 1915, 3½ h.p. twin, 3 speeds	£54
TRIUMPH, 1914, 4 h.p., 3 speeds	£52
DOUGLAS, 1914, 2¾ h.p., 2 speeds, T.T.	£46
HOBART, 1915, 2½ h.p., as above	£32
TORPEDO, 1913, 2 h.p. Precision engine, 2 sp.	£25
F.N., 1912, 2¼ h.p., 2 speeds, shaft drive	£24
TRIUMPH, 1913, 3½ h.p., 3 speeds, fine order..	£46
BAT, 1915, 8 h.p., 3 speeds, spring frame	£60
CLYNO, 1915, 2½ h.p., 2 speeds, T.T.	£36
DIAMOND, 1914, 2¾ h.p., 2 speeds, accessories.	£37
TRIUMPH, 1913, 3 speeds, excellent order	£47
ZENITH, 1913, 3½ h.p., Gradua gear, and clutch	£40
ROVER, 1914, 3½ h.p., 3-speed, T.T. model ...	£49

MAUDES
MOTOR MART
100 & 136 Gt Portland St. London W.

Telephone 552 Mayfair *Telegrams* Abdicote Wesdo

Special attention given to the requirements of ladies.

MOTOR CYCLES FOR SALE.

Clyno.

CLYNO, late 1914, perfect condition, speedometer, lamps, horn, etc., spare tyre, tubes, valves, wicker torpedo sidecar, as new; any trial; £65.—Beasley, Tring, Herts. [2035

1914 Clyno Combination, 6h.p. twin, 3 speeds, kick starter, handsome coachbuilt sidecar, detachable wheels; £55.—Murray, 37a, Charles St., Hatton Garden, Holborn. [X6183

CLYNO 6h.p. Coachbuilt Combination, 3 speeds, kick-starter, and brand new No. 6 sidecar, perfectly sound condition; £55.—P. J. Evans, John Bright St., Birmingham. [2258

CLYNO, 2-stroke, September, 1914, 2-speed, clutch, dynamo lighting, speedometer, mileage 3,800; seen mornings; £35.—8, Spencer Rd., Cottenham Park, Wimbledon. [2371

CLYNO 5-6h.p. 1913½ Combination, 4 detachable wheels, new tyres, coachbuilt sidecar, No. 6, 3 speeds, kick starter, chain driven, in real good order; £48.—Percy and Co., 337, Euston Rd., London. [2316

CLYNO, 1913, 3-speed gear, detachable wheels, separate oil tank, Lucas 462 head lamp and rear lamp, tyres excellent, enamel and plate as new, engine guaranteed; with No. 6 Clyno sidecar, Lucas 458 lamp, complete; £52/10.—Robinson's Garage, Green St., Cambridge. [6866

CLYNO, 5-6h.p., November, 1913, fitted with 1915 spring drive and 1914 coachbuilt sidecar, spare wheel, 3 new Dunlops, luggage grid, V.S. pillion seat with back and footrests, Cowey speedometer, Miller head lamp, Lucas sidecar lamp, Low generator, handle-bar mirror and horn, sidecar cover, carpet and mat, spare petrol can, jack and kit of tools, and good spare re-treaded tyre extra; complete, £60; in perfect condition; owner buying car; trial run to probable buyer.—Ward, 96, Dora Rd., Wimbledon. 'Phone: 320. [2422

Douglas.

DOUGLAS 1914 3½h.p. T.T. Model, 2-speed gear, good running order; £39.—Below.

DOUGLAS, 1915, 2¾h.p., all-black special War Office model, 2-speed, T.T.; delivery from stock; £52 plus 5% increase.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0492

DOUGLAS, 1914, model U, £41.—Russell Art Co., Ltd., 92, Gt. Russell St., W.C. [2125

DOUGLAS, 1914, bargain at £45, cost £56.—12, Myddleton Rd., Bowes Park. [X6142

DOUGLAS, 1911, 2¾h.p., 2-speed, fully equipped; £25.—116, Frinton Rd., East Ham. [2391

DOUGLAS 1913 T.T., 2¾h.p., 2 speeds, new tyres; £34.—108a, Penwith Rd., Southfields. [X6275

DOUGLAS, 1912, 2¾h.p., 2 speeds; £25, or nearest.—Westwell, Bank Quay, Warrington. [X6233

DOUGLAS, T.T., 1914, £45.—Lieut. C. V. Bennett, M.T., A.S.C., Grove Park, Lee, S.E. [2114

DOUGLAS, 2¾h.p., T.T., 2-speed, 1914, as new; £42.—Fairhead, Nurseries, Colnbrook. [X5635

DOUGLAS, 1913, T.T., 2-speed, Amac, excellent machine; £34.—59, Banbury Rd., Oxford. [X6251

DOUGLAS, 1911, perfect order throughout; bargain, £17/10.—Speechley's, 45, Church Rd., Acton. [2409

1915 Douglas, 2¾h.p., W, in stock, new; £54.—Moffat, Douglas Agent, Yeovil. Tel.: 50. [9203

1911 Douglas, fixed engine, recently overhauled; £18.—E. Dyson, Clayton West, Huddersfield. [X6157

DOUGLAS, 2¾h.p. to 10h.p. models.—Gourlay, the great Douglas agent, Fallowfield, Manchester. [4241

DOUGLAS, 4h.p., 3-speed, used a few times, practically new, not soiled.—Walsh's Garage, Blackburn. [X6176

DOUGLAS Model V from stock; first cheque secures.—Colmore Depot, 261, Deansgate, Manchester. [2179

1912 Douglas, recently overhauled, lamp, horn, etc., good condition; £25.—28, Abbey Walk, Halifax. [X6214

2¾h.p. Douglas (1914); cost £60 complete, with spares; £42, or nearest offer.—40, Portland Rd., Edgbaston. [X5700

DOUGLAS, 2¾h.p., 1913, 2-speed, complete with lamps, etc.; £37.—Clemmey, Melton Rd., Beadle Lanes. [X6128

DOUGLAS, 2¾h.p., 1914 T.T., 2 speeds, accessories, new tyres; £45.—Auto Mart, 133, Hammersmith Rd., W. [2196

TRY Us.—Probably we can supply.—Gibb, Gough, the Douglas Specialists, Gloucester. Douglases our speciality. [X3531

DOUGLAS, 1914, 2¾h.p., model U, Lucas horn and lamp, perfect condition; £40.—Carson, 26, Chance St., Leicester. [X6103

DOUGLAS, new 1915, model V, just arrived from makers; £48, plus 5%.—Lloyd and Son, Douglas Agents, Lewes. [232

DOUGLAS, 1910-11, excellent running condition, all accessories, etc.; bargain, £16.—37, Rosendale Rd., West Dulwich. [215

DOUGLAS 1913 and 1914 second-hand machines in stock, £28 to £43.—Turpins, 22 and 29, Presto Rd., Brighton. [071

MOTOR CYCLES FOR SALE.

Hobart.

HOBART, 2¾h.p. Precision, 1913, 3-speed, clutch, new tyres; £20.—Rowell, Cranleigh, Surrey. [2277

Humber.

HUMBER 2h.p. Lightweight, 1913; cost £36, accept £13, no offers.—Fairhead, Nurseries, Colnbrook. [X5636

HUMBER, 2h.p., horn, tools, spares, variable ignition; £14; any evening after 6.30.—36, Cedar Rd., Teddington. [2360

HUMBER, 1914, 3½h.p., 3-speed, free engine, kick starter, new Pedley belt and back tyre, Bramble coachbuilt sidecar; £55.—Lenthall, Castle Lane, Bolsover. [X6057

3½h.p. Humber, 1912, and coachbuilt sidecar, Roc 2-speed, handle starter, Palmer's and accessories; £27/10.—Welch, 48, Evering Rd., Stoke Newington. [2418

1911 Humber and Coachbuilt Sidecar, nearly new, 2-speed, handle-starter, new studded tyres, grand combination; £29. — Jarvis, Corner House, Southgate, N. [X6249

HUMBER, 1912, 3½h.p., 2-speed and free, all accessories, Low generator, Stewart speedometer, comfortable wicker sidecar, all in excellent order; £32/10.—85, Hamilton Rd., Felixstowe. [2239

HUMBER Lightweight, as illustrated Humber 1914 catalogue, page 12, new condition, done about 200 miles; first £22 secures the bargain, no offers.—Bolwell, 421, Gloucester Rd., Bristol. [2164

3½h.p. Humber, 1913, 2-speed, free engine, new belt, horn, and Kempshall tyre, 2 lamps, spares, engine entirely overhauled, climb anything; £34; with coachbuilt sidecar £40.—210, Putney Bridge Rd., S.W. [2278

Indian.

5h.p. Indian, all accessories, champion condition.—2, Albion Rd., Fallowfield. [2288

INDIAN, 7-9h.p. Hendee Special Combination, like new; £58.—33, Killyon Rd., Clapham. [2290

1914¾ T.T. Clutch Indian, da 75, speedometer, spares; £44.—62, Park Av., Barrow-in-Furness. [2121

1915 5h.p. Twin-cyl. Indian; immediate delivery; £63.—Parker and Son, St. Ives, Hunts. [2399

INDIAN Combination, late 1913, 2 speeds, kick starter; £45.—Percy and Co., 337, Euston Rd., London [2309

7-9h.p. Red Indian and Montgomery sidecar, electric lighting; £55.—Morgan and Maxwell, 80, High Rd., Streatham. [X6239

1913 Indian and coach sidecar, 2-speed, 7-9h.p., spring frame, a good machine, £47/10.—Jones, The Broadway, Muswell Hill. [2299

INDIAN, 1912, 7h.p., 2 speeds, clutch, and kick-starter, excellent condition; £32.—P. J. Evans, John Bright St., Birmingham. [2256

INDIAN 1914 Combination, 7-9h.p., 2-speed, electric equipment, little used; £57/10, bargain.—4, Dollis Rd., Church End, Finchley. [2319

INDIAN 1915 Latest 7h.p. Coachbuilt Combination, electric lighting outfit, new condition; £75.—P. J. Evans, John Bright St., Birmingham. [2257

INDIAN 1911 Twin, 5-6h.p., mag., spring forks, lamp, stand carrier, splendid condition; £18.—Murray, 37a, Charles St., Hatton Garden, Holborn. [X6182

INDIANS.—Liberal allowance made for your old mount in part payment for any model, let us quote you.—Ideal Cycle Co., Thundersley, Essex. [2186

7-9h.p. Indian, T.T., clutch model, late 1914, all accessories, Sensspray carburetter, lever control, grand order; £35.—R. J. Hamilton, Hamilfield, Irvine [2149

1915 Indian 7h.p. Combination for sale, excellent condition, mileage under 3,000; trial; price complete £75.—9,228, *The Motor Cycle* Offices, Coventry. [X6107

1915 Indian, 5h.p., 3-speed, kick-starter, lamps, horn, used one month; £57; will take Douglas in part exchange.—F. King, Chemist, Sutton, Surrey. [2170

HENDEE Special, electric self-starter, lamps, and horn, speedometer, and a £21 sidecar, total mileage 1,700; sacrifice, £65.—Longman, 1, King St., Acton. [2251

INDIAN, 1915, 5h.p., 3-speed model; £63; delivery from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. 0717

INDIAN.—Delivery of all 1915 models from stock. We are large contracting agents for these machines, and can offer best deliveries.—The Morris Garages, Oxford. [X6208

INDIAN, 1915, T.T., 7-9h.p., clutch, Lucas lamp set, horn, tail lamp, tools, absolutely as new, done 500 miles only; £50, or nearest; owner buying car.—Hawley, Rotherwood, Penistone. [X5691

INDIAN, late 1913, 7-9h.p., with Cowey speedometer, and Mills-Fulford Radio spring wheel sidecar, whole outfit in perfect order; £50.—Mebes, 156, Gt. Portland St., W. Tel.: 3426 Mayfair. [2254

1914 7-9h.p. Indian and Massey sidecar, electric lighting set, speedometer, all accessories, spare cover and sprocket, electric horn, everything in perfect condition: £70.—Private Perry, Farm Camp, Epsom. [X5926

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1915 3 h.p. ENFIELD, twin	46 0	—	—
1915 6 h.p. SUNBEAM Combination, many extras, cost £140, six weeks old	125 0	—	—
2¾ h.p. DOUGLAS, 1914, Model U.	42 10	—	—
2¾ h.p. 1915 ALLDAYS-MATCHLESS Combin'n	38 0	—	—
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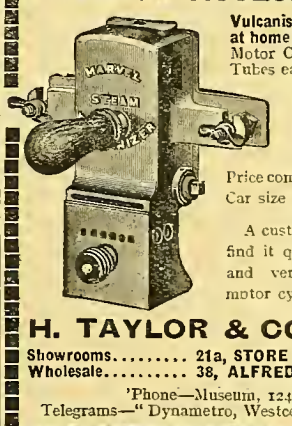

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Indian.

1915 3½h.p. 3-speed Indian, mileage 1,600, £7 worth accessories fitted, including speedometer, hand Sparton horn, etc., all as new; accept £55 for speedy sale.—Swindells, Dental Surgery, Fleetwood. [X5978

INDIAN, 7-9h.p., 1912, with Millford sidecar, clutch, 2-speed, just been thoroughly overhauled, new back cover, insurance policy; £45; owner in financial difficulties.—Jewell Garage, 157, Archway Rd., Highgate, N. [2430

1913 Indian, 7-9h.p., 2 speeds, speedometer, lamps, kick starter, good tyres, coachbuilt sidecar, overhauled by makers; price £45, or exchange with cash for good make cycle car.—L.L., 201, Gipsy Rd., West Norwood, S.E. [2285

INDIAN, 1915, 5-6h.p., 3-speed, clutch, kick starter, T.T. handle-bars, enamel perfect, not done 800, Lucas lighting set, spare tube, fast, excellent condition: £60, nearest.—S. Osmaston, 3rd Battalion, Royal Sussex Regiment, Newhaven. [2134

PRACTICALLY New 3½h.p. Twin T.T. Indian, 3 speeds, clutch, generator, lamps, and kick starter, not been ridden 300 miles; owner gone to Dardanelles.—Write in first instance to A. L. Bain, 12, Netherhall Gardens, Hampstead. [2106

INDIANS in Stock for immediate delivery.—7h.p. 3-speed and coachbuilt combinations, 7h.p. road racer, 5h.p. 3-speed double-purpose mount. — P. J. Evans, 87, John Bright St., Birmingham, sole Midland distributing agent. [2259

1915 7-9h.p. Indian, 3 speeds, Millford sidecar, Lucas lamp, speedometer, practically new, can do 53 miles per hour with sidecar; owner selling, having bought car; cost over £90, £85, no offers.—Flanagry and Co., Ltd., Roscrea, Ireland. [X6046

INDIAN, late 1913, 7-9h.p., with Cowey speedometer and Mills-Fulford Radio spring wheel sidecar, whole outfit in perfect order; £55.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0569

1914 7h.p. Indian, 2-speed, complete with dynamo electric lighting set, electric horn, and speedometer, smart Indian coachbuilt sidecar, whole outfit in very good condition, and thoroughly overhauled; 55 gns.—Julian, Broad St., Reading. 'Phone: 1024. [X4835

Ivy.

3½h.p. Ivy-Precision, 1912; £16.—Particulars, Geo Bainbridge, Witton, Gilbert. [X6013

IVY De Luxe, 2½h.p., 1915 (June), 2-stroke, 2-speed, special engine, light coachbuilt sidecar, absolutely as new, mileage 500, Dunlop 2¼, accessories, etc.; offers.—Eldridge, Fordingbridge. [2276

James.

1915 James, 4¼h.p., 3-speed countershaft, clutch kick starter; 60 gns.—Parker and Son, St. Ives, Hunts. [2398

SPECIAL 3½h.p. Twin 3-speed Chain Drive James touch 68, 1914½, complete; £40, lowest.—Millard Chesterfield. [X6028

JAMES, 2¼h.p., 1915, done 300 miles, perfect condition; best offer over £30.—Write, Porter, 97, Tabernacle St., E.C. [2088

JAMES 1914½ 4¼h.p. Combination, 3-speed, clutch, kick starter, accessories, faultless; trial; £58.—173, Victoria Rd., Alexandra Park. [2043

1915 James 4¼h.p. Combination, just received from works; £76/13, or accept lightweight and cash balance.—Newnham, 223, Hammersmith Rd., W. [2172

JAMES, 1914, 4¼h.p., 3-speed countershaft, kick starter, speedometer, lamps, tools, James Canoelet sidecar, equal to new.—Duddell, 40b, High St., Dorking [2280

1915 James, 4¼h.p., 3-speed countershaft, clutch, kick starter, fitted with James Canoelet sidecar, complete; 75 gns.—Parker and Son, St. Ives, Hunts. [2397

JAMES, 4¼h.p., 1914, 3-speed combination, complete, lamps, horn, tools, accessories, perfect; £57.—Brookes and Adams, 250, Barr St., Hockley, Birmingham. [X6089

JAMES, September, 1914, 4¼h.p. Combination, speedometer, lamps, auxiliary silencer, storm apron, back-rest, etc., new condition; £57.—51, Arthurdon Rd., Brockley, S.E. [2240

JAMES, 3½h.p., late 1912, chain drive, 2-speed, kick starter, all accessories, Canoelet sidecar, good running order and condition, not used this season; £42.—Cook, Fitz Rd., Cockermouth. [X6043

JAMES, 1914, 4¼h.p., 3-speed, Canoelet sidecar, fitted walnut locker, apron, luggage grid, lamps, horn, etc., perfect condition; £55, or nearest offer.—9,230, *The Motor Cycle* Offices, Coventry. [X6317

JAMES, 1915, 4¼h.p., 3-speed counter-shaft gear, clutch and kick starter, chain drive, Canoelet sidecar, with Lucas electric lighting outfit, Lucas electric horn; £90/15.—Colmore Depot, 261, Deansgate, Manchester. [0674

1915 T.T. James, 3½h.p. twin, new condition, perfect, fast, reliable, luxuriously equipped; cost over £75 three months ago; excellent reason selling; accept best cash offer over £60, or sell machine alone £55.—Trevor Davies, Highcroft, Sketty Rd., Swansea [2395

MOTOR CYCLES FOR SALE.

J.A.P.

4 h.p. J.A.P., Bowden gear, M.C., Bosch, Druids, speedometer; £17.—44, Hampden Rd., Kingston. [2295

8 h.p. J.A.P., Druids, Albion clutch, Best-Lloyd, spring wheel sidecar, all Chater-Lea fittings.—44, Richmond Rd., Earl's Court. [X6301

2¾ h.p. J.A.P., U.H. mag., engine, tyres, belt, all excellent; £11/10, or near.—Ketley, 20, Dalgarno Gardens, Wormwood Scrubbs. [2161

Kerry.

KERRY-ABINGDON, 3½h.p., fitted with footboards, horn, and inflator, in good running order; price £17.—Seen at 248, Bishopsgate, London, E.C. [9127

3½ h.p. Kerry-Abingdon, with Roc 2-speed, Best and Lloyd, in good order; £27; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0723

KERRY, 2½h.p., B. and B., Hellesen, new Dunlop back, Dunlop front, new belt, just overhauled, perfect running order; bargain, £8; exchanges.—Ideal Cycle Co., Thundersley, Essex. [2187

Lea-Francis.

LEA-FRANCIS, 1914, 2-speed, clutch, splendid order, little used; £45.—193, Mansfield Rd., Nottingham. [X6067

1914 Lea-Francis, 3½h.p. twin, 2-speed, clutch, kick start, all chain drive, lamps, horn, spares, new Stellastic on back; £50, or exchange 6h.p. combination.—Carlton, Crook Log, Bexley Heath, Kent. [2143

Levis.

1915 Levis, 2½h.p., bought June, good as new; £30.—8, Connaught Rd., Leytonstone. [2206

LEVIS.—Immediate delivery all models.—Sole agents, Colmore Depot, 261, Deansgate, Manchester. [2182

LEVIS Popular; £28/1 cash, or fifth down, 2½% on balance.—Referee Cycle Co., 332, High Holborn, W.C. [2773

LEVIS, 2½h.p., 1915, in new condition, complete, with accessories; £25.—138, Horseferry Rd., Westminster. [2344

LEVIS, 1915, hardly used, not scratched, tip-top accessories; snip; £26.—8, St. James Rd., Kingston-on-Thames. [2375

LEVIS, 2½h.p., 2-speed gear (new), and special new lightweight Wilsonian sidecar; £35.—Colmore Depot, Colmore Row, Birmingham. [X5972

1915 Levis, 2¼h.p., Popular model, absolutely in stock; £28/1; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6410

LEVIS Popular, 2½h.p. single, and 2-speed, and De Luxe models.—Sole Midland distributing agents, Colmore Depot, 31, Colmore Row, Birmingham. [X3034

LEVIS, 1915, model de luxe, 2¾h.p., mileage 1,600, new condition, accessories; £39, or near offer; joined Army.—Roebuck, 19, Somerset Rd., Huddersfield. [X6312

LEVIS 2-stroke Motor Cycles, latest 1915 models.—Sole London and district agents, Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent. [0711

Lightning.

3 h.p. Lightning, mag., B. and B., adjustable pulley, belt drive, new tyres, Druids, low, perfect running order; £15, bargain.—On view, Newtun's Garage, Underhill, New Barnet. [2042

L.M.C.

L.M.C., 4¼h.p., with wicker sidecar, November, 1913, 1914 improvements, 3-speed Sturmey-Archer, 1915 Philipson pulley, whole splendid condition, good tyres and belt; £42; seen any time by appointment.—Rector, Monkton Wyld, Charmouth. [2099

Matchless.

MATCHLESS, 6h.p., mag., a.o.v., smart condition, powerful.—Oakley, Hurst Green, Sussex. [2332

1912 3½h.p. Matchless, 90×77½, single, good condition, and fast; £38.—Scott, Alice St., Keighley. [X5702

MATCHLESS Combination, 1913, 6h.p., splendid condition; £49.—J. Gelder, Long Marton, Carlisle. [X6136

8 h.p. Matchless Combination, fine condition; £43; any trial.—Wainwright Baxter, High St., Morley, Yorks. [X6303

1915 Matchless Combination, 8B. model, 6 weeks old, 3-speed, all accessories; £90.—Basil Wood, Horn Park, Lee. [2036

LATE 1912 6h.p. Matchless Coachbuilt Combination, speedometer, perfect condition; £44.—Blencathra, Walton-on-Thames. [X6267

MATCHLESS Combination, 8h.p., late 1913, little used, fine condition, fully equipped; 50 gns.—52, Western Rd., Romford. [2157

1912 Matchless-Jap, 6h.p., and Chater spring wheel sidecar, excellent condition; £38.—111, Woodlands Park Rd., Harringay. [2370

1914 Matchless, 8h.p., 2-speed, chain drive, cane sidecar; best offer over £60.—North 2845.—7b, Bayham St., Camden Town. [2326

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Matchless.

MATCHLESS, 8h.p., 1913, chain drive, 2-speed, kick-starter, sidecar, new condition; £50. — 4, Hawthorn Villa, Potter's Bar. [2203

MATCHLESS, 1913, 8h.p., twin belt, grand machine, splendid condition; £55, with sidecar.—5, Park Av., Palmer's Green. [2265

1914 Matchless Combination, 7h.p., 3-speed, fitted with speedometer and lamps; bargain. £72.—Newnham, 223, Hammersmith Rd., W. [2173

6 h.p. Matchless and sidecar, late 1913, lamps, speedometer, etc., in splendid condition; cost over £100, sell £56.—Kendall, 5, Wood St., Stratford-on-Avon. [X6298

MATCHLESS 1915 8h.p. Combination, Lucas dynamo lighting set, wind screen, horns, pillion seat, speedometer, back rest; £90.—29, Dalberg Rd., Brixton. [2359

LATE 1914 7-9h.p. Matchless Combination, fitted, very little used; owner buying car; £70, rock-bottom, no offers.—Richfield, 18, Lower Bridge St., Canterbury. [2091

1913 7-8h.p. Matchless, with Cancelet sidecar, lamp, speedometer, etc., in very good condition; £60; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0721

1914 Matchless 8B Combination, hood, wind screen, 3 lamps, mirror, all accessories, everything perfect, not done 500 miles; 76 gns.—54, St. Gabriel's Rd., Cricklewood. [2334

MATCHLESS, 1913, 3½h.p. twin, 3-speed, free engine model, Miller lamp set, horn, with cane sidecar, good order and condition; private owner; £35.—Seen at The Morris Garages, Queen St., Oxford. [X6201

6 h.p. Matchless Combination, completely overhauled, and in practically new condition, including new Bluks, XL'all saddle, coachbuilt sidecar; any trial; for quick sale £42, no offers.—6, Grange Rd., Layton, Blackpool. [X6218

MATCHLESS, late 1913, 8h.p. J.A.P., 2-speed, Dalton coachbuilt sidecar, complete with spares, lamps, horn, speedometer, etc., perfect; £50, no offers; any trial given.—The Steward, R.F.A. Officers' Mess, Bordon, Hants. [2368

1913 8h.p. Matchless, 2-speed, chain drive, 1914 Swan sidecar, Tynesider Pillion, lamps, tools, valves, tubes, new spare Kempshall cover, very smart, excellent order, top gear climber; £57.—Parker, 21, Clarendon Rd., Blackpool. [X6217

MATCHLESS 8B. Combination, 7-12h.p., mag., latest model, best Lucas set, speedometer, watch, all latest accessories, tools, spares of every description, beautifully equipped, very little used; cost £118, bargain, 80 gns.; trial given.—Box L1,291, *The Motor Cycle* Offices, 20, Tudor St., E.C. [2059

Minerva.

MINERVA, 2h.p., low frame, h.b.c. Amac, good tyres, Dunlop belt; £5.—179, Snargate St., Dover. [X5920

MINERVA, 2½h.p., going order, good condition, low; £12.—Brent, 14, Cleveland Rd., South Woodford. [2221

MINERVA, 3½h.p., low built, accumulator, B.B., good condition; owner enlisted; £9.—Turner, 3, Derwent St., Rochdale. [X6102

MINERVA, 5h.p., Amac, Hellesen, h.b.c., perfect running order; £8/10, offers; photo.—Jackson, Mather House, Cove Rd., Gourock, N.B. [X6308

Monarch.

MONARCH-PRECISION, 1913, 4¼h.p., 2-speed, and coachbuilt sidecar, splendid condition; £38.—58 Ashted Row, Birmingham. [X6068

Moto-Reve.

MOTO-REVE Lightweight, single, perfect condition new Palmer tyres; £14; owner going abroad; no reasonable offer refused.—Liddiards Garage, Prittlewell, Southend-on-Sea. [2041

Motosacoche

1915 3½-4h.p. Motosacoche, as new; £45.—7, Pemberton Gardens, Upper Holloway, N. [2057

1915 Motosacoche, 3½h.p. twin, with 2-speed gear not been ridden 500 miles; cost over £60, for quick sale will accept £47/10.—Exeter Garage Co., Paris St., Exeter. Tel.: 123. [2297

MOTOSACOCHE, 1¾-1½h.p., special Palmer new Clincher front; any length trial, examination 145 to gallon regular, set tools, lamps; £13/13.—6, Kent, 131, Winnock Rd., Colchester. [2058

New Hudson.

NEW Hudson, 3-speed, and clutch, 3½h.p., 1913 cost £60, accept £26.—Barnes, 81, High St., Slough. [X5637

1912-1913 New Hudson, 4h.p., sidecar, 3-speed, all accessories, good condition; £39.—Jordan, Builder, Staines. [X5417

NEW Hudson, 4h.p., late 1914, 3-speed, coachbuilt sidecar, perfect condition; 50 gns.—Olliver and Addis, Margate. [2243

NEW Hudson, 3½h.p., 3-speed coachbuilt sidecar, condition splendid; £35.—Hilton, Sharp, and Co., Ltd., Foxhall Sq., Blackpool. [X6155

MOTOR CYCLES FOR SALE.

Rudge.

RUDGE Multi, 1914, 5-6h.p., coachbuilt sidecar, lamp, horn, speedometer; £52, or exchange 3½ h.p.—Johnston, Adelaide Ter., Dundee. [X6161

1912 Rudge, with accessories, T.T. bars, in good condition; first offer, £16, secures.—Whipps Cross Garage, 879a, Raglan Rd., Walthamstow. [2202

RUDGE Multi, 1913, 3½h.p., free engine, torpedo engine sidecar, with lamps, speedometer, etc.; £35.—Ridgway, 96, Clockhouse Rd., Beckenham. [2292

1915 Rudge Multi, 3½h.p., new July, run 1,200 miles only, new sidecar just fitted, all accessories; lowest 60 gns.—Rupert Smith, Thrapston. [X6126

RUDGE Multi, 5-6h.p., 1915, and Rudge sidecar, hood, screen, speedometer, 3 lamps, new last July, little used; £78.—Valentine, 19, St. Mary's, Bedford. [X6086

RUDGE, 5-6h.p., 3-speed, with Rudge sidecar, speedometer, lamps, horn, hood and screen on sidecar, only 4 months old; £60 cash.—Rawson and Sons, Tunbridge Wells. [2048

TWO 5-6h.p. Rudges, one Multi gear, one N.S.U. gear, with or without coachbuilt sidecar, 1913 and 1914 (late); £35 and £40.—Morgan and Maxwell, 30, High Rd., Streatham. [X6237

RUDGE Multi, deceased officer's, in damaged condition, necessary repairs about £8; price £28, or near offer for quick sale.—Box L1,308, *The Motor Cycle* Offices, 20, Tudor St., E.C. [2152

RUDGE Multi, 1915, 3½h.p., with Lucas head light, horn, tail lamp, and Jones speedometer, coachbuilt Canoelet sidecar, guaranteed perfect; £55.—The Premier Motor Co., Aston Rd., Birmingham. [2425

RUDGE Multi, 5-6h.p., bought last year, and Montgomery sidecar, Lucas lamp, generator, and horn, Jones trip speedometer, perfect condition; £54/10, or nearest offer.—Orme, 91, Ashbourne Rd., Derby. [X6097

Scott.

SCOTTS.—Two in stock for immediate delivery.—Colmore Depot, 31, Colmore Row, Birmingham. [X3032

SCOTT (1914) and Canoelet, faultless condition; £55; take solo mount part. — Sinclair, East Molesey. [X6280

SCOTT, 1913, with 1915 cylinders and improvements, condition as new; £35.—The Premier Motor Co., Aston Rd., Birmingham. [2428

SCOTT and Sidecar, late 1911, used under 3,500, Gloria 18 gn., pan saddle, wind screen, speedometer; bargain, 40 gns.—Seen at McKinnon's, Woodcote Rd., Wallington. [2433

SCOTT, 1913, complete with Jones trip speedometer, Lucas lamp set, horn, etc., excellent condition throughout; private owner; £40.—Seen at The Morris Garages, Queen St., Oxford. [X6200

3¾h.p. Scott Coachbuilt Combination, 1914, in first-class condition, overhauled by Scott in May, very good tyres, Lucas lamp set and horn, 2 spare chains, tubes, all tools, wind screen, apron, overalls; £50.—Any time, 21, Leicester Terrace, Lancaster Gate. [214]

Sheffield Minor.

SHEFFIELD Minors (2-stroke), single and 2-speed models from stock only at Colmore Depot, 31, Colmore Row, Birmingham. [X3035

Singer.

3½h.p. Singer, 1912, clutch, new tyres and belt; owner enlisted; £22, offers.—Seen, Thaxter, Engineer, Maidstone. [X5692

SINGER, late 1913, 3½h.p., 3-speeds, free engine, and sidecar, excellent condition; £37.—McBratney, Adare, Co. Limerick. [X6247

SINGERS.—Immediate delivery of 4¼h.p. chain drive 3-speed model; sidecars supplied to suit in stock.—Colmore Depot, 31, Colmore Row, Birmingham. [X3033

T.T. Singer, 2¾h.p., Sept., 1913, 2-speed, F.E. clutch, cylinder, tyre new, re-bushed, enamelled, makers' bill £9 July, accessories; £28, near offer.—Lieut. White, 36, Tredegar Rd., Bow. [X6235

4½h.p. Singer and Sidecar, 1913½, 2 speeds, countershaft gear, free engine clutch, 2 lighting sets, 2 horns, mirror, splendid condition, done 3,750; £45.—S. F. Seaward, Monxton, Andover. (D) [2366

Sparkbrook.

SPARKBROOK, 1915, 2½h.p., 2-speed, lamps, horn, and speedometer, cost £42, run only 60 miles, absolutely perfect; bargain, £36.—Stanley, 5, Parade, Belmont, Surrey. [2220

Sun.

1915 2¼h.p. Sun 2-stroke, not ridden 300 miles; trial; £24.—Leonard Hook, West End, Honiton, Devon. [2177

SUN-VILLIERS 2-stroke, 1915 model de luxe, accessories, perfect; £24.—T.H.L., 79, Eaton Rise, Ealing. [X6116

SUN, 2¾h.p. Precision, in fine splendid order, lamp, horn, etc.; bargain, £21.—Dance, Outfitter, Trowbridge. [X5694

SUNS, with Villiers or V.T.S. engines, single or 2-speed models; delivery from stock.—Colmore Depot, 31, Colmore Row, Birmingham. [X3028

SUN-VILLIERS, 1915, 2½h.p., Sensspray, electric head light with dynamo, tyres and engine perfect, enamel and plating hardly scratched, complete with accessories; £24, or exchange higher power.—215, Upper Thames St., London, E.C. [2197

KEEP SMILING.

THE SERVICE CO. have plenty of New 1915 Motor Cycles and good Second-hand Machines. We are still making liberal allowances on good second-hand machines in part exchange for new ones, and can arrange the easiest EXTENDED PAYMENTS for either New or Second-hand Models.

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JAMES, 3½ h.p., twin, 3-speed	£63	0
JAMES, 4½ h.p., 3-speed, and Sidecar	£76	13
METRO, 2¾ h.p., 2-str., Sporting model	£28	0
NEW IMPERIAL-J.A.P., with 2-speed gear, clutch, and kick starter	£44	4
NORTON Big 4, 3-speed, chain drive, and Sidecar	£80	0*
HARLEY-DAVIDSON, Model J, with electric light and horn	£76	13
ROYAL RUBY, 2½ h.p., 2-stroke	£26	5*
SUN-VILLIERS, 2½ h.p., 2-stroke	£26	5*
SUN-V.T.S., 2½ h.p., 2-stroke	£28	0*
WOLF, 2¾ h.p., 2-stroke, 2-sp., clutch, and kick starter	£33	12*
ZENITH, 6 h.p., clutch model, with Gradua gear	£75	12
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MOTOR CYCLES FOR SALE.

Sunbeam.

SUNBEAM, June, 1914, 2¾h.p., 2-speed, lamp, spares, excellent order; £42.—A. Wilkins, Bradford-on-Avon. [X5934

1915 3½h.p. Sunbeam Combination, fully equipped, new condition; cost £95 July, offers.—Brewer, Slingsby, Malton. [X6071

1914¾ Sunbeam, 3½h.p., 3-speed gear, speedometer, lamps, spares, Montgomery Sidecar, new condition, only 3,000 miles; £65.—Peake, Victoria Rd., Horley. [X5975

SUNBEAM, 3½h.p., Aug., 1914, Gloria coachbuilt sidecar, Lucas head and tail lamps, horn, spare valve, perfect condition; £65.—Miller, Royalty Lane, New Longton, Preston. [2242

1915 Sunbeam, 3½h.p., with 17 gn. sidecar, absolutely new and unscratched, ridden 600 miles, complete with tools, horn, Lucas lamps, speedometer, mirror, extra case of spare parts, perfect order; accept 80 gns. cash, no offers.—Write, Glenmore, Langley Park, Mill Hill, N.W. [1784

FOR Sale, latest model 1915 6h.p. twin-cyl. Sunbeam motor cycle combination, with interchangeable wheels, delivered July last, done just over 2,000 miles, better than new, absolutely perfect condition, spare wheel and tyre never used, Lucas acetylene head, rear, and side lamps, and 2 generators, never been used, Lucas horn and handle-bar mirror, Smith's handle-bar watch, Stewart's speedometer, Sunbeam sidecar, Cape cart hood, specially made adjustable plate glass wind screen, Brooks leather travelling trunk and detachable leather dust cover, with Brooks patent fasteners, expressly made to fit grid and back of sidecar (cost £6), detachable real horse hair and spring stuffed pillion seat, expressly made to fit over back, luggage carrier, tools and spare parts; whole outfit cost £140, receipts shown; reason for selling, buying car.—Apply, Private Owner, Box 170, c/o Pool's Advertising Agency, 92, Fleet St., London. [1959

T.A.C.

7h.p. T.A.C., 4-cyl., 3-speed, and shaft drive, in good order.—S. Reid, Photographer, Dumfries. [2212

Torpedo.

1912½ Torpedo, 3½h.p., Sturmey-Archer 3-speed hub, Amac, foot and h.b.c. clutch, spares, and accessories; £32/10.—Peters, 49, Willmer Rd., Birkenhead. [X6092

Triumph.

1911 Triumph, free engine, complete; £22.—Cross, Jeweller, Rotherham. [X6223

TRIUMPH, 1913, 3½h.p., 3 speeds and clutch, accessories; £37/10.—Below.

TRIUMPH 1912 3½h.p. Clutch Model, in excellent order; £30.—Below.

TRIUMPH 1912 3½h.p. Free-engine Model; £23/10.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0551

TRIUMPH, 1914, 4h.p., 3-speed, perfect condition; £46.—Lloyd and Son, Lewes. [2320

3½h.p. 1909 Triumph, fully equipped, and perfect; £18/10.—13, North St., Barking. [X6153

TRIUMPH, 1914, 3-speed, new condition; £46, a bargain.—185, Graham Rd., Hackney. [2385

1912 Triumph, free engine, new tyres, good condition; £26.—North, Jeweller, Malton. [X6306

TRIUMPH, excellent order, thoroughly overhauled, new tyre; £17.—Turopenny, Newton-on-Ouse, York. [2034

£25.—T.T. Roadster Triumph, everything in splendid order; bargain.—7, Bulwer Rd., Leytonstone. [2273

TRIUMPH, 1911-12, N.S.U. 2-speed, accessories, Herald sidecar; £24.—26, Gunter Grove, Chelsea. [2322

3h.p. Triumph, mag., Amac, good running order; £14.—Quick, 4, Causeway, Great Baddow, Chelmsford. [2098

TRIUMPH, 1912, recently overhauled, tyres, tubes new, accessories, spares; £26.—Moss, Staplehurst. [2113

TRIUMPH, 3½h.p., 1906, overhauled and re-bushed; £14.—Auto Mart, 133, Hammersmith Rd., W. [2193

1909 Triumph, exceptional condition, little used, accessories; £20.—76, Herongate, Manor Park. [X6212

TRIUMPH and Sidecar, 3½h.p., 2-speed, good tyres, free engine, in good condition; £22.—Ayres, Hednesford. [X5377

£16, or nearest offer by September 30.—Triumph, 1908, perfect condition.—C. F. Lumbard, Ashbourne. [2364

TRIUMPH, 3½h.p., 1908, perfect order, adjustable pulley; 15 gns.—Richardson, 306, Whalley Range, Blackburn. [X6112

TRIUMPH, late 1913, 3½h.p., 3-speed, excellent condition; £40.—The Premier Motor Co., Aston Rd., Birmingham. [2429

1913½ 3-speed Triumph, accessories, splendid condition, carefully used; £38.—Hardy, Denby Dale, Huddersfield. [X6144

MOTOR Cycle, Triumph, free engine, good condition, tyres good; £24.—Coulson, 44, Tanners Hill, Deptford. [2073

All letters relating to advertisements should quote the number at the end of each advertisement, and the date of the issue.

MOTOR CYCLES FOR SALE.

Triumph.

TRIUMPH, 3h.p., free engine, 2-speed, tyres, tubes, belt, new lamps, spares; £16.—Carter, 96, Merton Rd., Wandsworth. [2207

JUNIOR Triumph, in good condition; owner buying combination; £34, bargain.—F.S., 5, Conway Rd., Hucclecote, Gloucester. [X6100

TRIUMPH, 1912, 3½h.p., 2 speeds, sidecar, speedometer, perfect running condition; £40.—9, Jackson Rd., Holloway, N. [2168

TRIUMPH, 1911, 3½h.p., tyres practically new, splendid condition, all accessories; £22.—Guy, 27, Carlton Terrace, Swansea. [X6271

1910 Triumph, 1914 N.S.U. 2-speed, 1915 Binks, wicker sidecar; £29; exchange 6h.p.—Brooks, Charlton, Parthury, Bristol. [X6122

TRIUMPH Junior, 2-stroke, 2-speed, brand new, just arrived, ready to ride away; £42 secures.—Pepper, Market Hill, Royston. [1892

TRIUMPH, 1914, 4h.p., 3-speed, and Gloria coachbuilt sidecar, like new; no reasonable offer refused.—74, High St., Wealdstone. [2348

TRIUMPH 1914 T.T., 4h.p., 3-speed, clutch, splendid condition, lamps and horn; £45.—Wellington House, Gravelly Hill, Birmingham. [X6120

TRIUMPH, 3½h.p., 1911, free engine, recently overhauled, splendid condition, all accessories; £25.—Beaumont, St. John St., Beverley. [X6227

1915 Triumph, 2-stroke, new in July, in perfect condition, horn, and all spares; £37.—Box 9,225, *The Motor Cycle* Offices, Coventry. [X6056

TRIUMPH, 3-speed, coach body sidecar, practically new, accessories; £48; seen by appointment.—57, Knighton Church Rd., Leicester. [X6055

TRIUMPH, 1909-10, excellent order, tyres good condition, all accessories; £18, no offers.—Kendall, 24, The Market, Palmer's Green, N. [X5974

TRIUMPH, 1912, speedometer, lamp, 2 pairs handlebars, in running order; £29; seen by appointment.—D.W., 44, Upper Baker St., London. [X6248

TRIUMPH, 1914, Bosch, new cylinder, piston, re-enamelled, plated, practically new machine; £25.—5, Bromfelde Rd., Swan, Stockwell, S.E. [2338

TRIUMPH, 1908, sidecar, thoroughly overhauled, N.S.U. gear, adjustable pulley, new accessories; £23.—A.C., 36, Adela Av., New Malden. [X6129

TRIUMPH, 3½h.p., 1912, clutch and 2-speed, comfortable wicker sidecar, accessories, good order, low consumption; £33.—Brown, Engraver, Preston. [X6163

TRIUMPH, 1911, clutch, latest improvements, perfect condition, exceptional engine; £30.—Seen at Moore's Motor Works, Tamworth Rd., Croydon. [X6016

TRIUMPH, 1913, 3-speed, condition and engine perfect; any trial; tyres new, lamps, horn, and spares; £34.—18, Queenswood Rd., Moseley, Birmingham. [X6123

TRIUMPH, 1914, 4h.p., 3-speed model, lamp, horn, etc., powerful machine, good condition; £43; private owner.—F.G.A., The Morris Garages, Oxford. [X6202

TRIUMPH, 1912, and sidecar, free engine, clutch, lamps, spare belt, tools, excellent condition; trial; £30.—Motor, 65, Stockwell Park Rd., London, S.W. [2282

TRIUMPH, 1912, 3½h.p., free engine, carefully kept, enamel and plating excellent, been 6,000 miles; £29/15.—Blackmore, 50, Beacon Rd., Loughborough. [X6131

TRIUMPH, 1913, semi T.T. bars, Mabon clutch, 2 lamps, Lucas horn, new unpunctured Dunlops, rebushed, engine perfect; £35.—Ilsley, Harston, Combs. [2381

TRIUMPH, 3½h.p., 1910, engine recently re-bushed, new Kempshall, tools, horn, splendid condition.—Lucas, 81, Oakdale Rd., Leytonstone, N.E. After 7. [2346

TRIUMPH, 1912½, clutch model, all accessories, excellent condition, new Dunlop belt, tyres, tubes, recently overhauled; bargain, £32.—Hale, A.S.C., Willingdon. [2390

TRIUMPH, 2-speed, free engine, clutch model, tyres, belt, nearly new, lamps, etc., perfect condition; bargain.—Brown's, Manor Park Parade, High Rd., Lee, S.E. [X6272

TRIUMPH, 1911, 3 speeds, speedometer, Lucas lamp set, horn, wicker sidecar, 2 belts, spare tube, in perfect condition; £32.—Harper, 37, Fotheringham Rd., Enfield. [2145

1914 4h.p. T.T. Triumph, Cowey, F.R.S., Lucas horn, new tyres, very fine fast mount, been well looked after; first cheque £40 secures.—Newlands, Arboretum Rd., Walsall. [X6143

1913 Triumph, 3½h.p., F.E., Philipson pulley, overhauled by makers 1914, and since unused; owner on active service abroad; £35, lowest.—Feeny, 1, Madeira Rd., Streatham, S.W. [X5701

BARGAINS.—Triumph, 1911, 2-speed gear, Palmer cord, £27/10; another, with Brampton gear, £25; another, £20; all been overhauled.—Bunting, Wealdstone, Harrow. [1881

1911 Triumph, clutch model, and Herald sidecar, tyres and belt good condition, 1915 Binks carburetter, speedometer; what offers?—Hewett, 43, Maclaren St., Clapton, N.E. [2044

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Second-hand Bargains.

1915 T.T. DOUGLAS, 2¾ h.p., 2-speed	£48
1914 SCOTT Combination	£50
1914 RUDGE, 3½ h.p., F.E.	£39
1914 RUDGE, 5-6 h.p., shop-soiled	£45
1914 LITTLE GIANT, 2 h.p., 2-speed, lady's	£25
1914 INDIAN, 7-9 h.p., 2-sp., Canoelet S'car	£55
1914 LINCOLN-ELK, 2¾ h.p., shop-soiled	£26
1914 LINCOLN-ELK, 3½ h.p., shop-soiled	£32
1914 CLYNO, 5-6 h.p., 3-sp., coach-built S'car	£58
1914 TRIUMPH Junior, 2¼ h.p., 2-speed	£35
1914 O.K., 2¼ h.p., 2-speed	£25
1914 CONNAUGHT, 2¾-3 h.p., 2-speed	£32
1912 ENFIELD, 5-6 h.p., Combination	£45
1910 MOTOSACOCHE, 2¼ h.p.	£15

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1915 A.C., sporting model	£175
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REYS 378, 380, 382, 384, Euston Road, 'Phone: 4219 Regent & at 173, Gt. Portland St., 'Phone: 1970 Regent

MOTOR CYCLES FOR SALE.

Triumph.

1913 Triumph and sidecar, clutch model, spare tube, cover, belt, valve, plug, speedometer, lamps, watch, horn, all tools, perfect condition; £30.—47, Boundary Rd., Wood Green. [2035

TRIUMPH Motor Cycle, 3½h.p., 1912 or 1913, free engine, clutch, single-speed, new tyres, in splendid order; owner gone abroad; what offers?—A. B. Hargreaves, Milton Mount, Chorley. [2147

TRIUMPH, 1912½, new extra heavy Dunlops, and 1in. belt, clutch, lamp, horn, speedometer, good speed, and excellent condition throughout; bargain, 23 gns.—Lingford, 100, High St., Aylesbury. [X625

1913 3½h.p. 3-speed Triumph, with 17 gn. brand new Gloria sidecar, luggage rail, lamp, etc., perfect throughout; £55; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0720

1913 3½h.p. 3-speed Triumph, P.H. lamp set, Stuart speedometer, 2-note horn, reflector, T.T. bars, spare touring bars, tools, etc., very fast, in splendid condition.—Knight, 17, Lillyville Rd., Fulham. [2337

TRIUMPH, 1914½, 3-speed, free engine, Bramble sidecar, mirror, lamps, tools, enamel and plating as new, new Dunlop belt; trial by appointment; best offer over £50.—Swan, 59, Onslow Rd., Richmond, S.W. Tel.: 1645 Richmond. [2367

4h.p. Triumph, 3-speed and free engine model, fitted with coachbuilt Montgomery sidecar, Lucas's lamps front and back, also Lucas horn, with several extras; property of officer ordered on service; £65.—Seen at Wauchope's, 9, Shoe Lane, London. [X6145

1912 Triumph, 3½h.p., free engine, clutch model, Sturmey-Archer 3-speed, Stuart speedometer, Triumph lamp and rear light, horn, mirror, exhaust whistle, new belt and tubes, all accessories and spares, thoroughly overhauled, appearance as new, with new Coronet sidecar; £45.—Keen, 108, West Wycombe Rd., High Wycombe, Bucks. [X6066

Trump.

TRUMP-J.A.P., 6h.p., 1913, 3-speed, kick-starter, speedometer, Xl'all saddle, q.d. spring wheel torpedo sidecar, spares; 40 gns.—5, Douglas Rd., Canonbury, N. [2328

2¾h.p. Villiers, 2-stroke, 2-speed, and free engine, latest model (1915), speedometer, and all latest accessories and spares, quite new; £38; write appointment any evening.—Bradford Bros., 116, Boundaries Rd., Balham, S.W. [2038

Vindec.

£11.—3½h.p. Vindec, mag., spring, adjustable, overhauled, perfect.—15, Primitive Place, Beaufort, Mon. [2061

VINDEC Special and sidecar, 7-9h.p., 2-speed, Peugeot engine.—Stirling, Garage, Stockwell St., West Greenwich. [2090

Werner.

WERNER, 2h.p., low, Hellesen, Amac, suit beginner, ride away; £6.—53, Chelsham Rd., South Croydon. [X5965

Williamson.

WILLIAMSON, new, 8h.p., water-cooled, sidecar combination; £99/5; exchanges quoted.—Motories, 68, Horton St., Halifax. [0706

WILLIAMSON, 8h.p., latest model, water-cooled combination, coachbuilt sidecar, done 2,000, as good as new, extras included; £82, or close cash offer.—27, Rylett Rd., Shepherd's Bush. [2363

8h.p. 1914 Williamson, water cooled, fitted with superior 2-seat, coachbuilt sidecar, complete with accessories; price £65; any severe trial given.—Wauchope's, 9, Shoe Lane, London. [X6151

Win-Precision.

3¾h.p. Win-Precision, 1914, coachbuilt sidecar, 3-speed, free engine, P. and H. lamps, new tyres, excellent condition; £38.—Brydon, 44, Evering Rd., Stoke Newington. [2199

Wolf.

WOLF, 4h.p., 1914, S.A. 3-speed, new tyres, splendid condition; £30.—Woodger, 307, Goldhawk Rd., W. [2234

Yale.

YALE Motor Cycle in stock, 8h.p., 2-speed, kick start; 60 gns.—Jones, The Broadway, Muswell Hill. Sole agent for N. London, trade and retail. 'Phone: Hornsey 2562. [7636

Zenith.

ZENITH, 1912, 6h.p. J.A.P., Gradua gear, Canoelet sidecar, complete; £40.—Lock, Louth, Lincs. [2339

ZENITH, 1913, 3½h.p., and sidecar, in splendid order; £36, or offer; any trial.—Corley, 88a, High St., Merton. [2080

ZENITH-GRADUA, 4h.p., 1913, tyres good, all in good condition; £32, or offer. — 88, Batterses Rise, Battersea. [2243

1914 9h.p. Countershaft Zenith, red, excellent order, property of officer; £55.—Captain Ker, Buffs Depot, Ashford, Kent. [X5921

ZENITH, 1914, 6h.p., Gradua gear, engine and tyres in perfect condition, very fast; £45.—Zenith, 12, Mulberry Walk, Chelsea. [2105

ZENITH, 1915, 4-5h.p., countershaft Gradua, clutch, new, only run 20 miles; 60 gns.—Lieut. Scarborough, Royd Lodge, Halifax. [X6186

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SOUTH AFRICA.—Central News Agency, Ltd. PARIS.—Smith's English Library, 248, Rue Rivoli.

Repairs in War Time.

FROM evidence which has reached us, it would appear that some private owners of motor cycles are inconsiderate enough to imagine that they should receive the same prompt attention to repairs as they have been in the habit of receiving in pre-war days. Difficult repairs have been sent to the various firms who specialise in such work, and, on account of more than usual delay in executing the repair, readers have been moved to complain. But we venture to remind motor cyclists in general that the conditions throughout the engineering industry are abnormal, and it behoves riders therefore to exercise a reasonable amount of patience in dealing with firms in the motor and allied industries. The difficulties these firms have to contend with owing to the shortage of men and material are enormous and almost beyond comprehension unless one has a knowledge of the actual situation. Every branch of the business is affected. Letters cannot be replied to promptly, as so many of the clerical staff have answered their country's call, whilst, of course, the engineering side is even more seriously affected, owing to many firms devoting practically all their energies to the production of munitions of war. Indeed, some of the leading firms find themselves quite unable to execute repairs for private customers, and it is only a few weeks ago that we announced, on behalf of a leading manufacturer, that no promise of delivery of repairs could be made in the future owing to the amount of Government work on hand; and, further, the company in question discouraged users of their products from sending machines to the works for repair.

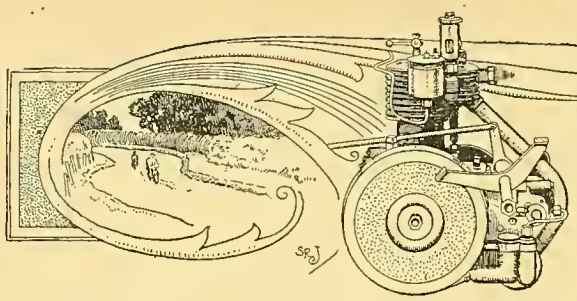
From conversations which we have had with leaders in the motor industry, we are forced to the conclusion that some members of the public are most inconsiderate at the present time, quite failing to realise the difficulties of the situation. England, owing to her insular position, is suffering less from the war than any other of the Allies. We are lucky, indeed, to be able to enjoy our favourite pastime. Consequently, a little greater consideration should be shown to those who are doing their best to keep the ball rolling in face of practically insuperable difficulties.

Government Work for Rejected Motor Cyclists.

WE have good reason to know that there are very many practical motor cyclists who have been rejected for military service by reason of some slight physical defect, which in no way affects their working capacity in civilian life. Among these are men sufficiently confident in their abilities to apply for positions either as despatch riders, or gunners, or sidecar drivers in the Motor Machine Gun Service. Some are rejected on account of flat foot, varicocele, hammer toes, loss of a finger, or slight spinal curvature, yet are in other respects in perfect health and suffer no ill-effects from the disabilities named.

We have a list of such men in our possession which, though not large, could no doubt be considerably extended by ventilating the subject, as from private conversations we are convinced that the cases we have instanced must be typical of hundreds. It does not need emphasising how wrong it is to keep at home many able-bodied men who are ready, nay anxious, to go to the Front, but who cannot be spared from the particular work they are performing, when men unfit for military service and able to perform such work are ready and willing to do so. A case came under our notice the other day of a batch of able-bodied youths desirous of enlisting who were stopped at the last moment by their employers, who, it should be added, were on Government work, but exercised their influence apparently without a thought that the men's occupation was by no means so skilled that substitutes could not quickly be found from the ranks of men unfit for the fighting forces.

An Index to the advertisements in this issue will be found on the page facing the back cover.



HINTS FOR BEGINNERS.

Some Elementary Tips on the Driving of a Motor Cycle.

(Concluded from page 246.)

IN cold weather carburetters are apt to freeze if the vaporisation is as it should be. This is not a fault in the carburetter but in its position, and the difficulty can be overcome by fitting a warming device, such as an air intake pipe which takes its supply from the neighbourhood of the radiating fins. Petrol itself does not freeze at ordinary temperatures, but benzole freezes readily, so in cold weather a little petrol should be mixed with it. Benzole gives very good results (except for the failing just mentioned), and a slightly increased mileage per gallon. Many carburetters can be used unaltered with benzole, but, generally speaking, a smaller jet is desirable, and the float may be slightly weighted, as benzole is heavier than petrol. An engine very seldom knocks when benzole is used, as, a higher temperature being necessary for its ignition than in the case of petrol or paraffin, pre-ignition is almost impossible.

We do not propose in this article to deal with carburetter tuning, as we may take it for granted that the instrument is sent out by the makers correctly suited to the engine, and that it will give satisfaction if properly handled. The rider should, therefore, aim at giving as perfect a mixture as possible, remembering that too much air is better than too little.

Lubrication.

It is very necessary to use only the best brands of oil, and preferably the particular brand recommended by the makers, who have in all probability tried a great variety and know what is best suited to their engines. The rider should remember, if using drip feed, that the oil flows much more slowly in cold weather, and should adjust accordingly. The same thing applies to some of the mechanical oiling systems, that in use on the 3 h.p. Enfield, for instance, and although, *ceteris paribus*, an engine is more likely to overheat in hot weather, lack of oil will cause overheating far quicker than a summer temperature, and, strange as it may seem, the motor sledges in a recent Antarctic expedition suffered much from overheating through this cause. Too much oil means a dirty engine, not only in the cylinder, but inside the pistons and in the crank case, and shorted plugs, but these are minor troubles in comparison with the worn bearings and damaged engine which may result from lack of proper lubrication. If the plugs get rapidly foul, or oil blows out of the crank case at the tappet and joints, it is advisable to examine the piston rings and see that the crank case release valve is in working order.

The function of a release valve is to maintain a partial vacuum in the crank case. This results in a two-fold advantage: (1) it keeps the oil from working out through the bearings, and (2) it enables the engine to turn over with greater freedom than would otherwise be the case. The valve opens when the pressure in the crank case exceeds atmospheric pressure, as the piston falls and closes as the piston rises, thus preventing air from re-entering the crank case.

Descending and Ascending Hills.

When descending steep hills, especially those which are unknown to the rider, great care should be exercised to prevent the machine gathering so much speed as to get out of hand. It is much easier to control the speed from the start than to reduce speed quickly in an emergency. Therefore, on really bad hills engage the low gear before the speed increases, and the engine will be found to be a most efficient brake. If a friction clutch is fitted it is a good plan to stop the engine on hills where the brake can be relied upon to do all that is necessary in retarding speed, remembering that when starting the engine up again by means of the impetus of the machine the high gear should be employed, the exhaust valve raised, and the clutch let in gradually. Some machines are provided with a variable gear embodying a free engine position but no friction clutch. While it is possible to coast down a hill on such a machine with the engine at rest, restarting the engine means a dismount, with its consequent delay, for if the gears were engaged with the machine in motion damage would most certainly result to the gears, and possibly to the engine.

When climbing a hill on a variably-geared machine it is better to drop into a lower gear while the engine is still turning over quickly and easily than to wait till it begins to labour. The road speed at which a change is desirable will vary with machines of different gears, but will lie between 10 and 20 m.p.h. in most cases. In changing down there is no need to lift the exhaust valve, for it is desirable that the engine should have the opportunity of quickening up a little during the brief time while it is free; the gear is then engaged without shock or jar. When the change is from low to high, of course, an opposite state of things exists, and a momentary lift of the exhaust tends to produce an easy change.

Another point in changing gear is worth noting. When it is desirable to lower the gear at a corner and the throttle has been previously closed to reduce speed, the engine does not pick up speed when free, so that it is desirable to apply the brakes to some extent and prevent the impetus of the machine from revolving the engine unduly fast when the low gear comes into engagement. This particularly applies when the drop between the gears is considerable or the speed of the machine at all high. The type of gear in which each speed is engaged by expanding rings, as in the case of the Enfield or P. and M., is eminently suited to a novice and very convenient to any rider.

Broken Inlet Valves.

My paragraph of August 19th last brought a shoal of letters, from which it appears that the 1914 engine of a certain first-class machine suffered from faulty inlet valve design. I thought one of the earlier correspondents was trying to pull my leg when he asserted that he had broken seven inlet valves in 750 miles, but later letters go far to make his claim credible. In one or two cases the makers appear to have exchanged the engines gratis, and the evidence to hand is all against seizure of the stems in the guides. I fear I must leave the mystery unsolved, as the cams do not appear to have had a very quick or high lift, and weaker springs effected no cure, whilst the firm's policy of giving a new engine in extreme cases eliminates the supposition that the valve metal was at fault. The makers are said to have played about with the faulty engines in their research department for three and four weeks at a time, and finally to have despaired of curing them. The 1915 engine is entirely free from the fault. A rider of another make of engine has experienced similar trouble, and says that the manufacturers blamed a quicklift cam, adopted at the request of the firms for whom they manufacture engines. He forwards a sample valve, which strikes me as far too light for the h.p. involved, and undoubtedly shows signs of being too close a fit in its guide. Readers in general need not worry about their inlet valves, for I have never broken a mechanical inlet valve, despite the enormous mileage and variety of mounts which lie behind me.

Leg Room.

As the few readers privileged to know me in the flesh are aware, I am a dumpy little rotund personage, with short legs; and so I feel the inherent defects of certain riding positions more than lanky, leggy riders can understand. Some of our designers appear to take it for granted that all heavyweight enthusiasts are bow-legged giants of 6ft. 6in. or thereabouts. For example, my 4 h.p. Douglas has a tank which narrows towards the rear, and is easily embraceable by my nether limbs, which resemble those of Mr. Quilp; but the machine is spoilt (from this standpoint) by a projecting carburetter, which has worn a deep recess in the calf of my left leg. My 6 h.p. Motosacoche has a parallel-sided tank of enormous width, which hoists the soles of my boots about 2in. above the footboards, and makes me look as if I were hung on a clothes-horse to dry; while matters are made worse by the vertical rod of the Enfield two-speed gear, which does for my near leg what the Douglas carburetter does for my right. Surely, most motor cyclists assist their adhesion to the machine by thigh-gripping the tank, and makers ought to remember that some of us are stout and short—well-nourished bantams, in fact.

Cleaning a Cycle Car.

What the first day greasing is to the motor cyclist, a body "in the grey" is to the passenger man. My invariable rule, where passenger machines are concerned, be they coach-built sidecar, cycle car, or light car proper, is to get the factory to agree to supplying the body in its first coat of "filling" or unvarnished ironclad grey, and to paint and varnish it royal blue or claret, or whatever the hue may be, a week before I sell it. If it is a long job to furbish up the complex details of a motor bicycle, it is a far worse infliction to conclude a long run at 11 o'clock on a cold wet night, and to know that it is your bounden duty to spend another hour or more in a draughty, ill-lit garage, hosing the mud off your precious coach varnish. It is true that you may leave the body untouched till morning—in which case much elbow grease and furniture polish will be needed to remove the spots and stains which will assuredly come out when all is dry again; it is true also that you may content yourself with hosing off the mud, and leaving the rub and dry-up till morning, in which case spottiness will be less marked. But if you don't run to a handy lad about the house and have a liking for instantaneous bed after a night's ride, get your body "in the grey." It will never look extraordinarily smart, but it will maintain a modest appearance of comparative decency on the minimum of labour.

Electric Lighting for Two-strokes.

An increasing number of riders employ the baby two-stroke for local pottering in the immediate neighbourhood of their homes. Many such owners are engaged in businesses which entail a certain amount of night-riding, interspersed with very frequent stops. The lamp of a mount employed in such work is something of a problem; good illumination is needed, and yet a bulky lamp is completely out of place, whilst acetylene generators seldom behave kindly under frequent extinguishings. I believe the best solution is a dry battery electric outfit, as the dynamo is far too cumbrous for a wee machine. For example, Ward and Goldstone supply a 6-volt outfit for 26s., including a satchel for storing the battery. The cells give about seventy hours' light, and cost 6s. per set. The same period of illumination on carbide would cost less money, but would include twenty times more trouble. There is no need to leave the lamps alight during a business call, as the machine can be lifted on to the footwalk and propped against the wall of a house, except in very busy thoroughfares. The only indispensable extra is a removable plug switch, to prevent urchins playing about with the lamp during the owner's absence inside a house. I do not think that this and similar dry battery outfits have received the attention they deserve from two-stroke enthusiasts. Of the more

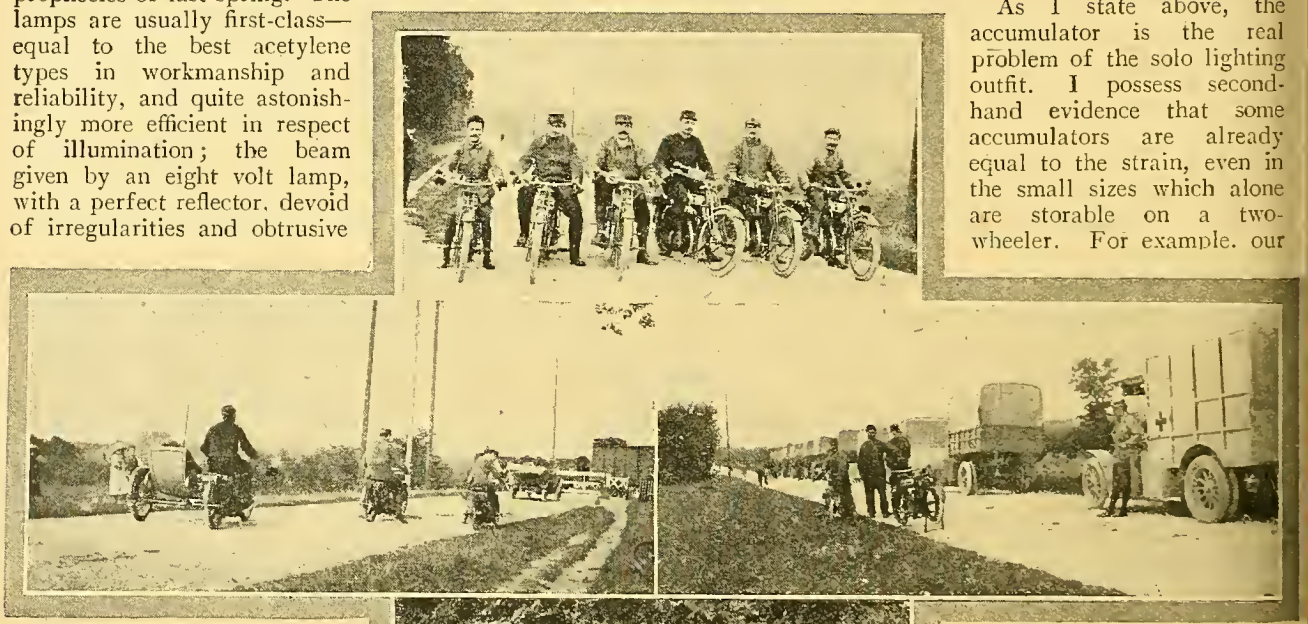
Occasional Comments.—

elaborate dynamo outfits, the type supplied by the Motosacoche people is easily the lightest, but its cost (£6 15s.) may be a little too high for lightweight users, as it represents a high percentage on the cost of a £25 or £30 machine.

Six Months on Dynamos.

I have now been doing my night work with the aid of lighting dynamos for nearly half a season, though, curiously enough, I am still without appreciable experience of two or three of the best known outfits. Up to date my chequered vicissitudes bear out the prophecies of last spring. The lamps are usually first-class—equal to the best acetylene types in workmanship and reliability, and quite astonishingly more efficient in respect of illumination; the beam given by an eight volt lamp, with a perfect reflector, devoid of irregularities and obtrusive

BRITISH-MADE MOTOR CYCLES ARE LARGELY USED BY OUR FRENCH ALLIES.



Our photographs show a group of three-speed Rover machines attached to a lorry convoy on their way to the Front.

details, is magnificent, and has increased my night speed by at least fifty per cent.; they will have a huge vogue when twenty-hour trials recommence. The dynamos have so far given no trouble of any sort or kind. The wiring details and switches seem to stand up well, and rain does not affect them as one might expect, considering the exposure and vibration to which they are subject. But the batteries are the very dickens. I should be ashamed to tell how often I have detached them for separate charging at a garage; how often I have cleaned the accumulated filth of corrosion from their terminals; how often the cells have gone to the repairer for internal treatment. The deductions are twofold. First, it takes a quite uncommon breed of accumulator to withstand the perpetual vibration to which rather makeshift storage on a motor cycle subjects them. Second, it is stupid to expect a light and small accumulator to behave perfectly under the high rates of charging and discharging which motor cycle use demands. No competent electrician would dream of employing such patterns of cell for operating a hooter. But here's the rub: we cannot accommodate accumulators of the bulk and weight which science suggests unless we have a sidecar in which to store them, and a thumping big engine to laugh at the weight of our accessories. This detail problem will hamper the progress of electric lighting on solo machines for some time to come. The system is already efficient on sidecar machines, provided the price is not scamped by including a toy accumulator, but I should not dream of using it for serious long distance solo work at present, except on certain conditions.

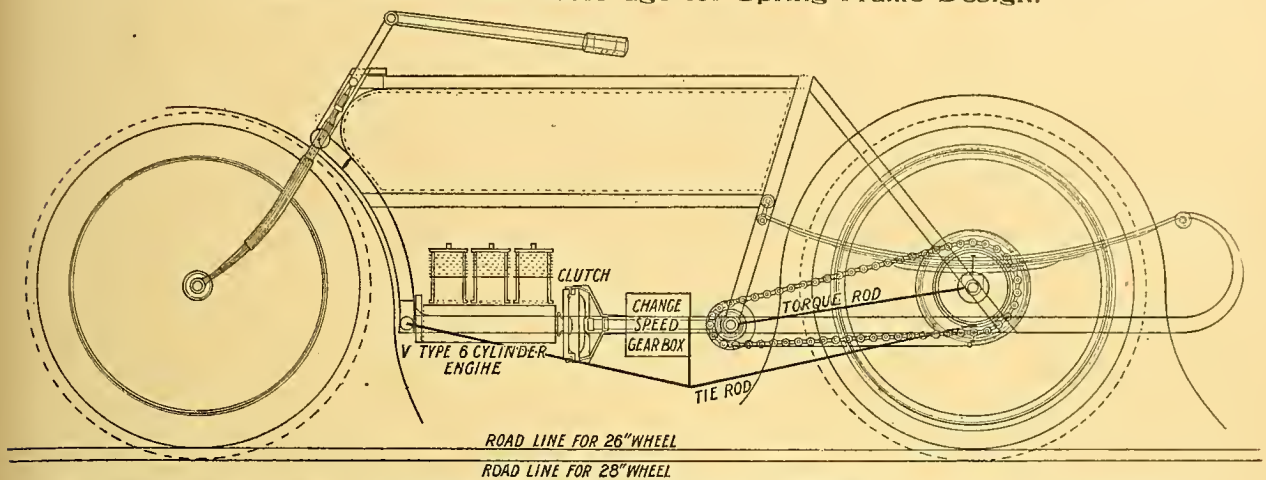
Electric Lighting for Solo Work.

As I state above, the accumulator is the real problem of the solo lighting outfit. I possess second-hand evidence that some accumulators are already equal to the strain, even in the small sizes which alone are storable on a two-wheeler. For example, our contributor "Auriga" used a Fuller Block accumulator throughout last winter, without recharging, and without the aid of a dynamo, and this battery is light and compact; while two of my friends speak very warmly of the behaviour of two foreign accumulators, used with and without dynamos respectively. But some vendors of dynamo sets provide wholly unsatisfactory cells, and it is a costly and awkward matter to substitute cells of higher class, as, for instance, when the standard cells are of an unusual shape, and the carrying case includes the switchboard and springblade connections. If I were marketing a solo set, my first and chief interest would concentrate on the accumulator. I should test every conceivable type, and I would not advertise until I was absolutely satisfied that the cells were up to their work.

["Auriga's" 40 a.h. accumulator was recharged in April last simply as a precaution and stored through the summer: it is now in excellent condition.—ED.]

"The Motor Cycle" and Rear Springing in 1906.

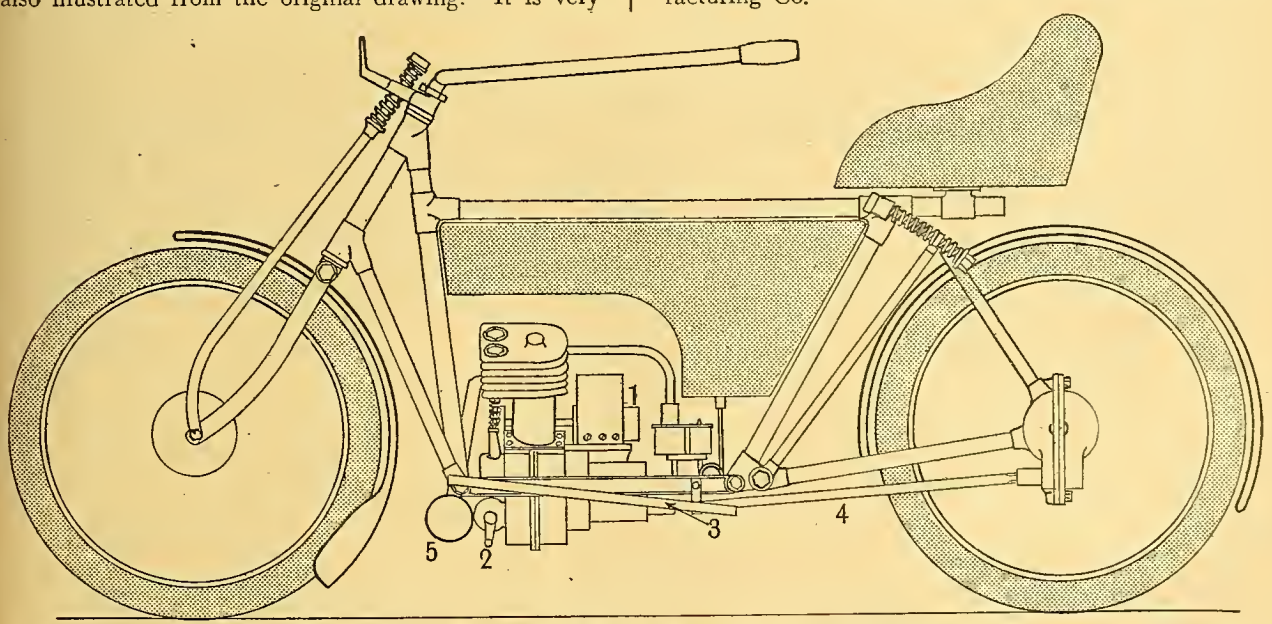
Prizes Awarded Nine Years ago for Spring Frame Design.



The winning design in *The Motor Cycle* Improvement Competition, submitted by Lord Tollemache. It has a 7-8 h.p. six-cylinder V type engine, countershaft gear box, and frame sprung fore and aft.

AS far back as the year 1906, *The Motor Cycle* was, as now, advocating the use of rear springing for motor cycles, and some very interesting designs came to light during a competition known as *The Motor Cycle* Improvement Competition organised by this journal in that year. The designs gaining first, second, and third positions all incorporated a rear springing device of some kind. The winning design, submitted by Lord Tollemache, which is illustrated from the original drawing, contains some very novel ideas. The rear springing is carried out by means of two half-elliptic springs supported at their farthest extremity by a substantial extension of the bicycle frame. This design would hardly conform to modern ideas so well as that gaining third place, also illustrated from the original drawing. It is very interesting to note that this design was submitted by Mr. Alfred Scott, the well-known designer of the famous Scott motor cycle. It is curious that in his letter accompanying the design, Mr. Scott mentions that he does not favour an open frame. Of course, as everyone knows, the present-day Scott is one of the very few machines which are turned out with an open frame as standard. The rear springing device in this design is very simple, the drawing being practically self-explanatory, the rear portion of the frame working on a pivot and supported by two spiral springs beneath the saddle.

The second prize design, submitted by Mr. Pilkington, incorporates the cantilever seat pillar, which was shortly afterwards adopted by the Rex Manufacturing Co.



Design also embodying a spring frame, for which the third prize was awarded to Mr. Alfred Scott, of Leeds. The parts numbered are: (1) Magneto. (2) Starting handle. (3) Footboards. (4) Propeller-shaft. (5) Silencer.

Scottish Officers and their Pleasure Mounts.

JUDGING from the number of officers one sees speeding up and down the valleys in many parts of Scotland, it would seem that the motor cycle is even more popular among men of the Highland and Lowland regiments than it is in the flatter districts of the South. This state of affairs is not surprising when one considers the conditions that prevail in the North. About most of the valleys many beautiful mansions are situated, and the sons of these houses have turned out like men to join regiments of their own district, so that, during the initial part of their training, some of them are within reasonable reach of home, and a motor cycle is all they require to enable them to spend their leisure hours most advantageously. Up or down the valley they go, then, at dusk, returning to the military centres late at night or in the early morning, so that for an hour or so each day their passage along many of the roads resembles a military procession. A finer, tougher set of young fellows it would be hard to find anywhere.

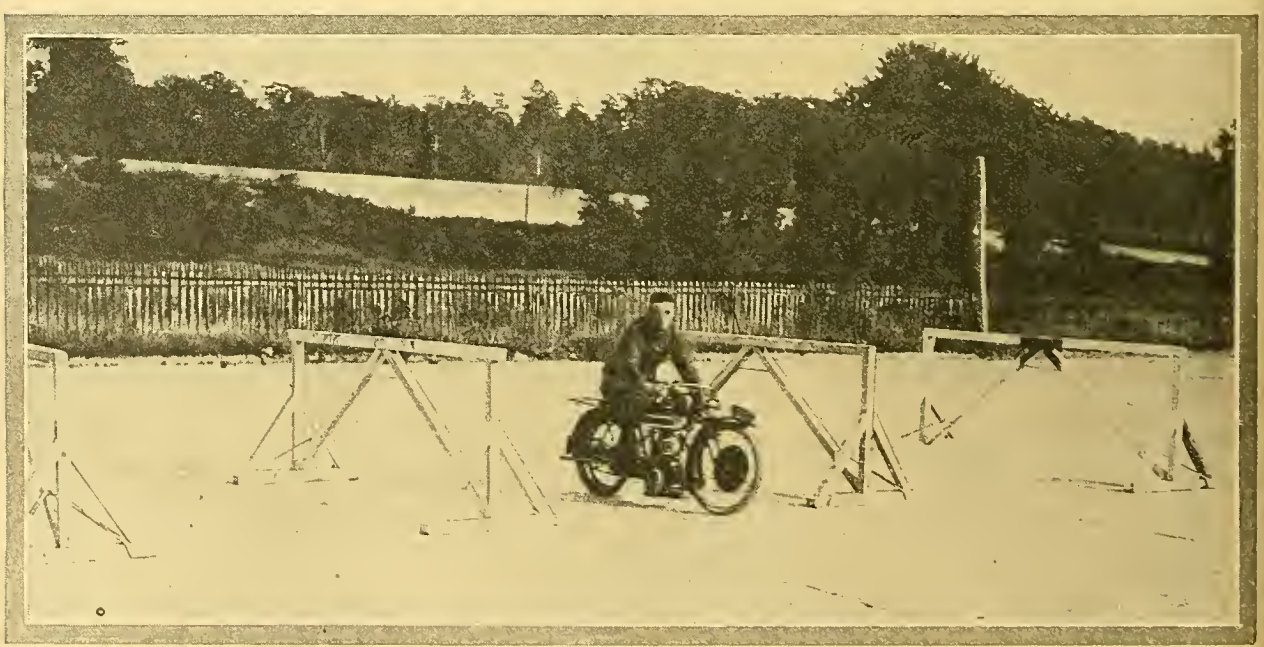
The variety of machines is also very interesting. Not a few light cars are about, but, as in England, the lightweight motor cycle, snapped up at the last moment, predominates in numbers.

That these little machines have proved of immense value in meeting the sudden demand of the last twelve months is obvious everywhere. As officers' mounts they are hard to beat, and many of the men now riding lightweights would be without machines at all were it not for the timely arrival of the little two-stroke. But these men, to-day new to the pastime, will not be content with the diminutive two-stroke after the war, and manufacturers of luxurious touring machines will then have something for which to thank the cheap lightweight of to-day.

But in addition to the little two-stroke, a wonderful variety of old jiggers is to be seen konking at full throttle through many of the Scottish dales during the twilight hours. Now an old Triumph shoots gamely by, followed by the bellowing discharge of an ancient Rudge. A new Lea-Francis brings up the rear, and though it seems to be travelling at half the speed, one notices that it is far ahead when the next corner is reached. A tiny two-stroke splutters round the bend at a good twenty-five; a big twin Indian dribbles behind it at twelve. Then come more old Triumphs, a Scott and a Douglas, and struggling manfully to overtake the whole procession, heedless of revs. and rattles, flies a rusty and very ancient P. and M. Everyone runs his mount full out on each straight bit of going, and, considering the very mixed sample one sees on the road, surprisingly few breakdowns occur.

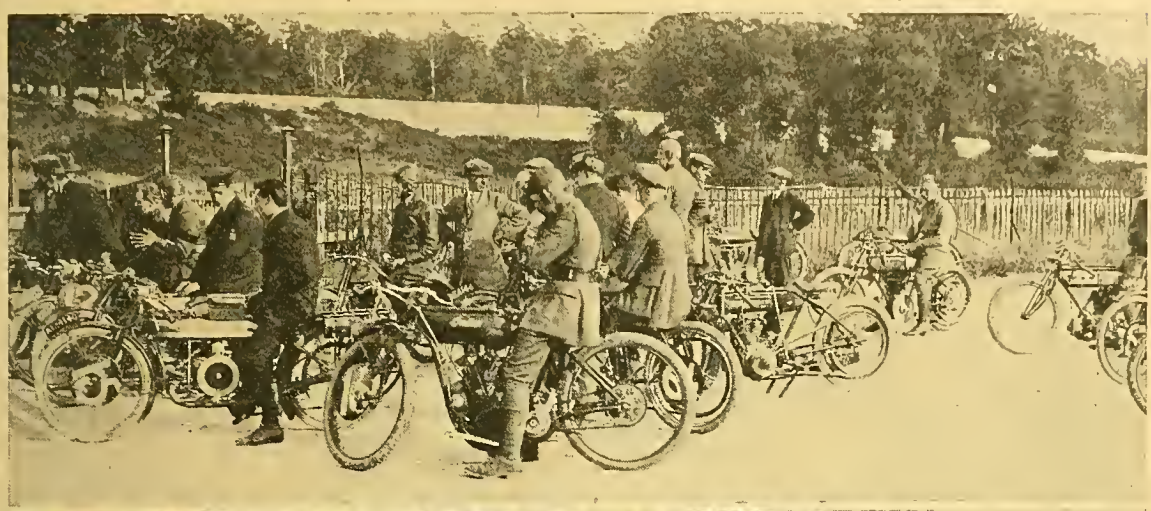
Most of the main roads in Scotland are good and reasonably level, while good fishing or shooting is usually to be obtained within a few miles of the military centres. Thus, even though home be out of reach, the officer of sporting tastes is able to make good use of his mount. As a rule the roads follow the rivers, and at many points machines are to be seen stacked up in the gutters while their owners find a happy relaxation from their military duties in an hour or two with rod and landing net.

Not much shooting is done, since it is impossible to organise parties, but seldom before have the Scottish moors carried such quantities of game as they carry this year. But while an hour at the river side can be occasionally snatched, it requires time to walk up the moorlands, and consequently the same story is told in every valley—game in abundance, but no guns available. As was the case last season, many estate owners are organising scratch parties—the village grocer, cobbler, and poacher—to walk the moors.

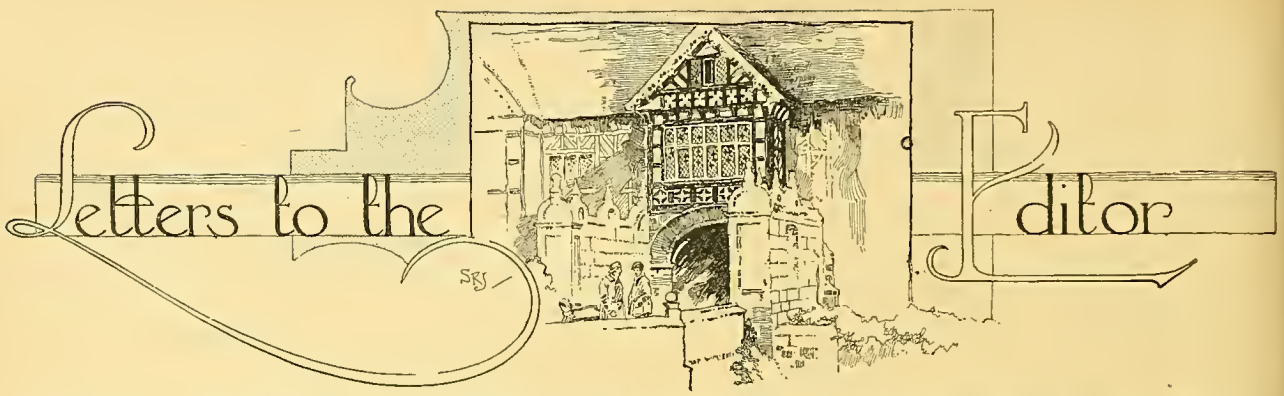


THE ARMY AND NAVY MOTOR CYCLISTS' MEETING AT BROOKLANDS. Sergt. A. Milner, R.E., riding a two-stroke Levis in the Serpentine race.

THREE PHASES OF A BROOKLANDS RACE IN PICTURES.



(1) Lining up for the start. (2) Are you ready? (3) Go!



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Physically Unfit.

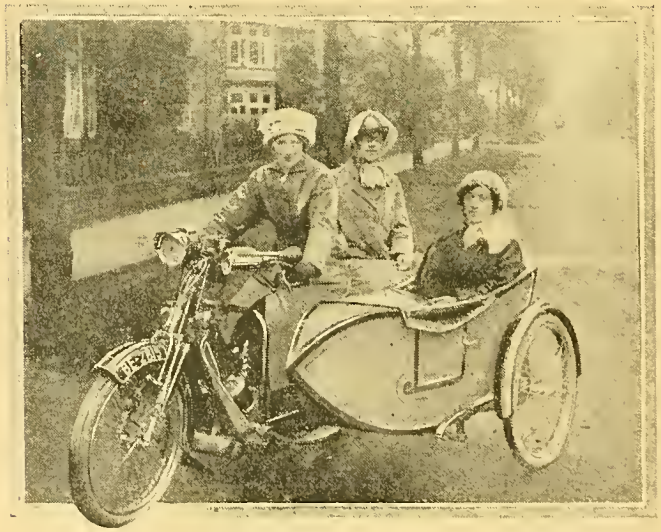
Sir,—I was most interested in the letter by "H.M.B." upon the physically unfit. I myself came home from New Zealand just before the war broke out owing to lung affection, brought on by exposure in the New Zealand bush and on the gum fields; also I have farmed in Canada, worked on the railway there as a navvy, and generally roughed it much more than the average man. Like "H.M.B.," I look well and strong, and have had much to put up with from interfering humbugs; but as I have tried twice for the Army and once to go to Servia with the Red Cross, my conscience is quite clear. NORMAN LAWSON.

Piston Rings.

Sir,—I read with interest your article recently on piston rings. I hardly like the idea of peaning a ring to get spring, as there is a danger of getting out of shape and being off and on at the points. Also in peaning the width is bound to be altered.

Another thing I should like to know is why makers turn rings thick and thin? I find the wear takes place at the thin part, and really not worse at the thick, *i.e.*, vertical wear. No doubt the majority of broken rings are due to vertical wear at the thin part.

My method of making rings is to have the same thickness all around. Turn the ring 1-64th larger than the cylinder cut gap, and fit in. Then spring the ring open to the required spring by means of a piece of strong iron wire, put in the fire, make red hot, and cool out in water. This I have done and found successful, the spring remaining on after cooling out. MOTOR CYCLIST.



The Misses Reeve and their Scott sidecar outfit. In sending the photograph Miss Reeve says: "Perhaps the publication of it will induce other ladies to follow our example. My sisters and I have glorious spins."

Paraffin Lamps.

Sir,—Now that winter is upon us, and the lighting question looms once more in our minds, may I be allowed to advance a plea for the more extended use of paraffin oil? There are those who will unthinkingly accuse me of being out of date, but when the problem comes thoroughly to be considered in view of the present Defence of the Realm regulations, it will be seen that paraffin has claims on the ground of sufficiency, simplicity, and economy.

Sufficiency.—In the pre-war days, when one was allowed to enjoy the fruits of the labour of keeping acetylene generators in order in the shape of a good light, and the expenditure was worth it, acetylene rightly held the entire field, but now, when if one has a good light one is compelled to dim it so that it becomes but a mere rush light, I claim that a paraffin lamp such as taxis use for side lamps is amply sufficient, and no dimming is necessary. The point of simplicity is so self-evident that it is unnecessary to deal with it. Economy.—A halfpenny-worth of oil gives about twelve hours' steady light.

As regards rear lights, I have made a perfectly satisfactory one from a Lucas cycle lamp (Pioneer pattern), to which I have fitted a Barton paraffin burner. I am at present making experiments with a 5in. lens mirror paraffin oil head lamp, and if successful will communicate the results to your readers. V. C. RAYNER.

Mind and Machine.

Sir,—I have read Mr. Vulliamy's letter and your editorial comment on the psychic relation between man and machine with much interest, tinged, I am fain to confess, with a little amusement.

In your comment I venture to think that you have confounded "sympathy" with "skill." A piece of machinery does not possess a soul: nothing does unless it has the power of will. It is conceivable to argue that an animal, even an insect of the lower creation, may possess a soul, but both are possessed of a degree of what the Latins termed "anima," and even if they cannot think or reason, they at least have instinct, which is not very far removed from reason.

But when we come to an inanimate piece of machinery it is obvious that it cannot possess any of these attributes, in that it is entirely dependent on some outside human influence to operate it. Were such a psychic phenomenon, as suggested by your correspondent, possible, it would be feasible to operate a machine by volition alone, without in any way touching the levers. There is no doubt whatever that a motor bicycle will run better with what you term a "sympathetic" driver, but in my opinion the term is a misnomer, the term "skilful" being the real word wanted.

The analogy between the motor cycle and *its* rider and the horse and *his* rider is, I venture to think, unfortunate. The possessive pronoun shows why, for the horse being an animate being can and does possess an actual power of thought transference with a rider to whom he is accustomed, or even to a strange rider whom he recognises as specially "sympathetic" (the right word in this case).

What Mr. Vulliamy practically asks us to accept is the possibility of telepathy between an animate being and an

Safe at any angle.

THE scientifically designed ridge on each side of the dome-shaped tread grips the road the moment your machine heels over. Normally this ridge is off the ground, therefore is never under wear unless the machine is inclined to one side.

This ensures *permanent* protection—in fact, a Bates-built tyre at the end of its life often has more skid resistance in it than many a new tyre of another pattern.

The thick tread of a Bates-built gives a high degree of comfort and security; whilst its ability to stand up to the roughest roads represents true tyre economy.

Bates-built tyres are being supplied to the
British War Office,
South African Defence Force.
South African Police Force.
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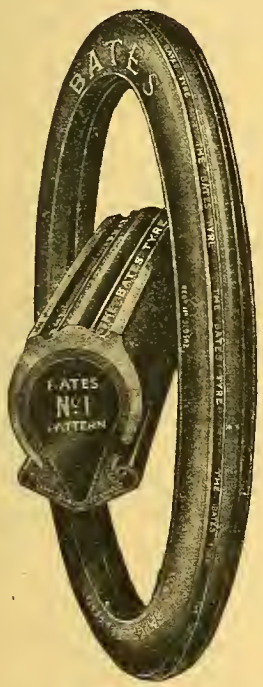

Bates No. 1.
This is the original Bates, the finest tyre for hard work yet produced. Special Heavy, 26 x 2¼, **42/6.**

Bates SUPER RUBBER. Tyres

"The Tyre of no regrets."

W. & A. BATES, LIMITED,
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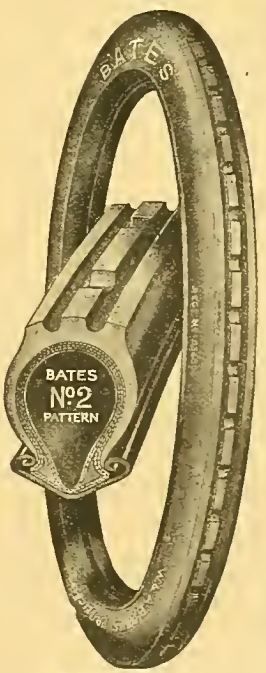

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Designed to give 'forward grip' on greasy roads. Very popular with all-weather riders. Special Heavy only, 26 x 2⅜, **48/6.**

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IN THE ONLY RACES held at Brooklands this year there stand to the credit of the ZENITH Motor Cycle the following—

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4 FIRSTS.
UNITED SERVICES MEETING
3 FIRSTS.
In addition to 3 other Awards.

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in AUSTRALIA, GRAND PRIX RACE,
4 Awards.
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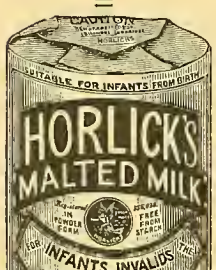
HORLICK'S MALTED MILK



A glass of Horlick's is always the best invigorator. Taken before a ride it will give strength and endurance, and after strenuous exertion there is no better pick-me-up. At all times it gives and maintains fitness and stamina, and is especially useful to men on Active Service.

SUPERIOR TO TEA, COFFEE, COCOA, AND BEEF EXTRACTS.
READY IN A MOMENT WITH HOT OR COLD WATER ONLY. NO COOKING.
Served in Hotels, Cafés, and Railway Refreshment Rooms.

Also available as delicious food tablets to be dissolved in the mouth.
Relieve hunger and thirst and prevent fatigue.

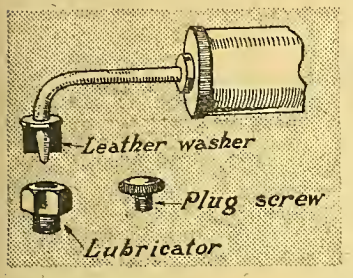
Supplied in Sterilised Glass Bottles, at **1/6, 2/6, 11/-,** by all Chemists and Stores.
The Tablets also in convenient Pocket Flasks at **6d.** and **1/-** each.
Liberal sample sent post free for 3d. in stamps.
HORLICK'S MALTED MILK COMPANY, SLOUGH, BUCKS.

inanimate object; and I have yet to hear of even strange tales from the Orient to confirm such a view. His letter is interesting, as anything putting forward some new thing is interesting to us just as it was to the old Athenians. But the cold light of reason is likely to turn down his contentions.

M.S.

The Lubrication of Spring Forks.

Sir,—I have often been impressed with the lamentable manner in which spring fork spindles are usually lubricated. The lubricators provided are almost always choked with dirt, which seems to delight in congregating at their base, and, in consequence, the oil never reaches its goal.



My own machines are now fitted with lubricators as shown in the sketch; and you will see that if a thick leather washer is fitted to the nozzle of an ordinary oil injector this can be pressed tightly down on to the lubricator and oil forced right along the spindles in a cleanly manner until its appearance at the ends gives ocular proof of its effectiveness.

E. C. FRANK EVANS.

A Long Distance Record—And a Sigh for Spring Frames.

Sir,—Can any reader beat the following? Up to September 1st I have ridden a three-speed 1913 Triumph 40,267 miles, using the machine on practically every day for two years and six months. The machine failed me on two occasions only, once breaking a piston ring and on the second occasion bursting a pulley flange. The cost works out as follows:

Licences, etc.	£2	10	0
Refits and repairs	32	0	7
Fuel	27	16	5
Oil	3	15	9
Cycle oil		10	0
Tyres	30	14	3
Belts	5	14	3
Carbide		9	2
Depreciation	40	0	0
	£143	10	5

Roughly .85d. per mile.

Except for the fact that the three-speed gear is, and has been for a long time, out of action, the machine is running almost as well as when it was new.

Having almost eliminated the item depreciation, my running expenses during the coming winter should not exceed ½d. per mile.

But, oh! for the day when the Triumph Co. introduce a rear sprung motor cycle. My backbone is growing old, and every month pot-holes seem to get deeper.

A. W. TOMLINSON, R.N.

Honister Hause.

Sir,—Whilst on holiday in the Lake District, I attempted and climbed Honister Pass from Buttermere, with sidecar and passenger.

The first attempt was abortive owing to the whole combination slewing round in the loose stuff; only the prompt action of my passenger in jumping out and pulling at the sidecar averted disaster. We returned to the foot of the pass with my friend dragging at the carrier, the machine being almost totally unmanageable owing to the loose surface.

The second attempt was made too cautiously, and the wheel came to rest half-way up. We returned again in the same careful manner, and, leaving the machine, walked half-way up mapping things out.

The third time we had better fortune. The first bad gradient was taken all out—perhaps a doubtful method when so much depends on tyre grip, but success justified it. The bad bend at the top was totally unexpected, even where all things were unforeseen. The sidecar lifted, and in correcting this the front wheel was nearly broadside on, but continued to steer fairly. This I consider inexplicable. The remainder of the hill, although horribly steep and with surface entirely disintegrated, was comparatively easy.

We left Keswick at 2.30 p.m., and crossed the notorious Newlands *en route*. We got back at 5.30, the task accomplished. This, I think, compares very favourably with the performances of two well-known competition riders, who some time ago spent four days before being successful, notwithstanding the fact that they had in spring a road undisturbed for months, whilst we, on September 2nd, found it after a busy season's use. The coaches which ascend the new road *via* the quarry descend the Buttermere side with skidding pans on the wheels, and the passengers have to walk. These skids plough the road surface until it resembles a shingle beach or a river bed.

My machine is a standard touring 6 h.p. Bradbury combination fitted with Wood-Milne tyres. The engine never faltered the last time up, and the way the tyres gripped was truly marvellous. I have no connection with either firm beyond being a very well satisfied customer.

F. WOOD.

Two Sound Machines.

Sir,—I should be glad if you would publish my remarks on two machines I have had—the first and the last—as I feel that too many intending purchasers are put off by people continually stating that these machines are worthless and shake to pieces in a few months.

The two I refer to are the F.N. two-speed single and the 7 h.p. Indian twin. The F.N. I purchased third hand, very battered by rough usage (and a 1911 model, too, which shows that it was rather old). This machine did over 10,000 miles to my knowledge, and pulls better now than when new, owing to the fitting of a B. and B. carburetter. This shows that this machine deserves a pardon from critics who are not in a position to judge. My only trouble was oil occasionally getting on to the platinum points. I wish this had been my worst trouble with some of the more popular mounts, some of which needed rebushing in 1,500 miles.

As for the Indian, it has already outlasted my 6½ h.p. N.S.U., and still I cannot find one particle of wear in this machine. Its reliability is the most remarkable feature about it. This Indian has never yet konked, has never coughed right out, and has never yet failed to start on the fourth stride.

REAR LIGHT.

Birriwa, N.S.W.

A HAPPY TRIO. It is remarkable how canine pets are lovers of motoring. The subject has often been dealt with in the motoring press. Our picture shows an Irish terrier which can find a secure perch on the top of the tank or on the carrier, so long as he can accompany his master. The machine is a twin-cylinder A.I.S.

Double Countershaft Pulleys.

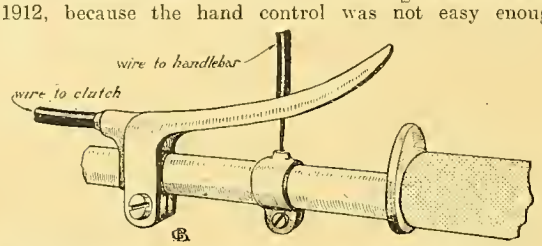
Sir,—Referring to Mr. Wall's letter in *The Motor Cycle* of September 9th *re* double expanding countershaft pulley gear, I have had this identical gear running on my machine for the past three years, and can confirm Mr. Wall's statements in every particular. I find it simple, cheap, and reliable. The ratios are 5 to 1 down to 12 to 1. What more can one expect? I have ridden through miles of mud and snow with never a sign of belt slip. Why the gear is not more widely used I cannot imagine. I should be glad if someone would point out the defect which has consigned several patents to the limbo of forgotten things.

There is a patent in existence, of which I have the name, number, and date, which seems to me to have anticipated Mr. Wall's, unless it is only possible to patent the application of a principle and not the principle itself.

LOUIS DUGDALE.

Double Clutch Control.

Sir,—There is a point in your issue for August 26th which is of much interest. I refer to the hand and foot controlled clutch. I fitted such a control to an engine-shaft clutch in 1912, because the hand control was not easy enough,



and also the movement of one notch in the control freed the clutch. The accompanying sketch explains it all.

One advantage might be mentioned. The handle control could be set so as to give a slight slip with throttle half open when in traffic. Then, if the throttle were half opened at the same time that the foot let in the clutch, the irritating experience of stopping the engine would be avoided.

BA 620.

South Wales and the Wye Valley.

Sir,—I have read with very great interest the account of the trip entitled "Through the Length and Breadth of Wales" in one of your recent issues. The account afforded me peculiar pleasure, because I have been over most of the ground myself, and remember even the vile hills at Fishguard and the pot-holes on the coast road. I know it is not practical in an account, necessarily brief, such as your correspondent gives, to enlarge on the beauties of *all* the ground traversed, but I would wish to draw your readers' attention to a district disposed of in a few words in that account, viz., the run from Llandrindod Wells to Llandovery and Carmarthen. I have had the privilege as well as pleasure of spending a month recently in the centre of that district, motor driving for the Red Cross Society (for such was my way of utilising my holidays for the cause of the wounded), and if the author had only known, and, instead of taking the direct road Llandrindod to Builth, had travelled *via* Rhayader (some thirteen miles longer), he could have included the wonderful waterworks at the latter place that supply Birmingham, as well as travelling through the magnificent scenery of the Wye Valley. Then, again, having left Builth about eight miles, if he had taken the road to the left—to Llangammarch Wells—instead of what is considered the direct run to Llandovery (a difference of only a mile or two), he would have obtained an extremely interesting view of the Irvon Valley and Llanwrtyd Wells from the southern road, which is more elevated than that on the north of the river. The country about there is full of bold mountain scenery, with soft-hued valleys alternating, and I am sure it is through ignorance of the splendid variety of the landscape that the district is not more largely patronised by motorists of all kinds. Llangammarch Wells, for example, is a fine spot to take as a centre, being equidistant from a number of "crack" views and places of interest, from the above-mentioned Wye Valley scenery on the north to the unexcelled view from the summit of the Sugar-loaf on the south. There are many "trips" in the neighbourhood very popular with those who know them, and one of the finest, as well as the most exciting from the motorist's point of view, is the circular run of twenty-three miles Llangammarch, Garth, Abergwessin, Llanwrtyd Wells, Llangammarch, which nobody who visits the locality, own he either a 40 h.p. limousine or a 3½ h.p. motor cycle, would dream of missing. The place is rich in good hotels—it is the only barium water district this side of Germany, I believe—from the big hotels a mile up the Lake Road to the Cammarch, on the main road, and very central for tours. A few of the gradients are a bit stiff, but that is a common failing of mountainous districts. I would commend the district to your readers. AN IRISH HEADMASTER.

Belfast.

A Curious Short.

Sir,—As a despatch rider at the Front, I eagerly look forward to *The Motor Cycle*, which is sent to me every week, as many a pleasant hour is spent reading and discussing the contents. I assure you I appreciate your valuable journal very much out here. I did so at home, but I do so even more now.

Perhaps, for the benefit of other readers, I might be allowed to explain a curious trouble I had with a Douglas lately. This certain machine (as is often the case with the Douglas) had a glazed waterproof mud shield, which is stretched down just behind the front mudguard. The fault was a persistent misfiring in the front cylinder at anything over about 15 m.p.h., either on high or low gear. The engine fired all right in both cylinders when on the stand at any speed, also on the road under about 15 m.p.h., either high or low gear. Everything was tried and looked over—contact breaker, and commutator of the magneto, h.t. cable, valves, and several plugs tried, but in vain: the misfiring still continued when over the said speed. I may say the machine was tried on the stand in a dark room, but no leakage of current was visible, and the engine fired quite evenly on both cylinders at any speed.

One night I had to go with a despatch, and at last found the root of the trouble. When going over about 15 m.p.h. the wind bulged the mud shield inwards till it touched the terminal end of the plug of the front cylinder, and so short-circuited the current. When slowing down the shield went back to its normal position, clear of the plug. The plugs had no waterproof terminals fitted. The fault, of course, was the mud shield not being adjusted tightly enough.

I have cured many a fault on a motor cycle, but I thought this was the limit, and that it would interest some of the readers of your valuable paper.

G. A. SEMPLE, Lance-Corpl. A.S.C., M.T.,
Despatch Rider, B.E.F.

Motor Cycle Volunteers.

Sir,—I should like to inform N. Randolph that Lieut. M.B. did attend the first khaki meeting at Brooklands, and, instead of weeping, he competed, thereby spending a very enjoyable afternoon.

Two of the foremost arguments brought forward by the supporters of this movement seem to settle the question:

(1.) All members must sign a statement that they are ineligible for military service.

(2.) Numbers of men who received their preliminary training in some M.V.C. have since enlisted or have received commissions.

These two statements are by no means consistent. In conclusion, may I remind N. Randolph, with all courtesy and quite impersonally, that Lord Kitchener has called for another 300,000 men. ALEXANDER LINDSAY.

SUMMARY OF CORRESPONDENCE.

A Loan of Petrol.—Will the driver of a 6 h.p. Bradbury sc., who lent two gallons of petrol to the rider of a Douglas on August 22nd, send his name and address to R. G. Clarke, 130, Brownside Road, Cambuslang?

NOTICE.

The Editor disclaims all legal responsibility in any way for loss of copy in the form of manuscript, drawings, or photographs submitted to him. Rejected matter will only be returned provided a stamped addressed envelope is enclosed for the purpose.

The DINE GEAR.

SUITABLE FOR ENGINES UP TO 8 H.P. TWIN

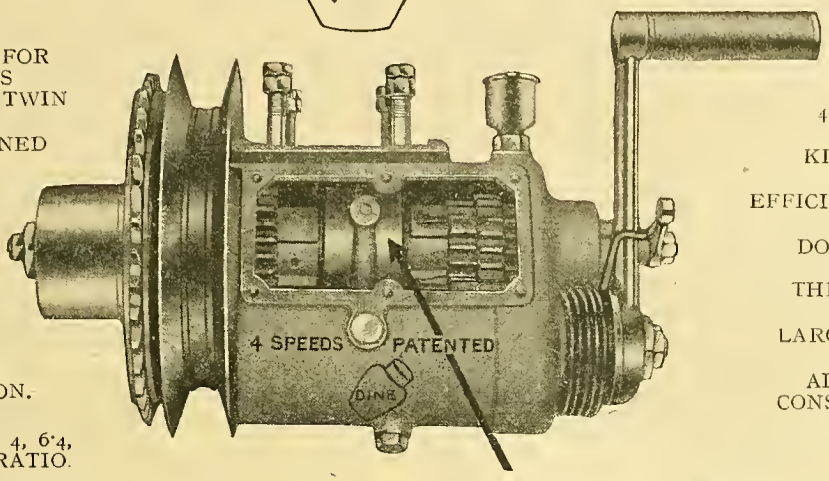
SELF-CONTAINED UNIT.

NEAT IN DESIGN.

ROBUST CON-STRUCTION.

EASY IN MANIPULATION.

GEAR RATIO 4, 6·4, 9·2, 14·8, PRO RATIO.



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KICK-START.

EFFICIENT CLUTCH.

DOG CLUTCH CHANGE THROUGHOUT.

LARGE PULLEY.

ALL GEARS CONSTANTLY IN MESH.

THE ONLY SLIDING PART.

The IDEAL GEAR—MATERIALISED.

JARDINE, NOTTINGHAM.

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"COUNTRY LIFE"

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(MEDIUM STRENGTH)

PURE VIRGINIA TOBACCO

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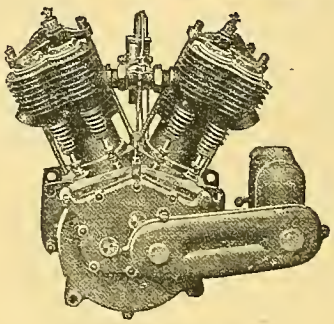
A·J·S

FEATURES



The A.J.S. 6 h.p. Engine.

The Engine of the A.J.S.

is the outcome of 16 years' high-class experience in the design and manufacture of internal combustion engines, and is distinguished for SILENCE, POWER, FLEXIBILITY, and ABSENCE OF VIBRATION — features which are the direct result of the A.J.S. policy of close and studied attention to the question of detail.

In the A.J.S. Engine the usual noise arising from Valves, Timing Gear and Transmission are entirely absent, the Exhaust is wonderfully silent, and the whole unit, in design and build, so near to perfection as to result in the A.J.S. machine being PRACTICALLY INAUDIBLE when travelling under ordinary conditions.

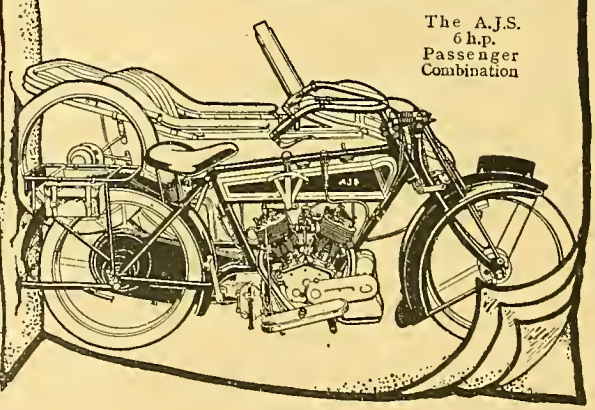
The Cylinders are of a design which ensure the merit of EVEN COOLING — a point in which the A.J.S. has always been pre-eminent — and which also permit of their quick and handy removal when necessary.

Before passing into the Erecting Shop every A.J.S. Engine is submitted to a thorough running test under its own power, having to reach and maintain a Standard of Efficiency, far in excess of the nominal rating, and before leaving the Works, every complete A.J.S. machine receives a thorough, searching Road Test at the hands of Expert Testers.

Now ask for copy of Catalogue describing all A.J.S. models.

A. J. Stevens & Co. (1914), Ltd., Wolverhampton.

London Agent: **H. Taylor & Co., Ltd., Store St., Tottenham Ct. Rd.**



The A.J.S. 6 h.p. Passenger Combination

MOTOR CYCLES.

5/6 h.p. **Hazlewood** Twin Combination - **£86 0 0**

6 h.p. **Zenith** Model E **£72 15 6**

Calthorpe, two-stroke single speed - - - **£27 14 6**

Coventry Eagle, 2½ h.p., two-stroke **£37 15 0**

"Selfridge" two-speed **£39 1 0**

"Selfridge" single-speed **£31 7 0**

Call or write for particulars of the Selfridge System of Deferred Payments.

TELEPHONE: "GERRARD ONE."

There's no need to proceed with caution if you purchase your Motor Cycles and Accessories at

SELFRIDGE'S

CLOTHING.

Waterproof, Motor Cycling **Suit,** consisting of double-breasted Jacket and Overalls with apron front. In strong Twills and Cashmere Cloths of double texture and rubbered. **45/- and 30/-**

Tan Leather **Under Jackets,** 30" long. Wind and rain resisting - - - - - **45/-**

Chamois Leather **Vests,** light and warm. without sleeves **18/6** with sleeves **30/-**

Tweed Motor **Caps** with ear flaps - - - - - **6/6**

Tan Leather **Caps,** close fitting - - - - **5/6**

Selfridge & Co., Ltd., Oxford St. W.

Cork Club's Hill-climb.

(1) W. J. O'Connell passing the starting line on his 2¾ h.p. Douglas.

(2) Sergeant Hughes, R.E., at full speed on his 4 h.p. Triumph. Hughes won the Two-stroke Military Class on a Levis.

THE Cork and District Motor Cycle Club held the penultimate event of its competitive season on Wednesday last week, when a series of hill-climbing competitions were held on a hill near the city, on the road leading from the Lough to Ballinhassig. The number of events held during the summer has not been as large as usual, owing to the absence of so many members of the club on active service, but a number of those who are still in training were able to take part in last week's trial. There was a special class for single-cylindered two-stroke machines confined to members of the Forces, and this was won by Sergt. Hughes, who made a very good climb on the 2 h.p. Levis on which, earlier in the afternoon, Fitzgerald had made the fastest climb in the under 300 c.c. class. The length of the hill was about half a mile, and as the steepest portion of it did not exceed 1 in 8 there was little opportunity for the use of variable gears. The fastest time of the day was made by C. B. Franklin, the well-known Indian rider, who covered the distance, with a flying start, in 38s. on a 3½ h.p. single-cylindered machine. The hon. secretary, R. S. Russell (2¾ h.p. Douglas), made the best time in the under 350 c.c. class, and, like Franklin, he, too, won the class on *The Motor Cycle* formula.

The results on formula were as follow :

UNDER 300 C.C. CLASS.—1, M. J. Fitzgerald (2 Levis), time 56⅖s.; 2, J. Gibbins (2 Triumph), 72⅖s.; 3, Staff Sergt. B. Pangbourne (2 Levis), 79⅕s.

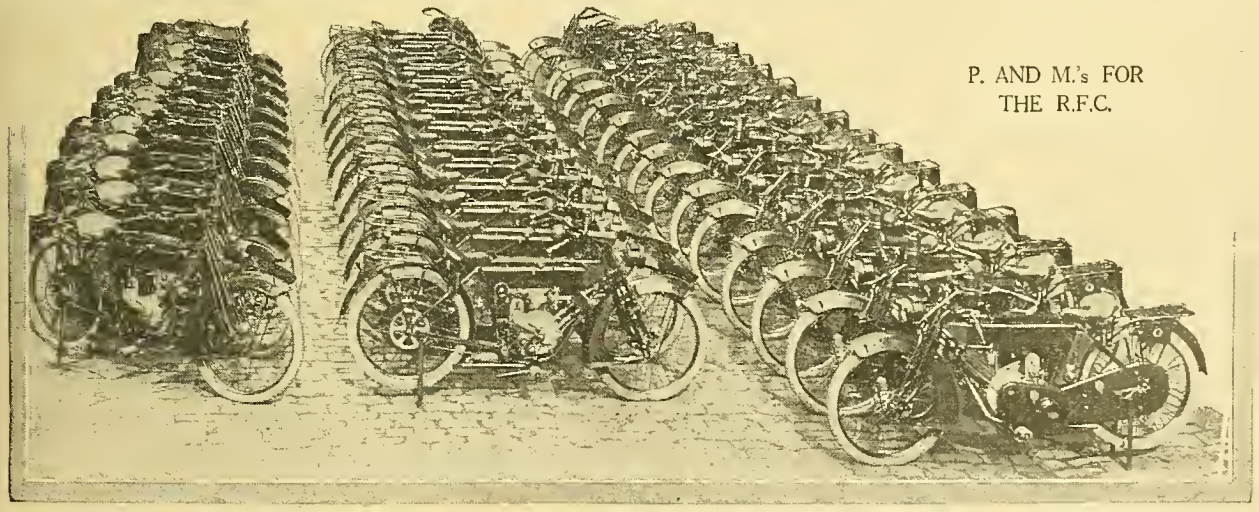
UNDER 350 C.C. CLASS.—1, R. S. Russell (2¾ Douglas), time 42s.; 2, D. Lucy (2¾ Douglas), 52⅕s.; 3, M. English (2¾ Douglas), 57⅕s.

UNDER 600 C.C. CLASS.—1, C. B. Franklin (3½ Indian), time 38s.; 2, E. G. Jack (3½ Rover), 46⅕s.; 3, R. Swanton (3½ Indian), 51s.

TWO-STROKE CLASS (confined to military men).—1, Sergt. B. Hughes, R.E. (2 Levis), time 57⅕s.; 2, Corpl. E. B. Russell (3½ Triumph), 66⅖s.; 3, Staff Sergt. B. Pangbourne, R.E. (2 Levis), 71s.

CAR CLASS.—1, Lieut. Pike (D.F.P.); 2, W. J. Callaghan (Humber); 3, M. English (Humber).

The result of the hill-climb places R. S. Russell at the head of the aggregate competition for the shield presented by Mr. M. English for the rider scoring the greatest number of marks in the season's competitions. Up to Wednesday week, Dooley was leading. The reliability trial for the Pike Cup will decide the destination of the shield.



P. AND M.'s FOR THE R.F.C.

One week's delivery for the military wing of the Royal Flying Corps. A batch of over forty P. and M. motor cycles fitted out complete with lamp, horn, and Kempshall tyres. They are of dull finish, with the exception of crank case and sundry parts. It may be added that the R.F.C. already have over five hundred P. and M.'s in use.

Motor Cycle Exports and Imports.

Government Machines not Included in Board of Trade Returns.

THE American motor cycle industry is awake to the opportunities with which the war has provided it. On August 19th last the *Motor Cycle Illustrated* of New York published a leader emphasising the fact that Germany, France, and England will do about £2,400,000 less trade in motor cycles, ordinary bicycles, and parts with foreign countries than they did in 1914. In 1914 the war prevented these exports showing their usual increase, and the actual shrinkage in such exports must be contrasted rather with the natural rise which 1915 would have brought in normal times than with the figures for 1914 or 1913. The American Government departments inform our contemporary that the fall in British motor cycle and cycle exports alone will be more than 50% as compared with 1914, a fall which probably represents an actual shrinkage of at least 75% on the sum which would have been realised in times of peace.

The exact situation is a little difficult to analyse. The Board of Trade returns for August, 1915, show that we exported motor cycles and parts to the value of £79,866 during last month, and imported machines and parts to the value of £38,582. On the surface these figures indicate that, despite shrinkage of exports in this line, we still rank as a "creditor" nation, and not as a "debtor" nation in this sphere of industry. But in view of the fact that our factories are so largely engaged on munition contracts, it is difficult to believe that we are exporting more machines for civilian purposes than we are importing. An observer would be tempted to suppose that the £79,866 exports include all machines bought by the War Office and Admiralty for war purposes, and possibly all the machines supplied to Allied Governments as well. Against this *The Motor Cycle* has ascertained definitely from the Board of Trade that machines bought by the Government and transported in Government ships do not figure in the Board of Trade returns. Motor cycles bought by the Russian Government are shown in our returns, and, incidentally, there has been a weekly supply going to our Ally for some time past. It is, therefore, possible that our actual exports of motor cycles and parts, for purely civilian purposes, still exceed our imports for the same ends.

However, these facts do not affect the patriotic contention. Even supposing that our motor cycle exports still show a slight cash balance in favour of this country over our motor cycle imports, there are many spheres in which the imports vastly exceed the exports, and in which this nation is, for the moment, a debtor nation, and is falling more and more deeply into debt; the adverse balance is bound to increase so long as the war lasts, and we are compelled to avail ourselves of America's offices.

The wording of the explanation mentioned above is contained in the following official communication from Whitehall:

[COPY.]

From the Assistant Secretary of the Board of Trade.

The Editor, *The Motor Cycle*,
Hertford Street, Coventry.

Sir,—With further reference to your letter (G.S./E.M.W.) respecting the figures given in the "Monthly Accounts relating to Trade and Navigation of the United Kingdom" for the exports of motor cycles during the war, I am directed by the Board of Trade to state that they now understand from the Custom House that all motor cycles shipped to foreign countries for warlike purposes are included in the Trade Returns of the United Kingdom, unless taken from British Government Stores, *i.e.*, unless they have been bought by the Government in this country and are exported on Government ships. Of the exports of such motor cycles no records are kept.

I am, sir, your obedient servant,

(Signed) H. FOUNTAIN.

A Lancashire Road Puzzle.

WILL any reader who has lately traversed both the direct Warrington-Wigan-Preston route and also the R.A.C. avoiding route *via* Ormskirk and Rainhill give us his opinion as to which is the more desirable? Last month we tried both routes—the tramline section on the advice of an intelligent Warrington policeman—and found that our experience bore out his opinion, viz., that the improvement effected to the road surface of late now renders it the more desirable route of the two—though neither is pleasant. If both routes were equal in length, then the balance would be in favour of the avoiding route, but a road must be bad to necessitate forty miles being covered in preference to thirty when time is an object.

Again, the so-called avoiding route is very badly signposted, though it is supposed to be clearly marked throughout by the R.A.C. Friends have confirmed our experience that it is not possible for a stranger to travel over this section without stops to make enquiry, and the Lancashire labouring classes do not seem to know the best way to the next town.

We wonder if the R.A.C. is alive to the fact that Tarmac is not now unknown in the Warrington-Wigan stretch. At any rate if a representative could be spared to try both sections again, measuring each accurately and subsequently giving his report, the R.A.C. would confer a benefit on thousands of motorists who have perforce to use this badly cut up route to the north with its maze of tramlines and cobblestones.

MOTOR MACHINE GUN BATTERY'S MASCOT.

The 10th battery of the M.M.G. Service in the trenches in Flanders has a mascot, a Flemish dog, and Gunner Hoult, of the Woolwich Club, relates how it has just been "decorated" with a tricolour bow from a tuck box, a gift from Mrs. Hardee. This battery has been in the trenches for several weeks. A photograph of a section of the battery to which Gunner Hoult is attached appears on the next page.

"THE MOTOR CYCLE" RECRUITING SECTION.

Vacancies in the Royal Flying Corps and Royal Engineers' Signal Section.

THE following are among the latest recruits accepted for the Motor Machine Gun Service by the Editor of *The Motor Cycle:*

H. F. Birchall	S. Hilhouse	H. Neville
H. Bird	L. A. Hogg	W. H. Probert
P. Bolger	A. Holroyd	A. Pullen (Johannesburg)
G. Burke	W. Howard	P. Robinson
G. Evans	H. Ingham	E. Sampson
P. Hardy	A. E. Jackson	F. Walker
A. G. Head	E. G. Maynard	I. Williams

Recruiting for motor cyclists has ceased temporarily for the M.M.G.S., the motor cyclists above-named being men who have passed through the Excelsior Training School. A few more expert cyclists of good physique can be accepted for the training school.

Ernest Smith, of Birmingham, maker of the Regal motor cycle, has closed down the works and enlisted in the M.M.G.S. as a mechanic.

All car drivers and artificer-mechanics enlisting in the Army Service Corps are now put through a practical and theoretical test at Grove Park before being finally approved.

Experienced car drivers and motor cycle mechanics are wanted for the M.M.G.S. Pay, 6s. per day. Applicants should mention age, height, and experience, and enclose two original references from previous employers.

Royal Engineer Despatch Riders.

A call for motor cyclists has been issued by the Royal Engineers, which has absorbed most of the names on the waiting lists of the different Motor Cyclist Reserve Committees appointed by the War Office. Furthermore, we are advised that the West Lancashire Divisional Area, the North Midland Divisional Area, and the South Midland Divisional Area have received notification from the authorities that a number of motor cyclists will be required monthly until further notice. This is good news, as, in the past, motor cyclists have had to be content to have their names on the waiting list for many weeks after being passed before being called up. A great many, indeed, got so tired of waiting that they subsequently joined other branches of the Service which required recruits immediately.

A prospective despatch rider must give a demonstration of riding, and undergo an examination of his knowledge of the machine and his ability to put in order any derangement. To carry out this examination, experienced motor cyclists in different centres were appointed as Inspecting Officers by the Government.

A section of the 10th Motor Machine Gun Battery in the trenches in Flanders. Gunner Hoult, of the Woolwich Club, is at the extreme right.

The secretary of the Motor Cyclist Reserve Committee in the West Lancashire Divisional Area is Mr. S. W. Phillpott, 60, Lime Street, Liverpool, and he invites motor cyclists in his district to make personal application to him for positions as despatch riders; they should attend with their machines.

Recruits in the North Midland Divisional Area should apply to Mr. W. H. Bishop, Inspecting Officer, Bolton Road, Wednesfield, near Wolverhampton.

Motor cyclists in the South Midland Divisional Area should write to Mr. Geoffrey Smith, Editor, *The Motor Cycle*, Hertford Street, Coventry, for particulars of the service and also an appointment.

It will save needless correspondence if we mention that transfers to the R.E. cannot be arranged, and the following general particulars apply:

Applicants must be experienced motor cyclists; age, 19 to 38; pay, 2s. 6d. per day, plus 6d. after completion of training, all recruits being made corporals on attestation. Enlistment for duration of war. The minimum height is 5ft. 3in.

Vacancies in the Royal Flying Corps.

It will interest those readers who have applied at various times respecting positions in the Royal Flying Corps to hear that the R.F.C. is now open to take a certain number of motor cyclists for despatch work. The men accepted must have a good practical knowledge of the running and upkeep of their machines, and before being finally accepted will require to pass a test both in riding and mechanical knowledge. The rate of pay is 2s. per day as second-class air mechanics, with enlistment for four years in the Army and four years in the reserve, or for duration of war only.

Applicants should first fill in the form printed below.

Application to join the .....

Name .....

Address .....

.....

Age ..... *Height* .....

Chest measurement .....

How long have you been a motor cyclist? .....

Can you do running repairs? .....

Have you had any previous military training, and, if so, when? .....

.....

Are you medically fit? .....

Occupation .....

When free? .....

Date .....

After filling in the above particulars return to:

MR. GEOFFREY SMITH,
Inspecting Officer,
South Midland Divisional Area,
19, Hertford Street,
COVENTRY.

[Issue Sept. 16th, 1915.]

A Lady's Record Ride in Lakeland.

The First Sidecar Crossing of Southern Lakeland from East to West.

By GEORGE D. ABRAHAM,
Author of "Motor Ways in Lakeland," "The Complete Mountaineer," "Mountain Adventures at Home and Abroad," etc.

At Cockley Beck Bridge, between the passes of Wrynose and Hardknott. The road is seen curling up the latter pass.

OVER the worst hills in England with a lady driver! The words sound adventurous, and anyone who crosses the Passes of Wrynose and Hardknott by motor is not likely to forget the outing whatever the sex of the expert in charge. If the weather conditions be those of the present season, which has been damp to say the least of it, the excitements of the expedition may be excessive.

Thus when Mrs. Mary Riley brought her Enfield sidecar along, and, pointing to the sturdy "two-year-old," said to the writer, "Can we manage it?" the answer was not encouraging. One remembered famous experts and their futile efforts to climb Wrynose Pass. Only one made a clean ascent. This was a few months before the English Six Day Trials in Lakeland, and the later history of the passes, as learnt from the farmers who live "on the spot," is soon told. Despite innumerable attempts, either three or four cars only had crossed the passes, and about six motor bicycles had also succeeded. About eighteen months ago Frank Smith on his Clyno brought the writer from west to east in perfect weather conditions, and after descending the upper part of Wrynose towards Fell Foot Farm, the return journey was made to Eskdale the same day.

Our chances did not look hopeful. However, recent improvements in machines, as well as in the experience and skill of drivers, made one loth to pour cold water on the lady's good intentions. A cloud burst on Wrynose did that more effectively when the auspicious day arrived. This was one of cloud and sunshine as we set forth for Southern Lakeland, with an experienced pillion rider as ballast and a heavy camera outfit as probably the most important passenger of all. The busy main trunk road to Ambleside was followed. Though lady drivers and riders were much in evidence, this was almost the only sign of wartime in the district which has proved so popular in these stirring times. Innumerable war workers and fighters have enjoyed for a brief time the peace of the eternal hills.

At Ambleside we chose the quickest and best way to the foot of Wrynose, and this enabled us to avoid the unpleasantness of overtaking the crowd of morning coaches which set out daily for Little Langdale by the usual route, and thread the narrow roads. Our

way lay first to Elterwater, with the Langdale Pikes looming grandly ahead. Shortly after crossing the bridge beyond the little village we turned sharply and steeply to the right. The writer's warning cry of "bottom gear" enabled the steep and immediate ascent of Owlet Hill to be made in lively style. This capital mile-long hill of good surface has distinct merits as a new test climb, which fact will doubtless be recognised in future trials. From its crest, high up amongst the bracken and rocks, there was a wonderful peep of Wrynose Gap ahead.

Cumberland Humour.

Heavy masses of grey vapour rolled across the grim mountain barrier in front, and for a few minutes of clearness a thin line, like a curly grey silken thread, was seen winding up to the only gap in the scattered crags. It was an impressive sight, but one which did not daunt our driver. At Fell Foot Farm, where the real struggle of the day began, we had a homely greeting. "Queer mak' o' men to trust your lives to that!" said the old dalesman, pointing to the lady and the machine. The writer reminded him of the Cumbrian saying, "Good stuff laps up in laal bundles!" But this did not suffice, and we swung outwards from Fell Foot remembering the farm folk's parting shot, "Th' kettle will be boiling when ye come back!"

At the outset it was easy work. The road, once so thronged with through traffic but now neglected, was grass-grown and stony. It rose gradually to an awkward turfy turn of considerable steepness. This has proved the limit of many a motor's endeavours, and an ominous hole in the wall below showed where not long ago a motor car had come off second best. We almost repeated the same performance. There was assurance in the gripping powers of the new Palmer rubber-studded tyre, and the driver decided to trust more to speed, despite the advice of the pillion passenger, who was now far below having elected to walk up the Pass.

Just on the "hairpin" bend the driving wheel failed to grip on the steep wet turf—the brake-locked wheel was useless, and we slid bodily backwards straight for the wall. The writer made a record exit from the sidecar. Then by instant aid of a sturdy push and the presence of mind of the driver, who steered the driving wheel on to some stony surface, the situation was saved as well as a repair bill for the stone wall.

Local Road Repairing.

At the second attempt this difficult spot was overcome by taking the slippery corner at lower speed and more widely, thus finding a hold on the less turfy middle part of the roadway. A rainstorm chased us up the next half-mile of easier ascent, and with three aboard the Enfield climbed splendidly and steadily. We had heard at Fell Foot that local talent was somewhat proud of recent road repairs on Wrynose. The writer has learned from previous experience to beware of so-called repairs to mountain ways. On this occasion it seemed that considerable portions of the boggy fellside had been planted on the road, and the Enfield plunged into the yielding mass viciously. There was much "mud-slinging" both by machine and riders, but fortunately the road repairers were not within earshot, or they might in future mend their ways. This was the only involuntary halt in what would otherwise, at the second attempt, have been a non-stop climb up Wrynose Pass.

After a safe restart, which the soft-gripping Enfield clutch made easily possible, the upper half of the Pass was climbed. The writer watched the performance from the safety of *terra firma*. It was certainly a thrilling sight, and one did not envy the position of the pillion rider, who seemed to spend most of his time bouncing in mid-air. The so-called surface was composed of jutting rocks, loose yielding stones mixed with turf, and 1 in 4 was the prevailing gradient. Jumping, sliding, squirming, and to the accompaniment of a lusty roar, the machine fought its way upward under the delicate control of its driver. It was a vivid demonstration that skill rather than strength is the main factor of freak hill work of the most extreme variety. Up and up into the gap over the final most difficult section the only visible fragment of life and movement in the grim mountain fastnesses threaded its perilous way. Finally, after growing smaller and smaller, it disappeared from sight through Wrynose Gap, and peace dwelt once more in the lonely heights.

STONE DENOTING BOUNDARY OF THREE COUNTIES.

One of the most remarkable topographical curiosities in the country—the Three Shire Stone on the top of Wrynose Pass (1,270 feet above sea level). It marks the spot where the three counties of Lancashire, Cumberland, and Westmorland join.

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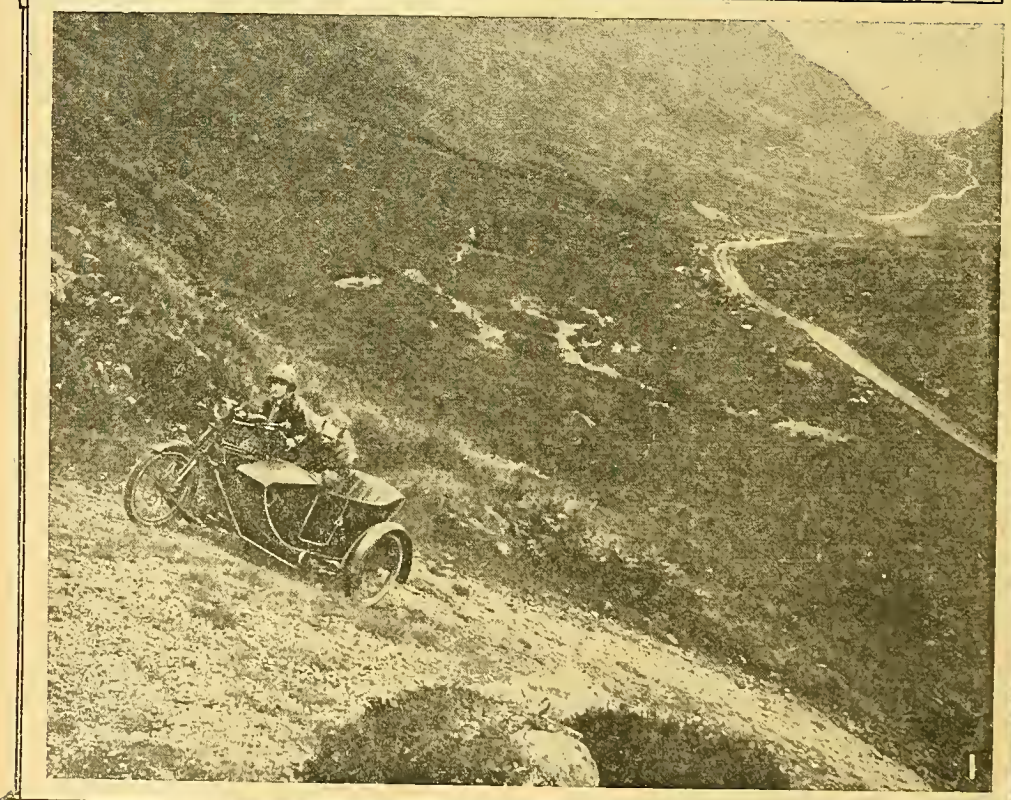
Then the writer joined the others, the camera did its work, and we followed the upper reaches to the crest of the pass, 1,270 feet above sea-level. There one of the most remarkable topographical curiosities in the country was inspected in the shape of the Three Shire Stone. It marks the spot where the counties of Lancashire, Westmorland, and Cumberland join. The grey granite obelisk, standing high and lonely amongst the wilds, was remembered as an emblem of dissension so far as the three counties are concerned in the new road scheme which has been delayed so long. Years have passed and they have failed to apportion their responsibility for the various sections. But the need of a good road from east to west across the screen of lakeland mountains cannot be neglected much longer. Of late months military reasons have demanded it, and those of us who have searched for hidden aeroplane bases in the inaccessible south-westerly area specially realise its importance. Then, mostly on a mass of sliding stones, we slid slowly and carefully down into the cloud-filled depths on the west side of Wrynose. Through a surfeit of moisture from rain and water splashes Cockley Beck Farm was safely reached.

The Ascent of Hardknott.

There was no rest at this out-of-the-world spot, about midway between the two passes, for Hardknott had still to be conquered. Unlike the ascent of Wrynose, which, except for the one initial grassy corner, was singularly straight, that of Hardknott was remarkable for its succession of "hairpins." There were thirteen of these problems to negotiate, and a sudden, double left and right series at the start proved only slightly less difficult than one grassy turn about halfway up the climb.

There were some thrilling moments on the lower section. During an unpleasant skid the prospect of flight through mid-air into the rugged depths of the torrent-filled gorge on the left seemed to startle the lady driver. A splendid recovery was made and, except for a momentary sliding delay on the halfway grassy hairpin, the climb was made non-stop throughout. Under the wet conditions this was a unique performance, especially as no rope or chain was used on the driving wheel. The rubber-studded Palmer tyre was largely responsible for success, and the excellent slow-running of the J.A.P. engine, the whiles it developed great power, made the need for extra gears rather less apparent. It was rumoured that the Enfield makers may shortly add two more speeds to their present standard, and in these days, when sidecar outfits go everywhere, the addition would demonstrably be an advantage.

On the crest of Hardknott the clouds were wafted aside like a huge white curtain, and we looked down the beautiful valley of Eskdale to the sea, 1,290 feet below. From the gloom of grey and purple crags, the way



(1) The first lady sidecar driver tackling the lower hairpin on Hardknott Pass. Wrynose Gap, with the road curling from its crest, is seen in the background.

(2) Climbing the first grassy corner at the foot of Wrynose Pass.

dipped over into the sunny depths on gradients of brake-trying steepness. On the most trying bit of 1 in $2\frac{7}{8}$ the scenery was glorious; but it looked better when seen from the mountain side than from a seat in the sidecar. Those upper zigzags on the Eskdale side of Hardknott Pass must be considered the most trying part of the crossing of the two passes in either direction.

The Roman Camp above Eskdale.

Halfway down the descent, upon the right-hand side and on the more level section, a call was made at the Roman Camp, which is one of the most remarkable in Britain. The remains of the wayside inn and shrine were noticed. The great fort and its many buildings which stand at a slightly higher level were also of interest in these modern warlike times. It was impressive to stand by the old look-out fort which commanded the seaward approach by road and the narrow gap of Hardknott through which the savage Brigantes hurled their attacks. Afar off lay the sea and the golden sands, where the bricks were made that built the now ruined and storm-swept structures. All seemed at peace. Yet as we stood amongst the bracken there came a dull roar echoing in the vast solitudes of Scawfell. Great guns spake the voice of war from the testing grounds.

The lower part of Hardknott Pass, though steep and curly, was remarkable more for its sylvan prettiness. On the steepest part, where

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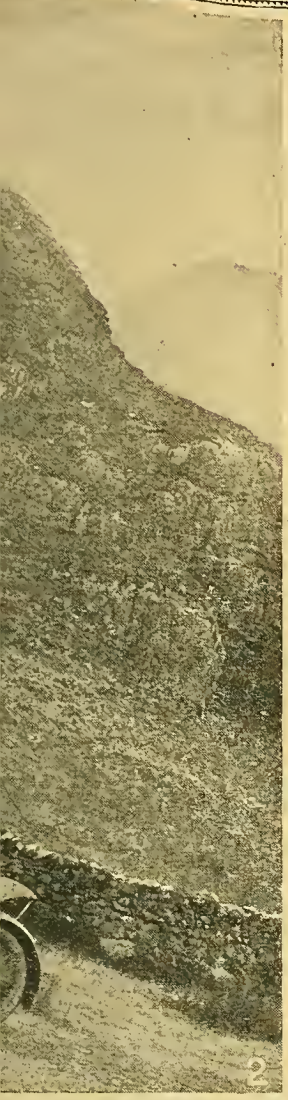
so many motor adventurers have ended their upward attempt, the retaining wall had again been repaired. Not so long ago it was carried away by a large car which, by good fortune, failed to reach farther than the edge of the gorge in its backward slide. With the aid of ropes the local farmers rescued the wanderer from this perilous position. Once amongst the larches the surface improved, and soon we were speeding down Eskdale to civilisation at the Wool Pack Inn. This altogether delightful resting-place was found to be under new management, and to all motorists who explore Western Lakeland it will prove a veritable oasis in the wilds. The temptation to linger after a sumptuous meal was resisted, and with the glory of the setting sun lighting the seaward prospect, we hurried northwards by the coast road through Gosforth and Egremont. Loweswater, Lorton, and Whinlatter Pass gave the quickest return to the starting point.

Thus, despite adverse weather conditions, what is probably the most severe road test in the country had been carried out successfully. The perfect running of the Enfield outfit—there had never been a moment's faltering—was only matched by the skill of the driver. Now that a lady has shown the feasibility of motoring over the much neglected passes, surely they will be included in the next official trials in Lakeland. Mere man can scarcely refuse the challenge!



(3) Descending Hardknott, amongst the craggy wilds of Eskdale.

(4) Up into the Gap of Wrynose. The roughness of the road and the wildness of the scenery are well shown. Mrs. Riley is seen approaching the summit on her 6 h.p. Enfield sidecar

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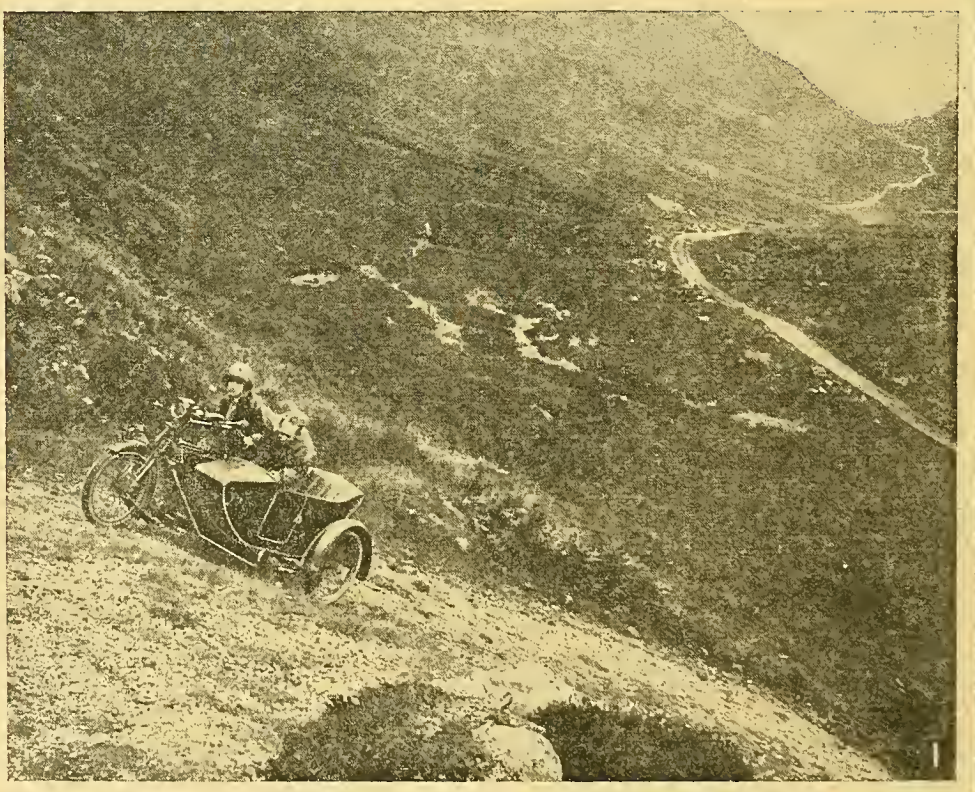

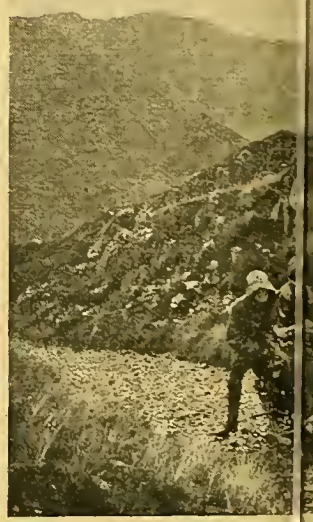

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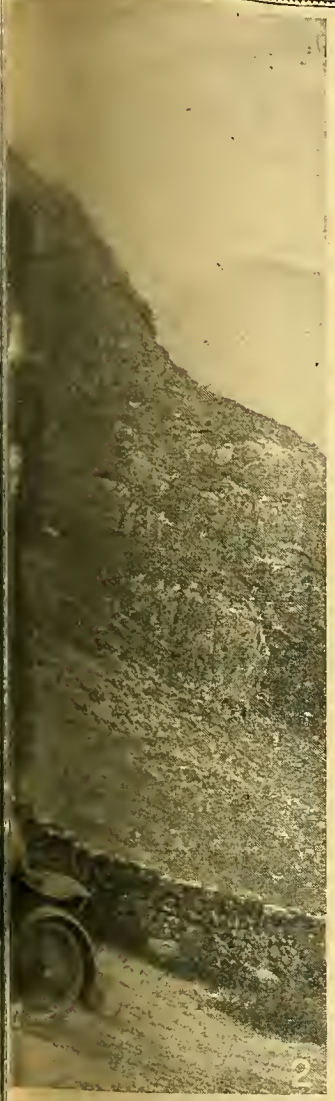

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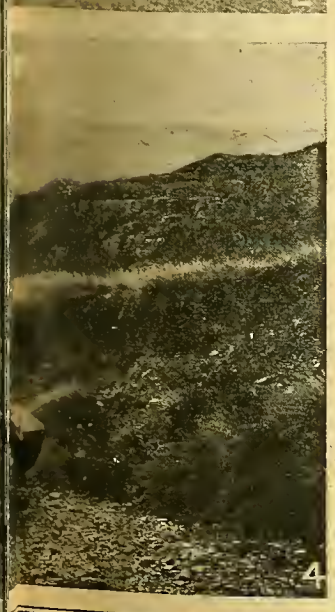

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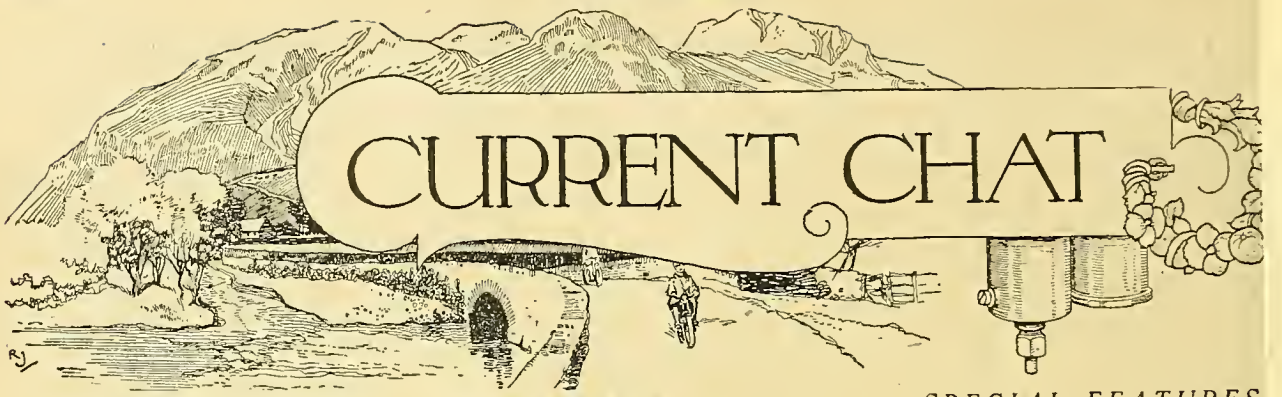


TIMES TO LIGHT LAMPS.

Sept. 16	...	...	7.14 p.m.
,, 18	...	...	7.9 ,,
,, 20	...	...	7.5 ,,
,, 22	...	...	7.0 ,,

Amuseful Hints!

An Irish reader writes: "I enjoyed the 'Useful Hints and Tips' in last week's issue, and hope to see this feature continued. By the way, should not the article have been called 'Amuseful Hints,' etc.?"

Adjustable Lamps.

The seizing of an adjustable motor cycle lamp at Woburn, as already mentioned in our columns, had its sequel on Friday last, when the owner was fined £1 and the lamp confiscated. The magistrates informed the unfortunate motor cyclist that they could have confiscated the whole vehicle, a motor cycle and sidecar.

Racing at Portmarnock.

The programme of the last race meeting of the season at Portmarnock on Saturday last was made up of a trio of events. The sidecar event was the least supported, but it was rather a scratch entry, and making a good handicap with so many unknown quantities proved a difficult task. A similar remark also applies to the veterans' handicap, in which Dr. Shiel's L.M.C. was so much faster than the machines to which he was asked to give starts that he was leading at half distance, and won much more easily than the eleven seconds that divided him from the second man would suggest. A Harley-Davidson sidecar was successful in the passenger class; but Walshe, who was second on a B.S.A., would have been the winner had he not had the misfortune to unship his passenger in going over a water gulley.

T. E. Green had not been seen in any Irish competitions during the season, as he is now serving with the Mechanical Transport Section. He was having a few days' leave in Dublin, and borrowed an old Rudge, but apparently he spent little time in tuning it up.

The results were as follow:

FOUR MILES VETERANS' HANDICAP.

	Time.
1. Dr. Shiel (3½ L.M.C.), scratch ..	5m. 54s.
2. R. P. Hurse (4¼ B.S.A.), scratch ..	6m. 5s.

TEN MILES SCRATCH RACE (under 600 c.c.)

1. C. B. Franklin (3¼ Indian) ..	13m. 39s.
2. T. E. Greene (3½ Rudge)	14m. 29s.

SIX MILES SIDECAR HANDICAP.

1. H., "Davidson" (7-9 Harley Davidson), scratch	9m. 6s.
2. R. Walshe (4¼ B.S.A.), 30s. ..	9m. 43s.

National Relief Funds.

At the week-end the principal relief funds stood as follow:

	£	s.	d.
The Queen's Work for Women Fund ...	164,524	3	5
The Weekly Dispatch Tobacco Fund ...	83,076	2	6
"France's Day" Collection	21,843	2	0
Belgian Relief Fund (exceeds)	860,000	0	0
The Times Fund for Sick and Wounded	1,668,236	16	10

Imports and Exports of Motor Cycles.

As was only to be expected, the trade of this country decreased enormously at the outbreak of war, and the export value of motor cycles and parts dropped from £125,860 in July, 1914, to £77,121 in August, 1914. The motor cycle trade suffered not only from the general depression, but also from the fact that many hundreds of motor cycles were taken over for war purposes by the Allied Government, and also because the manufacturers have been engaged to a large extent upon the manufacture of munitions. Now that the Board of Trade returns have been issued for August, we are able to compare a month's trade with the same month under war conditions, and we find that there is a welcome increase in the value of exported motor cycles and parts of £2,745, although the actual number of motor cycles exported has dropped from 1,324 to 1,092.

Compared with last year the imports have, of course, increased to a very large extent, the number of motor cycles being 645 last month, compared with 97 for the corresponding month of last year; but the total number of machines and parts, while approximately four times that of last year, is only about double the 1913 figure. The figures are as follow:

IMPORT VALUE OF MOTOR CYCLES AND PARTS.—August, 1915, £38,582; August, 1914, £9,577; August, 1913, £19,284; July, 1915, £37,827.

EXPORTS OF MOTOR CYCLES.—August, 1915, 1,092; August, 1914, 1,324; August, 1913, 1,130; July, 1915, 881.

EXPORT VALUE (INCLUDING PARTS).—August, 1915, £79,866; August, 1914, £77,121; August, 1913, £67,714; July, 1915, £64,601.

Seven foreign-made motor cycles were re-exported during the past month in addition to parts to the value of nearly £2,000.

SPECIAL FEATURES

A LADY'S RECORD RIDE IN LAKELAND.
SPRING FRAMES IN 1906.
FAULT FINDING AT THE FRONT

Accident to a Well-known Rider.

E. Kickham, who now has an ag in Bristol, was, near Salisbury, teac a pupil how to drive a sidecar, when latter charged a bank, throwing the senger out. A steam lorry coming behind unfortunately ran over Kickh left foot, causing a fracture. We glad to hear that he is making r progress.

Very Heavy Fines.

If the report in the local pres correct, a motor cyclist was very hea fined at Cardiff recently. He accused (1) of driving a motor cyc a speed dangerous to the public, (2) driving negligently, (3) of ignoring signal of a constable. The alleged s was from 20 to 25 m.p.h. (defen put it at 8 m.p.h.), and he ran in motor car which turned a corner, was thrown off his machine. Whe he did any harm to the motor ca not is not stated, but his fines on three summonses amounted to £42. defendant said he was unable to because his foot brake was broken, fortunately for him, he was not moned on this count.

Toronto M.C.C.'s Hill-climb.

There was a large crowd of ri in attendance at the first hill-c of the season, which took place Davisville on July 17th. The hill is of the worst in the neighbourhood being very steep and possessing a rough surface and three sharp bends

CLASS 1.—3 H.P. AND UNDER.

Fast.

	Time
1. G. Orange (2¾ Douglas) ..	23
2. H. Minney (2¾ Douglas) ..	29s

Slow.

1. H. Minney (2¾ Douglas) ..	1m. 9s
2. G. Orange (2¾ Douglas) ..	51s

Flexibility.

1. H. Minney (2¾ Douglas) ..	F.M. 2.4
2. G. Orange (2¾ Douglas) ..	F.M. 2.1

CLASS 2.—4 H.P. AND UNDER.

Fast.

1. G. Orange (2¾ Douglas) ..	22

Slow.

1. G. Orange (2¾ Douglas) ..	1m. 8s

CLASS 3.—7 H.P. AND UNDER (PROFESSIO

Fast.

1. T. Smith (Excelsior)	20

Slow.

1. T. Smith (Excelsior)	2m. 38s

Flexibility.

1. T. Smith (Excelsior)	F.M. 7.7

Grampians Road Good.

A Scottish authority states that the road over the Grampians is in good condition, there not having been a long enough spell of dry weather to break up the surface as usual.

Bromley Baker's P. and M. Sidecarrier.

A Bromley baker has just acquired a P. and M. and sidecarrier. The latter is complete and detachable, therefore at the week-ends he fits a pleasure type sidecar attachment. This has advantages over removing the carrier box and fitting a sidecar body, but is, of course, more costly.

Honour among Thieves (?)

A young man was recently sent to a Borstal Institution for two years at the London Sessions for being concerned with two men in breaking into a warehouse and stealing a motor bicycle and sidecar. The prisoner, Walter John Newman, aged 17, and the two men tossed up to decide who should wait outside the warehouse while the others entered. Newman lost, and then each took an oath not to "round" on the others. When arrested he refused to disclose anything about his confederates, but when remanded he gave their names, which has enabled them to be traced to Glasgow, but we understand they have not yet been arrested.

Average Prices.

We give below the average prices for the various second-hand models offered for sale in *The Motor Cycle*. We quote those models of which at least five weekly averages have appeared during the past two months. Where it is possible to obtain a sufficient number of each model we also give the average for the past week :

Make.	Year.	H.P.	Last week's average.	Average for past 8 weeks.
A.J.S.	1914	6 3-sp. sidecar ..	£77	£76
"	1913	6 3-sp. sidecar ..	£59	£58
"	1914	2¾ 3-speed	£42	£44
Ariel	1913	3½ 3-sp. sidecar ..	£46	—
Bat	1913	8 2-sp. sidecar ..	—	£49
Bradbury ..	1914	4 3-sp. sidecar ..	—	£47
B.S.A.	1914	4 3-sp. sidecar ..	£62	£58
"	1915	4 3-sp. sidecar ..	—	£67
Calthorpe ..	1914	2 2-speed	£18	£19
Chater Lea .	1914	8 3-sp. sidecar ..	—	£60
Clyno	1914	6 3-sp. sidecar ..	£63	£67
"	1913	6 3-sp. sidecar ..	£53	£53
"	1914	2½ 2-speed	£33	£31
Douglas ...	1914	2¾ 2-sp. T.T.	£42	£41
" ...	1914	2¾ 2-sp. kick start	£45	£44
Enfield	1914	6 2-sp. sidecar ..	£64	£64
"	1914	3 2-speed	£40	£38
Humber ...	1913	3½ 3-sp. sidecar ..	—	£39
Indian	1914	7 2-sp. sidecar ..	£61	£60
"	1914	7 T.T. free eng. .	£40	£43
James	1914	4½ 3-sp. sidecar ..	£56	£55
Lea-Francis.	1914	3½ 2-speed	£47	—
Matchless ..	1914	8 3-sp. sidecar ..	£69	—
" ..	1913	8 2-sp. sidecar ..	£54	£53
New Hudson	1914	6 3-sp. sidecar ..	—	£59
"	1914	4 3-sp. sidecar ..	£47	£48
O.K.	1914	2 2-speed	£24	£24
P. & M. ...	1914	3½ 2-sp. sidecar ..	£53	£57
Premier ...	1914	3½ 3-sp. sidecar ..	£47	£51
" ...	1913	3½ 3-sp. sidecar ..	£36	£59
Rex	1914	6 3-sp. sidecar ..	£55	£59
"	1913	6 3-sp. sidecar ..	—	£39
Rever	1914	3½ 3-sp. sidecar ..	—	£57
"	1913	3½ 3-sp. sidecar ..	£44	£40
Royal Ruby	1914	3½ 2-speed	—	£44
Rudge	1914	3½ multi	—	£35
Scott	1914	3¾ 2-sp. sidecar ..	£53	£55
"	1913	3¾ 2-sp. sidecar ..	—	£43
Sunbeam ..	1914	6 3-sp. sidecar ..	—	£77
" ..	1914	3½ 3-speed	—	£56
" ..	1914	3½ 3-sp. sidecar ..	£65	—
Triumph ...	1914	4 3-sp. sidecar ..	£54	£55
" ...	1914	4 3-speed	£45	£44
" ...	1913	3½ 3-sp. sidecar ..	£42	£45
Williamson .	1914	8 2-sp. sidecar ..	—	£75
Zeoith	1914	6 Gradua sidecar	—	£63

Illegally Equipped Motor Cycles.

At Garstang the other day, four motor cyclists were fined £1 each for not having two independent brakes on their machines. It is up to manufacturers and agents to see that their machines are properly equipped to comply with legal requirements before sending them out.

The Zeppelin Raid.

It was a curious sight the other night, when the Zeppelins were over the London district, to see motor cycles and sidecar combinations proceeding without lights. This mostly happened when it was all over, and we actually saw a policeman tell a sidecarist to light up. This was well over an hour after the raiders had gone home.

A Death in the Dardanelles.

The Cork and District Motor Cycle Club may well be proud of its record in connection with the war. The proportion of its membership that has joined the Forces is quite as high as, if indeed it is not higher than, any similar organisation in the United Kingdom. All the motor cyclists attached to the 10th Division Signal Company were members of the club. Although a great many of the men who joined have already seen much active service both in France and the Dardanelles, it was not until last week that a death took place amongst them. W. J. McCann, a prominent member of the club and a well-known figure in Irish competitions, has died of dysentery in Gallipoli, where he was serving as a despatch rider. Another prominent member of the club, Lieut. Haynes, of the 6th Munsters, has been wounded at the Dardanelles, and is now in hospital at Oxford.

Hill-climb, Army v. Navy Motor Cyclists.

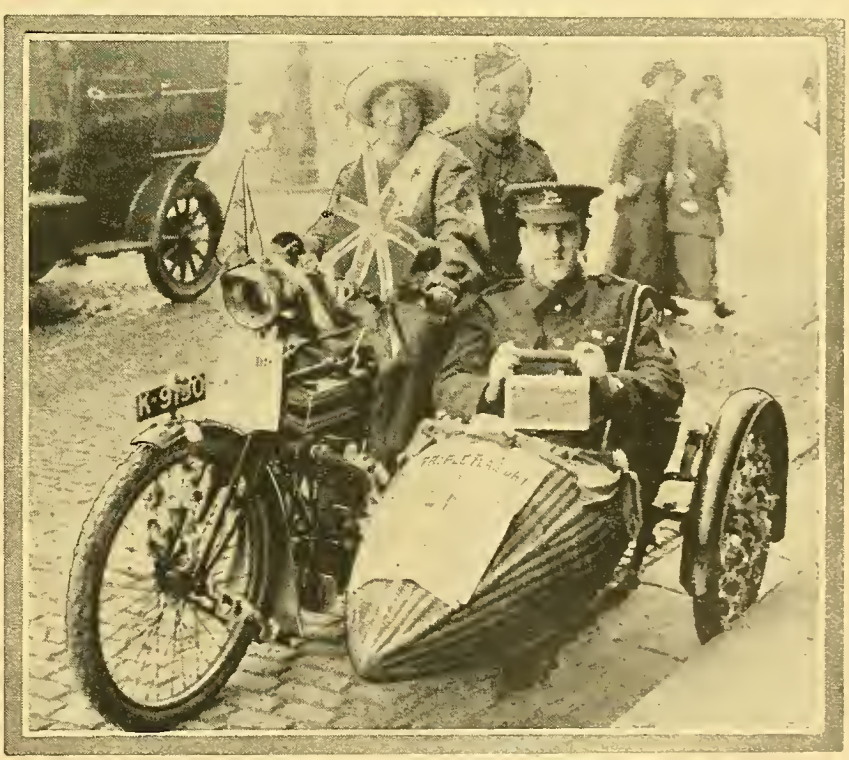
The complete regulations for the Army and Navy hill-climb on September 25th, organised by the Streatham and District M.C.C., were issued last week. There are ten classes, the first nine to be decided on *The Motor Cycle* formula, which is $\frac{C \times T^2}{W}$, whilst the other class will be decided on time.

Midland Section of the Fosseway.

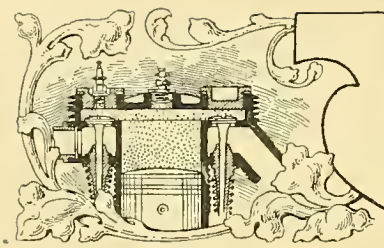
Last week-end we traversed the Fosseway between Leicester and Newark, and found that the road surface had, in common with most other roads throughout the country, considerably deteriorated in the last six months. The Leicestershire section was, as usual, by far the worst stretch, the Tarmac of the Notts end, withstanding its heavy traffic, in good style, yet showing signs of wear in many places.

Out-of-date Signposting in Leicester.

Any motorist desiring to travel North along the Fosseway may easily go wrong in Leicester, for when nearing the outskirts of the city there is an out of date signpost pointing to "Melton Mowbray and Grantham." This is the right road for Newark and Lincoln, and though the Fosseway has been in splendid order for two years, the authorities have still to think about erecting a proper sign. Incidentally, we should have thought that one of the local motor clubs would have brought about this necessary improvement. Not until one gets nearly to Syston is there any sign denoting the Fosseway to Lincoln, but on the Fosseway the signposting is excellent.

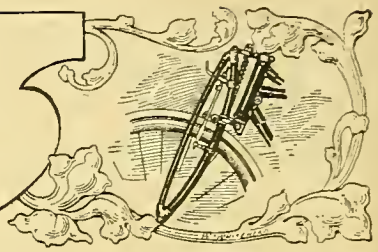


TRIPLE FLAG DAY IN LIVERPOOL.
A local sidecarist, Miss McNabb, does two kind actions at once—takes two wounded soldiers for an outing and collects for charities.



FAULT FINDING.

An Amusing Competition at the Front.



THE following account of a fault-finding competition, enjoyed by the despatch riders of the 2nd Division (in action) within a few miles of the fighting line, may be of interest to readers of *The Motor Cycle*.

It was decided that such a competition, besides providing much sport and amusement, would at the same time be of material value in making the competitors acquainted with intricacies of their mounts. Consequently the artificer had first of all a busy day in thinking out all the wily little dodges and traps imaginable.

Apparently, in England, at the present time, men training for despatch riding work are put through the mill in this respect as a part of their training. But most of the despatch riders of the 2nd Division have been right through the retreat from Mons and right through the war up to the present point and have not had this advantage, though it is undeniable that one and all are thoroughly efficient riders in spite of this. It would have been practically impossible to have held such a competition before the actual date, as the Division has been continually on the move. The C.O. readily gave his consent, and was quite keen on the result.

It appeared that nobody knew anything about the rules regulating such a competition, so it became necessary to draw up rules of our own. The competition as a matter of fact was decided on merit, comprising logical conclusion and coolness.

All the machines were 2¾ h.p. Douglases barring two Triumphs; below, unless otherwise stated, Douglas is assumed. The following is a list of the choicest faults with remarks.

Details of the Faults.

1 (K.B.R.)—Front cylinder exhaust valve fitted with rotten spring which had been heated red hot and all the temper removed, and one thickness of insulation tape passes round back cylinder inlet valve to prevent it from seating.

This competitor knew his machine so thoroughly that he suspected the inlet valve trouble; on inspecting the tappet clearance, he subsequently soon found the rotten spring.

2 (T.B.L.D.)—The high-tension wires to magneto crossed over so that both cylinders fired on induction stroke; also the jet choked up with silver paper.

The jet trouble was soon found, but the crossing over of the leads was a puzzler, and nearly caused this man to tamper with his timing.

3 (S.J.A.)—Induction pipe plugged up with rag, and one h.t. wire internally disconnected from carbon brush.

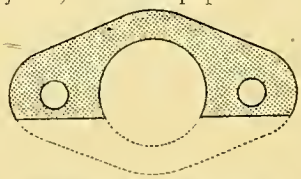
This man tried to get a spark at the plug which was out of action, and went straight to his magneto. Eventually he found the ignition trouble and attempted to start the bicycle with no result, at least for the time being.

4 (W.L.)—Carburetter air gauze completely bunged up so as to be unnoticeable unless held up to the light, also one plug shorted internally.

The plug was easily found, but the other was a teaser.

5 (W.R.)—Carburetter passage from jet to float chamber blocked (N.B.—There is no inspection hole on Douglas carburetters for this passage), and both h.t. wires disconnected internally from carbon brushes.

6 (H.B.)—Carburetter joint leaking air. (N.B.—these carburetters are attached by means of a flanged joint; the thin paper washers were removed from the joint and, instead, thick cardboard half washers inserted, so that the appearance was normal from the top, but there would be a gap if one lay on one's back and looked upwards from underneath.)



Cardboard washer cut away to admit air into induction pipe.

This gave a lot of trouble. If the carburetter were well flooded and the machine run hard with extra air lever shut it would give about twenty explosions and then cease. This unfortunate competitor probed about with a piece of copper wire, and found all the passages clear, eventually only finding the actual trouble at the last moment.

7 (N.W.)—Inlet valves not working at all, rockers having been entirely removed; also small trouble.

N.W. soon discovered the valve trouble and asked for the rockers, but was unfortunate enough to replace the timing wheel so that the wrong marks came together. Hence he had to dismantle again, and still found, much to his annoyance, that the machine was *hors de combat*. Occasion will be found to refer again to this competitor later.

8 (P.F.)—Magneto contact breaker internally shorted. (N.B.—The small central bolt which keeps the contact breaker on is insulated normally from the rear of contact breaker by small fibre bush which can be seen by peering down recess at back. This recess was plugged up with silver paper and the contact breaker screwed tight home.)

This was discovered, but it is a very neat little trick which would puzzle many experienced motor cyclists unless they know their contact breaker thoroughly, as the silver paper becomes part and parcel of the piece and has the appearance of being quite normal.

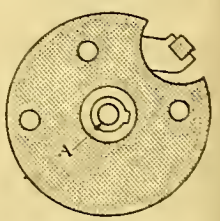


Diagram of back of contact breaker. "A" denotes point where silver paper washer was inserted.

Other competitors were J.B. and C.L., who had practically

MACKINTOSH OVERALLS
PURE PARA.

Pure Para Mackintosh Jacket.... Price, **36/9.**

Trouser Overalls, of finest quality. Price (without seat) .. .. **22/-.**

With seat, **26/3.**

These Overalls are made of the very best material, and the quality is unobtainable elsewhere.

In waterproof goods especially does it pay to use the best, because you are buying more pure rubber for every extra shilling you spend. The more rubber in a garment the longer it will keep waterproof.

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Dunhills Ltd.,

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2, Conduit St., W. **42, Lombard St., E.C.**

Manchester: 90-92, Cross Street. **Glasgow:** 72, St. Vincent Street.

BINKS
CARBURETTERS ON 2-STROKES

These grand little machines are wonderfully improved by fitting a Binks, it makes them **run slower without 4-stroking,** start easier and makes them tick over when in free, and greatly increases the mileage per gallon.

WHY NOT AT ONCE IMPROVE YOUR MACHINE.

I send on approval for 2 weeks' trial, and return your money, less examination fee, if you are not delighted with it.

TESTIMONIALS EVERY DAY.

"I have fitted the Carburetter and I find it does on my Allon 2-stroke 40 more miles to the gallon than with the carburetter sent out with the machine."

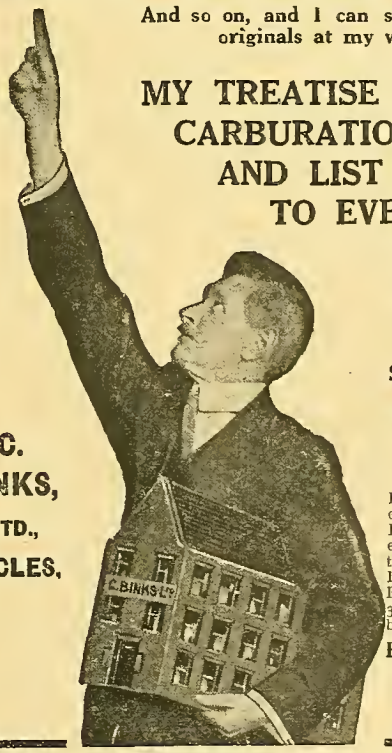
"I can now run at just half the speed without any 4-stroking. I am thoroughly satisfied."

"I have now got the jets right, and on my Calthorpe can do 115 miles to the gallon, and the power is marvellous."

"My machine is quite another thing since I fitted the Binks. Very little 4-stroking, 120 miles to the gallon, and terrific power."

"I have now got my Calthorpe to a fine state of perfection. It does 120 to the gallon with the hot air pipe, and runs very slow. The starting is marvellous. I can just sit on the saddle and give the machine a jerk forward and off she goes, and soon the speedometer is dithering between 35 to 40 miles an hour. If other Calthorpe riders get exactly the same Binks outfit as mine they will then have a machine that is practically perfect."

And so on, and I can show you the originals at my works.



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PRICE 49/-

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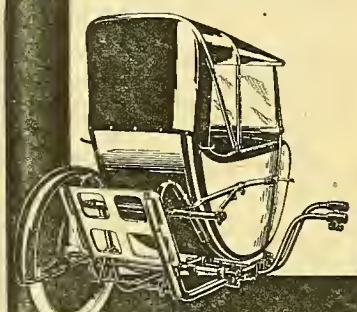
He used a BINKS.

Hercules

—the Sidecar the ladies love.

LOOK! the lovely springing, the folding luggage grid, the safe attachments are just perfect. That's the Sidecar I want—with the beautiful lines and adequate protection in all weathers and so comfortable. We will send for a catalogue to-night, study the specifications and the pictures and then we can decide just which model will suit us best. Here's the address—

The HERCULES CYCLE & MOTOR CO., LTD.,
Conybere St., Birmingham.



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ORDER NOW
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We have given up the manufacture of Motor Cycles, in order to cope with the huge orders for Forward Plugs and Belt Fasteners.

FORWARD MOTOR CO.,
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TO SKILLED ENGINEERS

Wanted Immediately

for munition work of the highest importance, large number of highly skilled men. Skilled men at present engaged on any work not required for the War are earnestly requested to make application at once to nearest Labour Exchange, mentioning this paper and No. A803.

The standard district rate will in all instances be paid, with bonus, and overtime. The average weekly earnings of similar men at present employed are very high.

TOOL SETTERS, for automatics, capstans, millers, spline millers, profilers, and small repetition work.

PRESS TOOL SETTERS, for large and small power and hand presses and drop stamp setters.

UNIVERSAL MILLERS for tool work, and to be trained as tool setters.

TOOLMAKERS, including tool turners, grinders, fitters, smiths and hardeners.

PRESS TOOL MAKERS.

TURNERS for shell production.

A suitable allowance towards the cost of removal to the district where employment will be given will, in certain cases, be made. Only highly skilled men are wanted and no man already engaged on War work should apply

ROYAL LEICESTER SIDECAR, No. 1.

12 Sidecars to clear at

£8 12 0

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First-class condition, complete with Moseley Tyre, and Couplings for all makes.

STOKES & HOLT, LTD.,
LEICESTER.

Fault Finding.—

repetitions of the previous troubles. Both used excellent methods of tracing their troubles throughout. There were other various faults, but the above gives the more outstanding ones.

Amusing Incidents.

Several amusing incidents occurred in connection with the competition which are worth recounting. For instance, before his machine had been tampered with one competitor put a minute blob of sealing wax on every joint, hoping that, if it escaped the detection of the unsuspecting artificer, it might help him to localise the fault.

Of course, the artificer twigged at once and wasn't long in breaking all the joints and then tampering with the machine (and piling on the trouble into the bargain) and finally arming himself with a similar piece of wax and going over the bicycle with fiendish glee and an eye to deception.

In all cases it was deemed advisable to throw dust into the eyes of competitors by throwing dust and mud on to parts which had been tampered with, and in some cases burring nuts and screws which had not. A few unwary birds were caught in traps like these.

And now I must narrate a little yarn against the artificer, that is myself. Being the principal adjudicator I was not normally a competitor, but after the first day's competition the fellows surprised me by bringing out my Triumph and coolly informing me that I was expected to locate the faults which they had put their heads together to impose upon my machine. Nothing loth, I commenced to attack the job surrounded by a ghastly mob and found, without more than a moment's delay, that I was getting no spark.

Having satisfied myself that it wasn't the plug, I was just going to set about the magneto when providentially I found a pin stuck through my high-tension wire and hidden well within the guiding tube. On attempting to start my engine on the stand, however, there was no result. I took a rough glance at the timing and found that all was well, and just for fun I again looked at my high-tension wire, and found the same pin had been stuck in again whilst I had been looking the other way. This caused great amusement, but the engine still wouldn't go when it had been removed. Various funny remarks were passed by the crowd, chiefly by N.W., who suggested that perhaps it was the lamp. This audacious fellow was due for the morrow's competition, hence I was able to take easy revenge by giving him a hard task. He who laughs last, laughs best.

A Problem for Readers.

The trial proceeded amid great amusement, albeit great disadvantage to myself, and I soon found the carburetter was all right, all passages being clear and petrol level correct, but still very little result.

I will put the trouble in the form of a problem:

Symptoms.—Good spark, timing correct throughout, plenty of compression, all carburetter passages clear, petrol level correct, throttle and air slides working, no carbon deposit in cylinder, petrol itself pure. Engine will go if throttle be opened fairly wide, but will not go slowly.

For anybody who possesses a 1914 Triumph this may prove a very neat little problem. I may say that it took me an hour or so to discover the trouble, and even then, though I say it to my own disadvantage, I had to be given a hint.

The prize was won by P.F., but K.B.R. and N.W. were good seconds. B.R.R.

DESPATCH RIDERS AT THE FRONT.

Reading from top to bottom the pictures show—(1) A despatch rider rounding a well-graded curve in pretty surroundings. (2) In a communication trench. (3) Despatch riders after a swim. (4) A fine stretch of road.

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Two-stroke Lubrication.

I have had some trouble with a 2½ h.p. two-stroke. It is very oily and smoky. The plug easily soots up. I changed a 28 jet for a 26, but it is no better, and now I can only give a very little air. Should I use less oil with the petrol or reduce the amount of the drip feed? I have so far followed the directions given, but once when I used petrol alone in the tank it ran particularly well.—R.E.F.

Surely if the engine is fitted with a drip feed lubrication system the petroil system is not needed, so we should say you can safely use petrol alone in the tank, and keep your drip feed running to a reasonable extent.

Petrol Consumption on a Two-stroke.

(1.) I have recently bought a two-stroke motor cycle fitted with Senspray carburetter, No. 30 jet. I get an average of about 70 to 80 m.p.g. I have tried both a 26 and 28 jet, but when I advance the air lever it immediately starts to backfire and slow down. With a 30 jet I can run with the air lever fully open and the throttle lever in the same position. (2.) I shall be glad to know how I can get a larger mileage per gallon, as I understand that I should get at least 100 m.p.g. I have a friend with a similar machine with a 28 jet who gets 120 m.p.g. I may also state that when travelling from 15 to 20 m.p.h. the engine fires like a four-stroke. How can I remedy this?—J.W.

(1.) There is no doubt that a 26 or 28 jet is too small, as you should be able to give a certain amount of air, at the same time improving the running. (2.) The difference in the miles per gallon between yours and your friend's machines may be due to the fact that he is a lighter weight than you; his machine may be geared more suitably, or it may be in better condition than yours. To get the best results, you should make sure the engine is in perfect order, piston and cylinder quite free from carbon, rings free, etc. Unfortunately, this habit of four-stroking is a fault from which many two-strokes suffer, especially when running light on down grades, etc. It is usually due to faulty carburation or choked exhaust. See *The Motor Cycle* for September 2nd, page 231.

Auto-wheel Taxes.

Is it necessary to take out a licence for an Auto-wheel? If so, what licences are necessary?—T.R.

Yes; you have to take out full motor cycle licences for an Auto-wheel. These will be: Local taxation licence, available until December 31st, 1915, and obtainable from any Post Office, £1; registration, obtainable from any county or borough council in the United Kingdom, 5s.; driving licence, obtainable from your local licensing authorities, 5s. An Auto-wheel attached to a pedal cycle is legally a motor bicycle.

Overheating and Loss of Power.

What is the cause of overheating and loss of power? I cannot open the throttle without causing misfiring. The rings seem all right, and I have ground the valves in. Would I be able to put a sidecar on my machine, a 3½ h.p. single-cylinder, with a multi-pulley attached?—B.B.

The trouble seems to be due to your using too large a jet. This would account for the overheating and loss of power, and the engine would choke when you opened the throttle. A variable pulley gear would be of some use to you, and would certainly be of assistance when you are using a sidecar, which the machine should pull quite well.

Chain Adjustment.

I have a 1914 two-speed clutch model Indian. (1.) When the machine is on the stand and the rear chain is removed, the back wheel revolves freely, but when the chain is replaced and the gear is in the neutral position I cannot spin the wheel more than half-way round. The gear box is adjusted correctly, and the chains are not too tight, so I think the clutch is too tightly adjusted. Can you tell me how to dismantle it, as two of the spindles on which the rollers revolve are loose on the back plate? (2.) What is meant by adjusting chains at the tight place? Should I measure the sag of chain at top or bottom, and what should this sag be in each chain? (3.) Kindly tell me how to alter carburetter to suit benzole.—WHITE ROSE.

(1.) The fact that you cannot spin the wheel freely with the chain on is probably merely due to the resistance of the grease in the gear box. To dismantle the clutch, it is only necessary to undo the four adjusting nuts, when all the plates can be withdrawn. (2.) To find a tight place, turn the wheel gently round, and note when the chain is least slack, then adjust the chain till it is not quite taut (there must be no strain on it). You will probably find an up and down play on the slack side of the chain when the wheel is turned. (3.) Use a slightly smaller jet, and place a small copper washer on the float to weight it, as benzole is heavier than petrol.

Too Strong a Mixture.

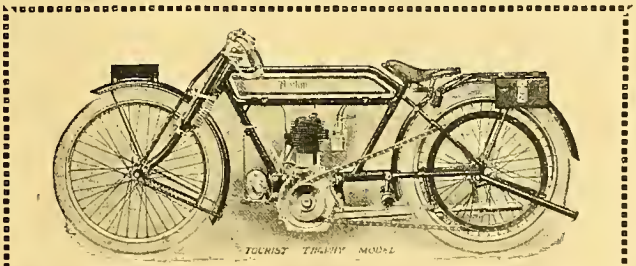
I have a 2¾ h.p. motor cycle, and have (1) difficulty (occasional) in starting. I often have to run the machine along the road for several hundred yards before I can get it to fire. The engine turns over all right, but there is no explosion, and when they do begin they are very irregular, first one in ten yards pushing, then two or three, but afterwards it gets regular. Injecting petrol is ineffective, also flooding the carburetter (a Senspray). The plug being changed makes no difference. The firing afterwards is perfect, and sometimes I am able to start right off easily. (2.) Up to 33 m.p.h. the engine is regular, but on opening out the throttle further (air full out) it misfires, and thus the increase does not give more speed. This gets more obvious as the throttle gets right open. (3.) I have run the machine 2,500 miles (it was cleaned internally at 2,000 miles), and now find I have to open wider for hills which formerly I could do on one-third throttle, and occasionally the engine gets very hot.—H.S.

(1.) Your trouble is most likely due to too rich a mixture. With this make of carburetter it is not advisable to flood it for starting, and if you have to at all do it very slightly. Simply depress the needle valve once or twice. (2.) The missing at speed is possibly due to the same cause. (3.) The cause of the engine overheating can probably be traced to the too rich mixture also. You should try a slightly smaller jet. An engine of this kind should be cleaned out and the valves ground in every 1,000 miles to obtain first-rate compression and thereby good running.

Norton

THE NORTON DOES IT AGAIN

at the **United Services Meeting** at **Brooklands,** and, as at the Khaki Meeting, carried off the PREMIER HONOURS, not only **WINNING** its own class **EASILY,** but also **FIRST PLACE in the UNLIMITED Class,** the little All-British NORTON of 490 c.c. **BEATING SEVERAL FOREIGN MACHINES** of 1,000 c.c., including special racers—ONE WITH PORTED CYLINDERS.



WHY GO ABROAD

for heavy, expensive, and complicated machines when the 490 c.c. SIMPLE SINGLE-CYLINDER NORTON GIVES MORE POWER AND SPEED AND NO TROUBLE.

Keep the Gold in England and buy a NORTON.

Write for Illustrated Catalogue:

NORTON MOTORS, LTD.,
Sampson Road North, Birmingham.
London: Bartlett & Co., The Parade, Kilburn.

HIGHEST QUALITY.

SECOND TO NONE.

Put *Your* Advertisement

in

THE MOTOR CYCLE

—and be *sure* of speedy and satisfactory results.

"Must be Hard to Beat."

"I may say your paper as an advertising medium must be hard to beat, as a single advertisement brought me thirteen replies for a free-engine wheel, which I disposed of. You may use this if you desire." HAROLD E. MONTEITH.
12, Gladstone Place, Stirling.

"Sold within half-an-hour."

"I should like to mention that a few weeks ago I advertised a second-hand machine in *The Motor Cycle* and had eighteen enquiries, and sold the motor within half-an-hour of the issue of your paper." F. J. MAW.
47, Skelton Road,
Forest Gate, London.

"A Shoal of Replies."

"One insertion in Miscellaneous column of *The Motor Cycle* brought a shoal of replies, and every article sold. We are unable to answer every one."
BARKER & CO.
Automobile Engineers,
Bradford Road, Huddersfield.

"Could have Sold Gear 40 times over."

"I deeply regret to disappoint Mr. —, but through the advert. (in *The Motor Cycle*) I could have sold gear about forty times over. Several wire money orders received, also cheques."
A. G. GARTON.
140, Porter Street, Hull.

"Each advert. a Great Success."

"I have had several advertisements in your paper, and each has been a great success. A short time ago I advertised an F.N. engine, and as a result spent quite a small fortune returning postal orders. It was sold by wire the day *The Motor Cycle* was published, and about six weeks afterwards I had an enquiry from India. One advertisement in *The Motor Cycle* is worth half-a-dozen in any other paper." JOHN W. WALKER.
Buchlyvie, Stirlingshire.

"Forty Answers."

"I was very pleased with the advert. in your paper, having had about forty answers." (Miss) D. JACKSON.
Fairfield, Birchington, Kent.

There is
NO DOUBT
as to the
SUPERIORITY
of
THE MOTOR CYCLE
for
Miscellaneous Advertisements

It is proved week by week that quicker and better results are obtained through this journal than any other medium. :: ::

Read
THE EVIDENCE
of
ADVERTISERS

¶ **This remarkable success of "The Motor Cycle" is attributable to the fact that it has the largest circulation of any paper of its kind and is read by the right sort of people.**

"Results of ad. Excellent."

"*Re* my advt. in *The Motor Cycle* of the 10th inst., No. 6839. Although the machine was sold before issue, I received through your paper thirty replies—some of these from York, Derby, Wilts, Hants, Dorset, Sheffield, Cardigan, etc. — and several callers, two of whom arrived at the same time, and were willing to bargain. I consider the results of advt. excellent." E. H. COLE.
4, De Castro Terrace, Canterbury.

"Undoubtedly IT."

"A fortnight ago I advertised a side car, which I sold the same morning as your paper came out; also a B.S.A. motor cycle, which I sold directly afterwards. I could have sold it five times over again. Your paper is undoubtedly IT." F. MERRIMAN.
"Highbury," Beech Tree Lane,
Cannock, Staffs.

"The Usual Success."

"Following the sale of my B.S.A. combination through the medium of your valuable paper, I advertised a cover and tube, and am pleased to say that the *usual success* was attained, same being sold next morning following day of issue. I was compelled to return several cheques and money orders." F. MERRIMAN.
Beech Tree Lane, Cannock, Staffs.

"Very pleased with result."

"I thought I would like to acquaint you with the success of my advertisement appearing in *The Motor Cycle*.
The same evening I received several calls; the second caller purchased machine at quite a satisfactory figure! You can guess I am very pleased with such a result, and more so as it is the second machine I have sold through your paper with similar dispatch."
EDWIN T. DEACON.
"Falconhurst," Blagdon Road,
New Malden.

N.B.—The rates for paragraph advertisements are given on page 30

Speed of 3½ h.p. Twin Machines.

I think of investing in a 3½ h.p. twin motor cycle. Can you tell me the greatest speed and the consumption of petrol?—A.W.K.

We should say that such a machine would be capable of fifty miles an hour, and that the consumption of petrol would be about eighty miles to the gallon.

Fitting a Larger Cylinder.

I have a 2½ h.p. two-stroke, 70×70 mm. If I fitted a new cylinder 75×70 mm., would the increase of power be appreciable, and would it upset the balance of the engine?—POWER.

The increased power would be appreciable, but the balance might be affected, as you would require a slightly larger piston. The engine could, however, be balanced by an expert to make up for this additional weight.

Fitting a Speedometer to a Bat.

I noticed in *The Motor Cycle* a paragraph on how to fit a speedometer to a Bat motor cycle front wheel. I have searched for this, but I cannot find the issue with it in. Would you kindly let me know how you fit one.—F.W.

There is no difficulty in fitting a speedometer to the Bat spring forks. The arm which supports the small gear wheel and cable mechanism is attached to the wheel spindle. You will find that the distance between the two gear wheels remains the same when fitted in this manner, but with this type of fork you will require a rather longer cable than with the Druid type. See page 163, *The Motor Cycle*, February 18th.

READERS' REPLIES.

Shorting in Wet Weather.

I have been troubled in the same manner as your correspondent "R.M.," and found, after experiencing numerous "shocks," that the cause of the trouble was a saturated rainproof coat, which was sufficiently long continually to catch the sparking plug. The rain, being a conductor, caused considerable short-circuiting.—J. E. HENSHAW.

No Compression in Front Cylinder.

"A.M." writes in your August 19th issue of *The Motor Cycle* about lost compression in the front cylinder of his 2¾ h.p. Douglas. I had the same trouble, and thought the leak was to the crank chamber, but after grinding the valves in very carefully, I find that the machine runs very well, and has got its full compression in both cylinders. The valves have now got a good bearing all round the seatings and the whole width.—G.F.C.

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"W.H.H." (Rudgwick).—Torogo two-speed gear for engines of 3½ to 5 h.p.

"W.B.L." (Ardrossan).—2¾ h.p. Douglas with sidecar. Speed, efficiency, and hill-climbing.

"J.P.M." (Glasgow).—Grado multi-pulley; also Oakley sidecar. Springing and comfort.

"J.E.W." (London).—3¾ h.p. Scott and sidecar. Reliability, ease of starting, hill-climbing, general efficiency, and upkeep.

A GROUP OF OFFICIALS AT THE BROOKLANDS UNITED SERVICES MOTOR CYCLE RACE MEETING.

Among the officers are Major D. F. Nicholl, Lieut. Neill (R.N.V.R.), Colonel Lloyd, and Dr. Low (Lieut. R.F.C.). Mr. Otto Thomas (chairman A.C.U.), of "The Motor Cycle," and Mr. T. W. Loughborough (secretary A.C.U.) are also among the group.

RECOMMENDED ROUTES.

PUTNEY TO FOLKESTONE, following the coast for a few miles.—T.J.D.L.

Putney Hill, Parkside, Wimbledon Common, Merton, Mitcham, Croydon, Addington, Farnborough, Sevenoaks, Tonbridge, Pembury, Goudhurst, Biddenden, Tenterden, Appledore, Romney, Dymchurch, Hythe, Sandgate, Folkestone.

TAVISTOCK TO CUCKFIELD.—H.C.B.

Tavistock, Two Bridges, Moretonhampstead, Exeter, Sidford, Colyford, Lyme Regis, Bridport, Dorchester, Bere Regis, Wimborne, Ringwood, Cadnam, Totton, Southampton, Fareham, Havant, Emsworth, Chichester, along the Arundel road to the Bull's Head Inn, Slindon, Whiteways, Houghton, Amberley, Storrington, Washington, Ashington, West Grinstead, Cowfold, Cuckfield.

BIRMINGHAM TO HANDFORTH.—H.R.S.

Birmingham, Sutton Coldfield, Lichfield, Weston, Stone, Trentham, Newcastle-under-Lyme, Red Bull, Congleton Alderley, Handforth. As far as we know, the roads are in fair condition and the journey could be easily done in a day.

WANTAGE TO WEYMOUTH.—C.H.A.

Wantage, Ashbury, Swindon, Avebury, Devizes, Westbury, Warminster, Shaftesbury, Blandford, Dorchester, Weymouth

LONDON TO PLYMOUTH.—A.L.G.

London, Kingston, Cobham, Ripley, Guildford, Hog's Back, Farnham, Alton, East Tisted, West Meon, Bishop's Waltham, Botley, West End, Bassett, Shirley, Totton, Cadnam, Ringwood Wimborne, Bere Regis, Dorchester, Bridport, Lyme Regis, Colyford, Sidford Exeter, Chudleigh, Ashburton, Ivybridge, Plymouth.

CHESTER TO NORWICH.—P.R.

Chester, Nantwich, Woore, Pipe Gate, Stone, Uttoxeter, Burton-on-Trent, Ashby-de-la-Zouch, Loughborough, Melton Mowbray, Oakham, Stamford, Market Deeping, Crowland, Wisbech, Downham Market, Swaffham, East Dereham, Norwich.

HENLEY TO WOLVERHAMPTON, avoiding the steepest hills, and distance.—E.B.

Henley, Nettlebed, Dorchester, Oxford, Woodstock, Enstone, Shipston-on-Stour, Stratford-on-Avon, Alcester, Crabb's Cross, Bromsgrove, Stourbridge, Kingswinford, Wolverhampton. The distance is approximately 100 miles.

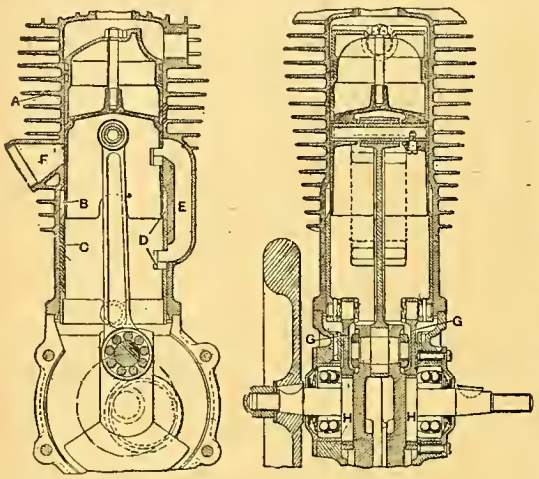
BIRMINGHAM TO EXMOUTH.—K.S.E.

Birmingham, Bromsgrove, Worcester, Tewkesbury, Gloucester, Stroud, Nailsworth, Bath, Radstock, Wells, Glastonbury, Durston, Taunton, Wellington, Cullompton, Exeter, Topsham, Exmouth, or Taunton, Blagdon, Churchingford, Honiton, Sidmouth, East Budleigh, Exmouth. The distance is approximately 180 miles. The latter route is likely to be more picturesque, but more hilly.

PATENTS BY ERIC W. WALFORD.

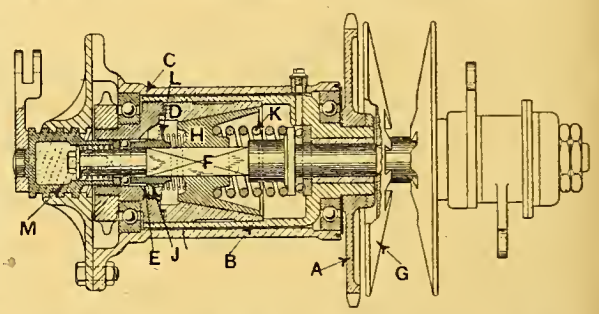
A Two-stroke Slide Valve Engine.

In the ordinary three-port type two-stroke engine, in which the exhaust port and transfer passage are both opened when the piston reaches the bottom of its stroke, the best results are not obtained owing to the pressure of the exhaust gases remaining in the cylinder when the transfer passage admits the fresh charge. Further, induction of the fresh charge into the crank case takes place only during a brief period when the piston is near the top of its stroke, so that complete filling of the crank chamber is not obtained. To overcome these defects, the present invention introduces a sleeve valve, which controls the opening and closing of the inlet port and transfer port, so that improved positioning and timing of these ports is obtained. The cylinder A is slightly enlarged in bore, as shown at B, to receive the sliding sleeve valve C. This valve is formed with two sets of ports, one of which (not illustrated) controls the admission of gas to the crank chamber, and this port is so arranged that induction takes place during a considerable part of the up stroke of the piston, ensuring an ample charge. The other set of ports is shown at D, and acts to open the transfer passage E after the exhaust port F has been uncovered a suitable time by the top of the piston. The sleeve C is reciprocated by a pair of rods G mounted around eccentrics H carried by the engine shaft, the angle of eccentricity being arranged to effect the port openings at the desired times.—The Enfield Cycle Co., Ltd., and F. W. Smith, No. 8,418, 1914.



A Zenith Clutch Improvement.

This is a combined friction and positive clutch, and has been designed for use with the Zenith countershaft variable gear. The chain sprocket A, which is driven from the engine, is carried upon a sleeve B adapted to rotate in a casing C. This sleeve carries an internal cone clutch member D, and also clutch dogs E. Passing through the sleeve B is the driven shaft F, to which is connected belt pulley G. Upon the shaft F is arranged, free to slide but not to rotate, the external friction cone H, together with a dog clutch part J. The friction cone is pressed into engagement by a strong spring K, whilst the light spring L exerts pressure on the dog clutch J. A quick thread actuating device M works through the casing A, and first meets with the positive clutch J, pressing this out of engagement. Further movement brings the clutch J into contact with the clutch cone H, releasing this. Conversely, on re-engagement the cone clutch first operates, after which further movement allows engagement of the positive clutch. —F. W. Barnes, No. 15,747, 1913.



The Royal Ruby Works.

Visitors to Manchester, whether riders of Royal Rubies or not, are invited to pay a visit to the Royal Ruby Works and inspect the processes of manufacture.

Bowden Wire Factory.

Messrs. Bowden Wire, Ltd., have found their business increase so largely that the capacity of their three factories is inadequate for their needs. They are, therefore, constructing a new factory near Willesden Junction, which, it is to be hoped, will be in full swing before Christmas.

Our Bookshelf.

"The Irish Motor Dictionary." W. Tempest. The Dundalgan Press, Dundalk. 1s. We are in receipt of the 1915-16 issue of this useful book. The early part contains a good deal of information of value to the motorist, while the major portion is devoted to a list of owners of motor vehicles in Ireland, giving the registration numbers, the owners' names and addresses, and a reference as to whether the vehicle is a car or a motor cycle.

"The War, 1914-15: Mentioned in Despatches. Part I., from August, 1914, to June 11th, 1915." 1s. *The Army and Navy Gazette*, 22, Essex Street, Strand, W.C. This book is one which should be in the hands of every patriot. It is exceedingly comforting to possess a record of the brave deeds of our officers and men, so clearly set forth as is the case in this publication. A careful perusal of the numerous honours and rewards contained in the book discloses the names of many old motor cyclist friends, who have gained distinction in the service of their country while still pursuing the pastime to which we are all so deeply devoted.

SPARKLETS

The Mex Motor Spirit Map of the River Thames (1s.). The Bowring Petroleum Co., Ltd., Finsbury Court, Finsbury Pavement, E.C. The map shows in thirty-two sectional plates the river from London Bridge to its source, together with roads and railways in the adjacent country. In the appendix are given an extract of byelaws affecting petrol launches on the Thames, a synopsis of the rules of the river, and some information concerning Mex motor spirit. The map is well printed and clear, and should be useful to motor cyclists.

Messrs. Gall and Inglis have lately brought out a map entitled "The Graded Map of West Yorkshire," which may be obtained from our publishers, price 1s. 6d. By an ingenious system of colouring, the relative values of the different roads are shown, and in the hilly country, or in the industrial districts near Leeds, the motorist may pick out in a moment the best road between two points. Black triangles show where severe hills are encountered, purple lines show where there are tramlines, yellow lines fast roads, and blue lines those roads which are exceedingly rough and hardly worth traversing.

Souvenir of the King's Visit.

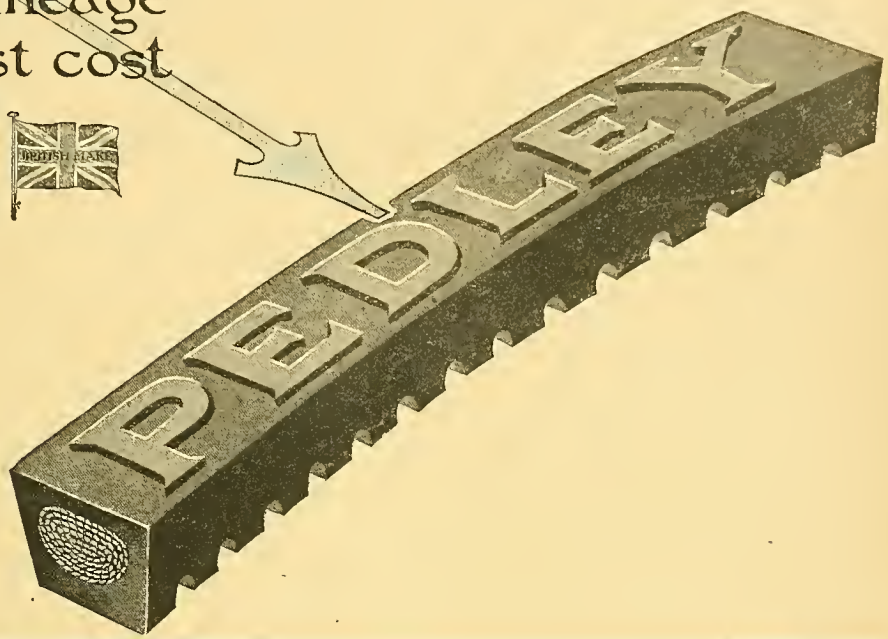
We have received from the Birmingham Small Arms Co. an illustrated souvenir of His Majesty King George's visit to the B.S.A. Works, Small Heath. A copy of this souvenir, which contains an actual photograph of the King and a facsimile of his autograph, has been presented to every employee.

A Novelty in Guarantees.

The Harley-Davidson Motor Co. have forwarded to us a copy of their late season catalogue for 1915, which contains descriptions of the various models, together with the two and three-speed gears and other details. The Harley-Davidson guarantee has now been extended to one year, provided that the registration card is duly signed and forwarded to the company, but the guarantee for sidecars is limited to use with the Harley-Davidson sidecar chassis.

The name guarantees the greatest mileage at the least cost

THAT'S THE MARK.



Art list gratis.
J. PEDLEY & SON, LTD.,
Gt. Charles Street, BIRMINGHAM.
London: 30, Holywell Lane, E.C.

Harman

WAKEFIELD
CASTROL
MOTOR 'C' OIL

Best for Two Strokes

C.C. WAKEFIELD & Co.
WAKEFIELD HOUSE
CHEAPSIDE, E.C.

LODGE
PLUGS

¶ In spite of increased price of raw materials, there is

NO ADVANCE IN PRICE.

Standard Model
(packed in sealed red metal box)
as sold by all dealers,

4/-

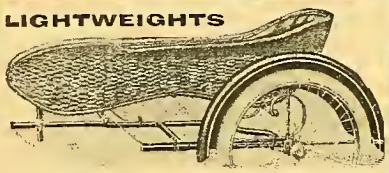
List price clearly marked on every box
REFUSE TO PAY MORE.

BRITISH MADE.

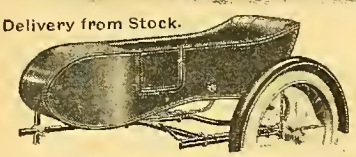
THE LODGE SPARKING PLUG CO., LTD.,
BIRMINGHAM and RUGBY.

FITSU
ALL BRITISH

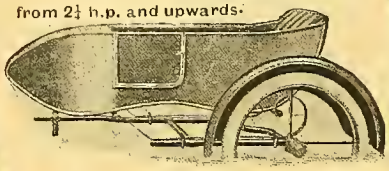
LIGHTWEIGHTS



Delivery from Stock.



TO SUIT ANY MOTOR CYCLE.
from 2¼ h.p. and upwards.



SCALA HOUSE, 45, SMALLBROOK ST.,
BIRMINGHAM.

SIDECARS

PETROL and OIL TANKS

We specialise in highest grade tanks of every description, best workmanship and material, satisfaction guaranteed.

Every tank tested under pressure before leaving our works. **PRICE, FROM 15/-.** Ask for booklet, post free. **Trade Enquiries Specially Invited.**

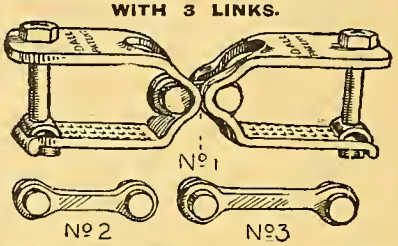
A. GREEN & Co., 56-60, Chapel Street, Salford, MANCHESTER.
Telephone: 2101 Ceotral.

THE HOUSING OF THE MOTOR CYCLE.

Quality and Cheapness Combined.
Guaranteed Weather-proof. Made in sections to bolt together. Illustrated Catalogue Post Free. Telephone: Putney 785, or call and inspect.

South Western Timber Co., High Street, FULHAM, S.W.

DALL Belt Fasteners
WITH 3 LINKS.



Cost only 1/3, and there is no better at any price. Obtainable everywhere, and worth insisting on. Made in three sizes. They are reliable, simple, safe, and sensible.

An appreciative user writes:
Cavalry Barracks, Canterbury,
7th March, 1915.
Mr. C. O. Parker would be obliged if Messrs. J. B. Dall will send him to the above address one ¾in. Dall Belt Fastener, for which he encloses 1/3.
Mr. Parker has found the Dall Fastener quite the best on the market.

Of all Agents.

DALL, Ladybank, Fife.

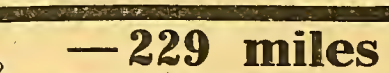
OVERALLS MADE BY A PRACTICAL RIDER

Are the most satisfactory, because the man who rides knows what is wanted

My Overalls praised by every user, splendidly made, contain improvements not found in other makes. Improvements tried out on the road, and perfected during ten years motor cycling experience, after long tests of different styles of cut and qualities of material. A motor cycling suit that gives absolutely complete satisfaction always.
The price for complete Suit from - 35s.
Competes with prices asked by others for lower grade productions without my improvements. And I sell only dependable goods. Read all about these overalls in my booklet. Write for a copy. It will solve your clothing problems.—Irvine Smith.

MOSLEY & SMITH
Buttershaw, Bradford.

"Willbro" Silencer Extension
FITS ANY MAKE OF MOTOR CYCLE.
(Reg.)



BRADBURY PATTERN.
EFFICIENT, NEAT, & EASILY FITTED.
Carr. 10 6 paid.
WILLMOTT'S MOTORIES, NORWICH.

FLYING MEN
can obtain commissions in the R.F.C. & R.N.A.S.
It is worth your while to
LEARN TO FLY
AT THE
RUFFY-BAUMANN
SCHOOL OF FLYING.
Write to Dept. B—
London Aerodrome, Hendon, N.W. 'Phone: 151, Kingsbury.
&
KENDALL'S MEWS, Portman Square, W. 'Phone: 5046 Mayfair.

NOTE THIS **WE GUARANTEE** ALL PETROL TANKS MADE BY US OF EVERY DESCRIPTION

Circulation and Results.

¶ You get best results from advertisements in "The Motor Cycle" because it has the largest circulation of any paper of its kind, and is read by the right sort of people.

TRY IT!

Velocette
A REAL MOTORCYCLE IN MINIATURE
F.W.W.

—229 miles per gallon!

That's the official mileage obtained by Mr. T. Searell on a "Velocette" in the Tasmanian A.C. Petrol Consumption Test—a remarkable record in petrol economy. He also obtained 217 m.p.g. against a strong head wind, over the same course.

GRIMSBY HILL CLIMB, 350 c.c. Class.—This was WON by Mr. C. H. Jennison on the little "VELOCETTE" of 220 c.c.

VELOCE Ltd., Fleet St., Birmingham.

ROSCO CYLINDER BLACK.
PRESERVES YOUR CYLINDERS.
Tins, 6d. Withstands Heat. Post free, 7½d.

Sole Manufacturers:
OWEN BROS., HULL, Eng.

THE
AUTOMOBILE ENGINEER
For Designers, Draughtsmen, Works Managers, etc.
Monthly (SECOND THURSDAY) Sixpence Net.

MOTOR CYCLES FOR SALE.

Auto-Wheels.

AUTO-WHEEL, 1914, £9/10, perfect.—18, Belle Vue Gardens, Clapham Rd., Stockwell, S.W. [2557

WALL Auto-Wheel and Gent.'s Cycle, perfect order; £10/10.—15, Grove Rd., Acton, W. [2728

AUTO-WHEEL, 1914½, shock absorber fitted, very little used, perfect; £9/10.—19, Stockwell Park Crescent, S.W. [2466

WALL Auto-Wheel, second-hand, perfect order, overhauled by makers; £10.—Seen at 248, Bishopsgate, London, E.C. [9128

Bat.

BAT and Sidecar, 3½h.p., free engine; £14/10.—Speechley's, 45, Church Rd., Acton. [2672

BAT-J.A.P. 1913 2-speed Coach Combination; £50.—Lamb's, 151, High St., Walthamstow. [2560

BAT, 3¾h.p., good working order, fast, Druid forks, new belt; 10 gns.—69, Garden St., Groves, York. [2778

5-6h.p. Bat-Jap, sidecar, spring frame, 2-speed, free, new tyres, accessories; £33.—Marks, College Slip, Bromley, Kent. [2604

B.A.T., 1914, 6h.p., 3-speed Armstrong gear, painted grey, in good condition throughout; £45.—P. J. Evans, John Bright St., Birmingham. [2653

1909 Bat-Jap, good condition, 6h.p. twin, mag., new carburetter, £18, or near offer; owner getting lightweight.—E. S. Humphrey, Walberton, Arundel, Sussex. [X6795

BAT, 1913, 8h.p J.A.P., 1914 model, 2 speeds, clutch, kick starter, spring frame, large Millford sidecar, good tyres; £52.—Channell, Dutton, Walton-on-Thames. [2606

BAT, 5-6h.p., 1913, 3-speed, h.b.c. clutch, spring frame, F.R.S. lamp, speedometer, horn, wicker sidecar; £50.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [2436

BAT-J.A.P., 4h.p., P. and M. 2-speed gear, 1913 machine, nearly new condition; £27/10.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [2585

BAT, 1915 model 2C, new, 7-8h.p., complete with Bat sidecar, Lucas lighting set, etc., just delivered; £113.—Full particulars from Morrison Bros., Balcarres and Bruce Streets, Edinburgh. [2447

Bradbury.

3½h.p. Bradbury, good running order; price £9.—10, Amity Grove, Raynes Park, Wimbledon. [X6794

2¾h.p. Bradbury, excellent condition; £14, or nearest offer.—J. Brayshay, 53, Green Rd., Colne, Lancs. [X6807

BRADBURY, 3-speed, very fast; bargain, £27; trial.—13, Charlesworth Av., New Basford, Nottingham. [X6893

BRADBURY, 1911, 3½h.p., clutch model; £16/16.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [2595

1914 Bradbury 6h.p. Combination, fully equipped, new condition; £65.—27, Peperharow Rd., Godalming. [2673

1912 Bradbury, 3½h.p., 2-speed, wicker sidecar; £37/10; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0726

BRADBURY, 3½h.p., 2-speed, free engine, in good running order; £22.—The Heywood Motor Co., Queen St., Heywood. [X6705

BRADBURY, 4h.p., 1912, 2-speed N.S.U. gear, engine just overhauled, new tyres; bargain, £26/10.—Holland, Earlsdon, Coventry. [X7032

1911½ Bradbury, 4h.p., new free engine, 2⅜in. new tyres, Badcock's by-pass, fine condition; £23/10.—Naylor, 10, King Richard St., Coventry. [X6857

4h.p. 3-speed Bradbury and Gloria cane sidecar, new speedometer, and back tyre; £55, or near offer, cost £90 1914.—Pearson, 46, Gerald Rd., Bournemouth. [X6728

BRADBURY Combination, 1914, 6h.p., 3-speed, chain drive, coachbuilt sidecar, hood, screen, everything in splendid condition; £60.—George Wray, Virginia St., Southport. [X6378

BRADBURY, 4h.p., 1913½, cane sidecar, Sturmey-Archer 3-speed gear, 3 head lamps, tyres good, done about 3,500; £40, or offer.—Eric Barton and Co., Shepperton-on-Thames. [2485

BRADBURY 1913 4h.p. Combinntion, 2-speed and clutch, Bosch, 2 new Dunlops, spare belt and tube, all accessories, powerful and reliable; £33.—Gilbert, 18, Dunstable Rd., Luton. [2555

BRADBURY, 3½h.p., 3-speed, countershaft gear, entire chain drive; £32; with Millford sidecar £37, accessories included; any trial.—Colmore Depot, Colmore Row, Birmingham. [X7013

1913 Bradbury, 4h.p., 2-speed, Villiers clutch, speedometer, lamps, new rear tyre, thoroughly overhauled, with enclosed side entrance wicker new sidecar; £30.—H. Green, Bengeo, Hertford [2475

BRADBURY, late 1913, 4h.p., coachbuilt combination, 3-speed, clutch, kick-start, Palmer tyres, accessories, all in new condition; £40, nearest offer.—Colwyn, Shirley Park Rd., Addiscombe, Croydon. [2759

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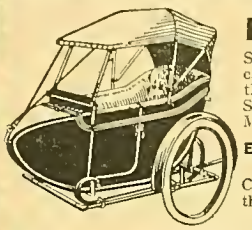

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1913¾ Bradbury, 4h.p., free engine, and 2-speed gear, with Montgomery art cane sidecar, speedometer, horn, lamps, tools, engine thoroughly overhauled, in perfect condition throughout; accept £35.—24, Lakehouse Rd., Wanstead. [2572

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BROWN, 3½h.p., good order, Dunlop belt and tyres, accessories; £12.—76, Shirland Rd., Paddington. [2531

BROWN, 3½h.p., 2-speed, free engine, mag., perfect, B. and B. carburetter; £12.—Box 9,261, *The Motor Cycle* Offices, Coventry. [X6779

BROWN 1914 3½h.p. Motor Cycle, with cane sidecar, Sturmey-Archer 3-speed, Bosch mag., spare tyre, tube, bell, etc., 2 lamps, condition as new; £37/10.—Phillips, 95, Heath St., Hampstead, N.W. [X6933

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B.S.A., 1912, 3½h.p., free engine, lamps, tools, excellent condition; £27.—Crawford Garage, Nottingham. [X6920

B.S.A., 1914, countershaft, 3-speed, sidecar, chain-cum-belt, speedometer.—Moat, High St., Normanton. [X6884

LATE 1913 B.S.A., 3½h.p., F.E., accessories, good reliable machine; £35.—Musgrove, Longtown, Cumberland. [X6998

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B.S.A., clutch model, 1912½, condition like new, lamp and accessories; bargain, £27.—64, Mill Lane, Brixton Hill. [X6842

B.S.A., 1914, 4h.p., chain drive, 3-speed countershaft, Miller lamp, Jones speedometer; £47.—133, Westfield Rd., West Ealing. [2691

1913 B.S.A., 2 speeds, combination, new tyres, belt, excellent condition, all accessories; a bargain, £40.—Whittle, Cinderford, Glos. [2481

B.S.A., 1913, Millford sidecar, all accessories, perfect condition, used Sundays only; any trial; £38/10.—Mason, 31, Glenelg Rd., Brixton. [X6936

1915 B.S.A., 4¼h.p., model H, in stock, 60 gns.; also 1915 B.S.A., model H, little used, £60.—Freeman, 50, Brighton Rd., Redhill. [X6846

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B.S.A., late 1914, 4½h.p., model H, chain drive, 3-speed countershaft gear, kick starter, Palmer cord tyres, accessories, lovely condition; £45.—Moss, Wem. [X6887

B.S.A. Motor Cycle, free engine, 3½h.p., 1912 model, lately overhauled by makers, in good running condition; £30.—Calder, Billie Mains, Chirnside, Berwickshire. [X6715

B.S.A., 1915, 4¼h.p., countershaft 3-speed, chain drive, as new, not done 200 miles; £55, or with £17 Bramble sidecar, £67 combination.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [2435

B.S.A., 3½h.p., free engine, 2-speed, Cowey speedometer, Lucas rear and head lamps and horn; £38; Canoelet sidecar; any trial by appointment.—125, Hednesford Rd., Heath Hayes, Cannock. [X6767

1915 B.S.A., 3 speed, chain-cum-belt, Dunlop tyres, Lucas horn, back lamp, and generator, not scratched, honestly only done 180 miles; cost £54, lowest.—Seen, 223, High Rd., Kilburn, N.W. [2704

B.S.A., 1912, 3½h.p., belt drive, 2-speed gear and free engine, Kempshall heavy tyres, accessories, engine overhauled by makers last week, now as new, £35; Montgomery coachbuilt sidecar for ditto, £5.—Moss, Wem. [X6888

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B.S.A., 1914, 4h.p., 3-speed, countershaft gear, kick starter, Canoelet sidecar to match costing £15/15, Lucas horn, Smith's speedometer, most careful use, splendid climber, whole outfit in excellent condition, run 2,100; £58.—S. C. Salter, Pennsylvania, Aldershot. [X6778

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B.S.A., 3½h.p., 1913, new 1914 coachbuilt sidecar, luggage carrier, Dunlop extra heavy tyres, Brooks saddle, new Dunlop belt, spare belt, plug, valves, etc., P. and H. lamps, horn, exhaust whistle, carefully used, low mileage; £45.—Highfield, Pattens Lane, Rochester, Kent. [X6755

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CALCOTT, 2¼h.p., 3-speed, Sturmey-Archer, F.E., Pedley new back tyre, re-tread front, Bates, Xl-All saddle, belt, new lamp, generator, tools, in good running order, cash wanted; £30.—Box 9,265, *The Motor Cycle* Offices, Coventry. (D) [X6847

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1914 Calthorpe Junior, 2-speed, splendid condition; £15.—6, Queen's Rd., Ilford. [2630

CALTHORPE Junior, 2-speed, in splendid condition; £18/5.—H. Hall, Woodbrooke Av., Hyde. [X6364

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CALTHORPE, 2-speed, good appearance, and running order; £16/10.—Millard's Cycles, Guernsey. [2745

CALTHORPE, 1915, 2-stroke, 2-speed, lamps, horn; bargain, best offer over £27.—Walsh, Felsted, Essex. [X6902

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1913 Calthorpe, 4¼h.p., 2-speed, in perfect condition, with Gloria No. 1 sidecar; £36.—Hicking, 137, Steade Rd., Sheffield. (D) [X6752

CALTHORPE-J.A.P., 1915, 2¾h.p., 2-speed, all accessories, condition as new; 30 gns., bargain.—52, Gaskarth Rd., Balham. [2739

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CALTHORPE, 1915, J.A.P., Enfield 2-speed, just arrived from works; immediate delivery; £36/15.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [2454

CALTHORPE Coachbuilt Combination, 1914, 4¼h.p., countershaft gear, kick start, chain-cum-belt, powerful, smart, and reliable turnout; £46; after 6.—10, Tanza Rd., Hampstead. [2788

1915 Calthorpe-J.A.P., 2-speed and clutch, £34/15; also 2¼h.p. 2-stroke, 2-speed, 35 gns.; delivery from stock; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6409

CALTHORPE Junior, 2h.p. Precision engine, 2 speeds, go anywhere and back, very easy to handle, condition as new, bargain £24; wanted, sidecar lot.—Cox, 85, Church Rd., Willesden. [X6994

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CLYNO, 6h.p., and coach sidecar, speedometer, lamps, horn, fine condition, owner bought car; £42.—Leighton's, opposite Wood Green Station. [2597

1912 Clyno, coach sidecar, Jones speedometer, Lucas lamps, horn, perfect condition, overhauled by makers July; £39.—Howson, Draper, Ewood, Blackburn. [2536

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CLYNO 1914 6h.p. Combination, coachbuilt, splendid climber, also speedometer, spare wheel, 3 new covers, 3 lamps, 2 inner tubes, tools, etc., fine condition; £75, or nearest offer.—Fowler, 319, Oxford Rd., Reading. [2608

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1912 2-speed F.E. Douglas, excellent condition, spares; £30.—Payne, Selukwe, Horsham. [X6816

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DOUGLAS, 1914, 2¾h.p., 2-speed, clutch, kick starter, perfect; £45.—Pigot-Disney, E. Molesey, Surrey. [2544

DOUGLAS, 1913, T.T., 2-speed, lamp, horn, excellent condition; £32/10.—59, Banbury Rd., Oxford. [X6853

DOUGLAS, 1910, very fast, and excellent condition; £20.—Norton, Larchwood, Crawley Down, Sussex. [X6955

1911 Douglas, new Dunlop, accessories, pan saddle; £18.—Gerring, 109, Norse Rd., Scotstoun, Glasgow. [X6648

DOUGLAS, 1914, 2¾h.p., 2-speed, horn, speedometer, T.T. and touring bars; £44.—Barrow, New St., Lancaster. [X6730

DOUGLAS.—Immediate delivery model V; first cheque secures.—Colmore Depot, 261, Deansgate, Manchester. [2519

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DOUGLAS, 1914, T.T., as new, £42; 1913, £32; 2 1912, 28 and £26.—Percy and Co., 337, Euston Rd., London. [2767

DOUGLAS, new 1915, model V, just arrived from makers; £48, plus 5%.—Lloyd and Son, Douglas Agents, Lewes. [2321

DOUGLAS 1913 and 1914 second-hand machines in stock, £28 to £43.—Turpins, 22 and 29, Preston Rd., Brighton. [0716

DOUGLAS, 2¾h.p., 1915, Colonial, 3-speed, as new; £45.—Newbury, 159, Conway Rd., Southgate, London, N. 'Phone. [2533

1911 Douglas, recently overhauled, excellent condition new tyres, spares; £17/10.—Frank Davies, New St., Wellington, Salop. [X6951

DOUGLAS, 1914, model U, 2¾h.p., 2-speed, perfect new Dunlop; £41.—Underwood, 92, Great Russel St., New Oxford St., W.C. [2701

DOUGLAS, 1915, immediate delivery any 2¾h.p model, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [9205

DOUGLAS, 1915, 2¾h.p., 2-speed, T.T. model, condition as new; £45.—The Premier Motor Co Aston Rd., Birmingham. [2801

MOTOR CYCLES FOR SALE.

Harley-Davidson.

HARLEY-DAVIDSON, model 11 J, 7-9h.p., 3-speed, with electric dynamo lighting outfit and electric horn, fitted with special Gloria sidecar, the finest combination on the road; £97/13 complete; immediate delivery.—The Premier Motor Co., Aston Rd., Birmingham. [1922

HARLEY-DAVIDSON, 1915, model 11J, 3-speed, electric lighting and horn, ordinary horn in addition, Stewart speedometer, Swan de Luxe sidecar, with apron and wind screen to match, run about 1,000 miles, condition perfect; owner under orders; £90.—Captain Blackwood, Barracks, Lincoln. [2554

HARLEY-DAVIDSON Motor Cycles, the machines with the 12 months' guarantee.—Every model in stock for immediate delivery. Exchanges or easy payments arranged.—Sole Distributers and Service Depot for the counties of Warwickshire, Worcestershire, Staffordshire, Salop, and Hereford, The Premier Motor Co., Aston Rd., Birmingham. [1923

HARLEY-DAVIDSONS.—The motor cycles with the real guarantee. Immediate delivery of all the popular models of the Silent Grey Fellow. Prices from £52. Sidecars in stock to match. We are the wholesale distributers for Lancashire (except Barrow district), and Cheshire, and want a few real "live" agents, where not yet represented. Agents, get into touch with us. We have a most interesting proposition for you.—The Colmore Depot, 31, Renshaw St., Liverpool, and 261, Deansgate, Manchester. [2473

Hazlewood.

HAZLEWOOD, 1914, 2¾h.p., free engine, 3-speed, perfect running order; £20.—Edgell, Stanhope Place, Sheepscar, Leeds. [X6707

1915 Hazlewood, 60 gn. model, 4h.p. J.A.P. engine, 3-speed bottom bracket gear, lamp, speedometer, horn, rear lamp, finished black grey gold, been under 1,000, car gears, stand any usage, guaranteed perfect, unscratched; 49 gns.—2nd Lieut. Everard, Claremont, Headlands, Kettering. [2679

Henderson.

HENDERSON, 1915, ridden 750 miles, machine and tyres as new, perfect condition; £65.—Box 9,194, *The Motor Cycle* Offices, Coventry. [X5689

Hobart.

HOBART.—New models in stock.—Frank Bannister, Railway St., Chatham. [2493

HOBART, 1915 countershaft 2 speeds, new; £34.—7, Surbiton Rd., Kingston. [2753

HOBART, 2¼h.p., 1915, in excellent condition; £19.—H. Brocklehurst, Broadhurst, New Mills, near Stockport. [X6381

Humber.

HUMBER 1913 2-speed free engine, handle starting, and sidecar; £30.—29, St. Leonard's St., Bow. [2674

HUMBER, late 1911, 3½h.p., 2-speed, sidecar, spares, good condition; £26.—Nobbs, Saudleford, Bramber Rd., N. Finchley. [X6860

HUMBER, 3½h.p., 2-speed, free engine, chain drive, new tyres, with sidecar; £16, or separate.—49, Estcourt Rd., Woodside, S. Norwood. [2791

1915 Humber, 3½h.p., 3-speed, Millford sidecar, bought July, speedometer, all accessories; bargain, £65.—Kendall, Glengowan, Thames Dutton. [2460

HUMBER, 1913, 3-speed, Clincher tyres, Dunlop belt, B170 saddle, Powell and Haumer lamp, Jones speedometer, horn; £35.—Robinson's Garage, Green St., Cambridge. [0612

HUMBER, 1911, 3½h.p., 2-speed, F.E., handle starting, excellent condition, P. and H. lamp, rear lamp, spare belt, 1914 Watsonian light sidecar, recently overhauled; £28.—W.D., 10, Hart Gardens, Dorking, Surrey. [2696

HUMBER Lightweight, 2h.p., new tank, complete, new Brooks padded saddle, new Osborne variable gear, new belt, 2 others, good tyres, engine just overhauled; £17, no offers.—Venton, Cullifford Rd., Dorchester. [X6718

Indian.

INDIANS.—New models in stock.—Frank Bannister, Railway St., Chatham. [2490

1914¾ Indian and sidecar, 7-9h.p., perfect condition; 60 gns.—Thomson, Cowgate, Peterborough. [X6739

INDIAN 1914 Combination, 7-9h.p., 2-speed, electric equipment; £57/10, bargain.—52, Gray's Inn Rd. [2724

INDIAN 1911 5-6h.p. Clutch Model, blue finish, sidecar to match, good running order; £25, bargain.—Moss, Wem. [X6891

7-9h.p. Red Indian and Montgomery sidecar, electric lighting; £55.—Morgan and Maxwell, 80, High Rd., Streatham. [X6239

INDIANS.—Your mount taken in part payment for one of these splendid machines, liberal exchanges.—Ideal Cycle Co., Thundersley, Essex. [2694

1914 Indian 7-9h.p., 2-speed, spring frame, electrically equipped with 16 gn. Millford sidecar, new condition, and tyres; £60.—F.A., 104, Woodside, Wimbledon. [2464

INDIAN.—Delivery of all 1915 models from stock. We are large contracting agents for these machines, and can offer best deliveries.—The Morris Garages, Oxford. [X6945

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1913 6 h.p. REX 2-speed Combination	40 0	10 0	53/9
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2¾ h.p. 1915 ALLDAYS-MATCHLESS Combin'n	38 0	—	—
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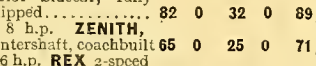

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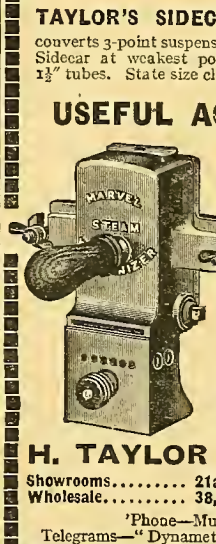

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MOTOR CYCLES FOR SALE.

Indian.

INDIAN, 1913, 7-9h.p., 2 speeds and clutch, spring frame, T.T. bars, fully equipped, condition as new; £55.—Bland, 13, Avondale Rd., Derby. [X6375

1914 Indian, electric equipment, fitted with 20 gn. sidecar, spare tyres, cost £100; first cheque 58 gns., or offer.—331, Fulham Rd., London. [X6948

INDIAN, 1915, 5h.p., 3-speed model; £63; delivery from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0717

INDIAN, 7h.p., with latest coachbuilt sidecar, 3 speeds, kick starter, complete electric lamp, horn, and speedometer; £75.—P. J. Evans, John Bright St., Birmingham. [2652

INDIAN 1913-14 Combination, 2 speeds, 23 gn. Gloria coachbuilt sidecar, splendid turnout, fully equipped, lamp set, speedometer, etc.; price £52.—Speechley's, 45, Church Rd., Acton. [2675

INDIANS in Stock for immediate delivery; prices from £57 solo and £74 3-speed combinations; exchanges and easy terms arranged.—P. J. Evans, John Bright St., Birmingham. [2648

5h.p. Indian, 1915, 3-speed, clutch, mileage 800, speedometer, etc., sidecar to match, cost £80 July, perfect throughout; £69; thorough test allowed.—59, Bexley Rd., Erith, Kent. [2690

INDIAN, late 1913, 7-9h.p., with Cowey speedometer, and Mills-Fulford Radio spring wheel sidecar, whole outfit in perfect order; £50.—Mebes, 156, Gt. Portland St., W. Tel.: 3426 Mayfair. [2254

INDIAN, 1915, 3½h.p., 3-speed, free engine, kick starter, not done 300 miles, very fast, pull sidecar; cost £63/10, sacrifice £50 for immediate cash.—A. B. Catt, The Willows, Ham Street, near Ashford, Kent. [2501

INDIAN 1914 2-speed Combination, Hendee special lighting and starting dynamo, only done 2,500 miles, 20 gn. Swan sidecar; £63; exchange lower power or solo and cash.—Carter, Edgbaston Hall, Birmingham. [X6951

INDIAN, 1915, 5h.p., 3-speed, not done 150 miles, perfect, practically as new, complete with 2 lamps, junior long horn, tools, etc.; £60; take Douglas in part exchange or good 3½h.p. — Ideal Cycle Co., Thundersley, Essex. [2693

INDIAN, late 1913, 7-9h.p., with Cowey speedometer and Mills-Fulford Radio spring wheel sidecar, whole outfit in perfect order; £55.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0569

1914 7h.p. Indian, 2-speed, complete with dynamo electric lighting set, electric horn, and speedometer, smart Indian coachbuilt sidecar, whole outfit in very good condition, and thoroughly overhauled; 51 gns.—Julian, Broad St., Reading. 'Phone: 1024. [X4835

INDIAN, late 1914, 7-9h.p. Hendee Special Model de Luxe, electric starter, electric light, in absolutely perfect order, practically new, very fast, and reliable, just been tuned up by manufacturers; a bargain, price £58.—Brewis, 75, Shaftesbury Av., London. [2550

Ixion.

1914½ Ixion-Villiers, 2½h.p., single, excellent condition, lamp, spares, good climber; £19.—Sunderland, North St., Lockwood, Huddersfield. [2496

James.

JAMES.—New models in stock.—Frank Bannister, Railway St., Chatham. [2492

JAMES, 2-stroke; quick delivery.—Colmore Depot, 261, Deansgate, Manchester. [2522

JAMES, 2-stroke, 2-speed, in stock.—Leighton's, opposite Wood Green Station. [2598

JAMES 4¼h.p. Combination, in stock.—Colmore Depot, 261, Deansgate, Manchester. [2521

JAMES Combination, 4¼h.p., just arrived; 73 gns.—Lamb's, 151, High St., Walthamstow. [2562

JAMES, 1914, 4¼h.p., 3 speeds, countershaft, James Canoelet, speedometer, run 3,000; £55.—66, Honley Rd., Catford. [2640

JAMES 1914 4¼h.p. Combination, 3-speed, chain drive, kick starter, lamps, horn, tools, excellent condition; £50.—77, Mill Rd., Gillingham, Kent. [X6810

JAMES, 1915, 4¼h.p., clutch, kick start, 3-speed, Millford family sidecar, fine turnout, not used; bargain, £70.—Fielder, 19, Worple Rd., Wimbledon. [2677

JAMES, 1914½, 4¼h.p., sidecar model, 3-speed, countershaft, clutch, kick starter, splendid condition.—Seen at 22, Holborn Viaduct, London. Central 1914. [2793

4½h.p. Late 1913 James, 3 speeds, clutch, Canoelet sidecar with screen, lamps, horn, tools; any trial; £44, or near.—Bristow, Kinross, Cremorne Rd., Chelsea. [2721

JAMES 4h.p. Combination, 3-speed, Sturmey-Archer, Jones speedometer, head and side lights, horn, spares, perfect condition; £45.—A. H. Walker, West Drayton, Middlesex. [X6727

1914 James, 4¼h.p., 3 speeds, countershaft, clutch, kick starter, James Canoelet sidecar, Lucas lamps, speedometer, horn, and screen, splendid condition; £58.—F. Halsey, 199, Uxbridge Rd., Mill End, Rickmansworth. [2538

MOTOR CYCLES FOR SALE.

James.

JAMES 1915 Big Single, 4¼h.p., 3-speed, free engine, studded tyre, horn, and lamp (unlit), complete, unridden, absolutely faultless; buying cycle car; £55.—Lewis, Green Court, Llandyssul. [X6806

JAMES, 1915, 4½h.p., 3-speed countershaft gear, clutch and kick starter, chain drive, Canoelet sidecar, with Lucas electric lighting outfit, Lucas electric horn; £90/15.—Colmore Depot, 261, Deansgate, Manchester. [0674

1914 4¼h.p. James, with 16 gn. Canoelet sidecar, fitted with wind screen, apron, strong luggage grid, complete with lamp, generator, horn, and all spares, tools, tyres nearly new, first-class machine; any trial or examination; owner going to France; price £50, or nearest offer.—Day, Okehampton. [2487

J.A.P.

3½-4h.p. J.A.P., 2-speed, free, as new, take sidecar; owner enlisted; bargain, £27/10.—Side door, 152, Albion Rd., Stoke Newington, N. [2616

Kerry.

3½h.p. Kerry-Abingdon, with Roc 2-speed, Best and Lloyd, in good order; £27; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0723

KERRY-ABINGDON, late 1912, free engine, just overhauled, re-bored, new piston, valve, and rings, fully equipped; £27.—Doe, Steeple Cottage, Garboldisham. [2547

Lea-Francis.

LEA-FRANCIS, 1914, 3½h.p., Lucas lamp and horn, engine perfect running condition, heavy tyres as new; £50.—Stewart, Coolmore, Parkstone. (D) [X6788

LEA-FRANCIS-J.A.P., late 1913, recently enamelled, plated, thoroughly overhauled and tuned, as new; £47.—Metcalfe's Garage, Romford. 'Phone: 155. [2779

1913 Lea-Francis, purchased June, very little used, guaranteed in new condition throughout; any trial or examination; £45.—George, Crescent Boarding House, Filey. [2448

Levis

LEVIS.—New models in stock.—Frank Bannister, Railway St., Chatham. [2491

LEVIS.—Two No. 1's actually in stock.—Lamb's, 151, High St., Walthamstow. [2446

LEVIS Popular Model in stock; £28.—Marston's, 26, Bridge St., Chester. [X6928

LEVIS, 1915, 2¼h.p., new condition; £18.—Marrs, Cliffside, Ulwell Rd., Swanage. [2500

LEVIS 1914 Model de Luxe, 2-speed, lamps, speedometer; great sacrifice, £30.—8, St. James' Rd., Kingston-on-Thames. [2750

LEVIS, 2¼h.p., 2-speed gear (new), and special new lightweight Wateonian sidecar; £35.—Colmore Depot, Colmore Row, Birmingham. [X7012

1915 Levis, 2¼h.p., Popular model, absolutely in stock; £28/1; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6410

1914 (Nov.) Levis, No. 1 model, 2¾h.p., excellent condition throughout, fitted lamps; cost £40, accept nearest £28.—Walton's, Dawson Sq., Burnley. [X6916

LEVIS, 1914, 2¾h.p., 2-speed, Model de Luxe, guaranteed absolutely perfect, Lucas lighting set, horn, and rear light, etc.; £32.—A. Slater, 88, King St., Blackburn. [2743

LEVIS 2-stroke Motor Cycles, latest 1915 models.—Sole London and district agents, Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent. [0711

Lincoln-Elk.

1913 4¼h.p. Lincoln-Elk, free engine, 2-speed, latest improvements, perfect order; any trial; with coachbuilt sidecar, practically new; bargain, £45.—Wright, Mill House, Cartlett, Haverfordwest. [X6649

LINCOLN-ELK, 1913, 3½h.p., 2-speed, free engine, and coachbuilt sidecar, large lamps, speedometer, horn, in splendid condition; £37, or exchange lightweight and cash.—28, Ellerby St., Fulham Palace Rd., Fulham. [2575

Lurquin-Coudert.

6h.p. Lurquin-Coudert Combination, 2-speed countershaft, just been thoroughly overhauled and rebushed, 3 new tyres and spare, very powerful; £30.—Frazer, 106, Barkworth Rd., South Bermondsey. [2526

L.M.C.

L.M.C., 1914, 4½h.p., 3-speed, and sidecar; £45; guaranteed sound.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [2437

Matchless.

MATCHLESS T.T., 1914, 3½h.p. twin, 3-speed, clutch, lamp, speedometer, 60 m.p.h.—Hobson, 7, Coolhurst Av., Highgate. [2510

1912 6h.p. Matchless Combination, speedometer, 2-speed, perfect; £45; solo machine part.—Blencathra, Walton-on-Thames. [X6999

MATCHLESS Combination, 1914, 7h.p., 3-speed, Lucas lamps, in absolutely perfect condition, tyres as new; £73.—Motor Cycle Dept, High St., Purley. [2713

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Matchless.

1913 6h.p. Matchless Combination, 2-speed, perfect, unscratched, go anywhere; trial.—R. Kirkwood, 62, High St., Maybole. [X6903

1914½ Matchless Combination, 7h.p., speedometer, screen, lamps, hood, spares, perfect condition; £80.—Capt. Sinclair, 41, Sandringham Gardens, Ealing, W. [X6650

1914 Matchless, 8B. model, without sidecar, just overhauled, done solo work only, spare chain, valve, 2 tubes, extra cover; £60, or offer.—Father MacDonald, Kelso. [2755

MATCHLESS 3½h.p. Twin, 3-speed, 1913, converted 1914 J.A.P. engine, in splendid condition; owner at Front; £45.—J. Langlands, Sutton-at-Hone, Dartford, Kent. [X6757

1913 7-8h.p. Matchless, with Canoelet sidecar, lamp, speedometer, etc., in very good condition; £60; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0721

MATCHLESS 1914 8B. Combination, screen, 3 best Lucas lamps, Lucas horn, mechanical horn, Watford speedometer, 2 new Dunlop heavy oversize tyres, condition almost new; price £76.—Hodkinson, Mill St., Macclesfield. [X6896

MATCHLESS-J.A.P. Combination, 1913, 6h.p., 2 speeds, kick starter, smart appearance, in excellent running order, new gear, chains, and 3 tyres just fitted, 3 lamps, 2 luggage carriers, tools, spare tube and cover and other accessories; £55, or nearest offer; owner leaving country.—Holmhurst, Sutton, Surrey. [2524

Minerva.

3½h.p. Minerva, new condition, Bosch, Amac; offers.—129, High St., Croydon. [X7031

3½h.p. Minerva, 3-speed, clutch, mag., B. and B.; £15, no offers.—H. Green, Bengeo, Hertford. [2476

£5/10.—Minerva, 2¾h.p., a.i.v., B. and B., low; photo.—Jardine, St. George's Place, Cheltenham. [X6654

MINERVA, 3½h.p., B. and B. carburetter, accumulator, all accessories, good condition; £11.—25, Miskin Rd., Dartford. [2459

MINERVA, 3½h.p., Bosch mag., B.B. carburetter, with wicker sidecar, good running order; £14, or offers.—Fred Hall, Wymondham, Norfolk. [X6949

Moto-Reve.

MOTO-REVE 2¾h.p. Twin, mag., B. and B., in real good condition; £12/12.—Derry, 25, Huddart St., Burdett Rd., Bow, E. [2781

MOTO-REVE, 1910, twin, 2½h.p., lamp, horn, low machine, good tyres, in splendid condition mechanically; £10.—Butterworth Garage, 64, Mill Lane, Brixton Hill. [X6844

Motosacoche

1915 3½-4h.p. Motosacoche, as new; £45.—7, Pemberton Gardens, Upper Holloway, N. [2057

MOTOSACOCHE, 2¼h.p., Druids, Amac, Bosch, Avon tyres, new; £15.—Wright, Bardon, Washford, Som. [2736

MOTOSACOCHE, mag., Amac, Whittle, in perfect condition; £10.—Reeves, Oakfield, Rudgwick, Sussex. [2697

MOTOSACOCHE, 2¼h.p., 1912½, Druids, Whittle, new condition; £13, offers; bought combination.—Bartlett, 248, Haydon Rd., Wimbledon. [2602

MOTOSACOCHE 1913, 3½h.p. twin, 2-speed Enfield gear, very little used; £27/10.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [2586

MOTOSACOCHE, 1914, 3½h.p., T.T. model, patent valves, kick starter, accessories, excellent running order; £37/10.—Can be seen Motosacoche Works, College Park, Willesden Junction. [2568

New Hudson.

NEW Hudson 2-strokes, models C and E from stock.—Lamb's, 151, High St., Walthamstow. [2441

NEW Hudson, 4h.p., 3-speed, and sidecar, run less than 3,000 miles, best fittings, a fine outfit; £55—Below.

NEW Hudson, 2¼h.p., 2-stroke, B model, as new; bargain, £26/10.—E. J. Gale, Sawston, Cambs. [2506

NEW Hudson, model C, 2-stroke, 2-speed (three in stock); £36.—Lamb's, 151, High St., Walthamstow. [2563

2¾h.p. New Hudson, 1912, accessories; £13, or nearest; must sell; bargain.—196, Ennerdale View, Frizington. [X6817

NEW Hudson Big Six Coach Combination in stock; £92/8; generous deferred terms.—Lamb's, 151, High St., Walthamstow. [2439

NEW Hudson Combination, 1914½, 3-speed, countershaft drive, splendid condition; £65.—Motor, 121, Nottingham Rd., Loughborough. [2644

NEW Hudson, 2-stroke, from £36; all models from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0603

NEW Hudson 3-speed Combination (coach), 1913¾, 3½-4h.p., all accessories, spares, movable screen, extra seats, perfect condition; £45.—Johnson, 85, Trentham St., Southfields. [X6997

MOTOR CYCLES FOR SALE.

Scott.

SCOTT, 1914, cane sidecar; £50; superb condition, overhauled, new rings; examination invited.—Whetton, Deddington, Oxon. [X6366

SCOTT, 1914, Binks carburetter, with Farlow sidecar, 3 lamps and spares, in first-class order; £55.—Thomson, 36, Balgonie St., Markwich. [X6660

SCOTT, 1913, 1914 Scott coachbuilt sidecar, 1914 Binks, drip lubricator, new Avon back, 2 head lights, tail lamp, hora, etc.; £38.—Baker, "Jewel Casket," Wigan. [2633

SCOTT, 3½h.p., late 1914, 2-speed twin, kick starter, horn, tube in case, 3 spare chains, 2 spare plugs, 2 pairs handle-bars, condition and tyres perfect; £50.—Stewart, Coolmore, Parkstone, Dorset. [X6967

1913½ Scott, coachbuilt sidecar, Binks, drip oil feed, and other improvements, Cowey, Lucas horn and sidecar bell, first-class lamp set, just overhauled, perfect condition, many spares; £43, bargain.—Garbutt, Yarm Lane, Stockton-on-Tees. [2461

SCOTT and Coachbuilt Sidecar, late 1912, mileage through illness under 2,000, lamps, horn, speedometer, unpunctured Palmer cord tyres, exceptional condition; bargain, 40 gns.; owner giving up motoring.—Collins, 11, Midland Bridge, Bath. [X6711

Singer.

1913 Singer, 2¾h.p., just overhauled; £18.—1, Dugdale Rd., Radford, Coventry. [X6710

SINGER, 2½h.p., 2-speed countershaft, clutch, kick start, speedometer; bargain, 30 gns.—6, Stonebridge Cottages, Davington, Faversham, Kent. [2504

SINGER, 3½h.p., 1912, Villiers hub clutch, head and tail lamps, generator, T.T. bars, belt and tyres in good condition, fine fast machine, property of officer just leaving for Front; must sell; first cheque £28 secures.—Box 9,257, *The Motor Cycle* Offices, Coventry. [X6717

SINGER, 4h.p., late 1914, 2-speed countershaft, free engine, Millford coachbuilt sidecar, perfect order, new Dunlop heavy tyres, 2 spare tyres, Lucas black best head light, horn, Stewart speedometer, spares; cost over £80, accept £45, or offer; seen any time appointment.—Alsop, 39, Cedars Rd., Chiswick. [2509

Sun.

SUN de Luxe, 2-stroke, from stock.—Lamb's, 151, High St., Walthamstow. [2442

SUN-VITESSE 2-stroke, only 6 weeks old, as new; £25.—Wells, Salway Hill,, Woodford. 'Phone: 14. [2719

SUN-PRECISION, 4½h.p., 3-speed, £52/10; C.B. sidecar, £10/10.—Walmsley and Co., Lumley St., Grangemouth. [2484

SUN, 1915, V.T.S. engine, 2½h.p., 2-speed gear, Dunlop tyres, Brooks's saddle, Dunlop belt, 2 lamps, horn, watch, condition very good indeed; £28/10.—Robinson's Garage, Green St., Cambridge. [6865

Sunbeam.

1914 6h.p. Sunbeam, 25 gn. sidecar, 3 Lucas lamps, horn, speedometer, plenty spares; 80 gns., cost £125.—T. Griggs, 168, High Rd., Kilburn, N.W. [2542

1914 6h.p. Sunbeam and Millford sidecar, speedometer, watch, 3 lamps and horn, and spares; £71/10, no offers.—Nelson, 66, Manchester Rd., Blackpool. [2757

1915 Sunbeam, 3½h.p., 3-speed countershaft gear, perfect condition, used 6 weeks, 500 miles; £65, no offers; owner buying lightweight.—Rev. T. Fitzgerald, St. Mark's, Daventry. [X6863

1915 Sunbeam, 3½h.p., almost new, Lucas accessories; cost over £75, accept 59 gns.; any trial.—Private J. C. Webber, D. Coy., 18th Batt. R.F., Jellalabad Barracks, Tidworth, Hants. [X6756

Torpedo.

3½h.p. Torpedo, 1911, B. and B., Bosch, P. and H. lamp, spares, engine just overhauled, in capital order; £19.—Lawton, Priory, Irlam-o'-th'-Height, Manchester. [X6931

T.D.C.

NAVAL Officer forced to sell 1915 2¾h.p. T.D.C. De Luxe, 2-stroke; £17 first cheque.—Campbell, H.M.S. Tiger, c/o G.P.O. [X6661

1913 3½h.p. T.D.C., N.S.U. 2-speed, F.E., underslung coachbuilt sidecar, wind screen, apron, every fitment, spares; £42.—Apply, 139, Plaistow Rd., West Ham, E. [2632

Triumph.

1911 Triumph, clutch model, new belt, tyre; £22.—24, Park Rd., Rugby. [X6864

TRIUMPH, 1914, 4h.p., 3-speed, perfect condition; £46.—Lloyd and Son, Lewes. [2320

TRIUMPH, 1911, perfect throughout; £20, or offer.—11, Luna Rd., Thornton Heath, S.E. [2469

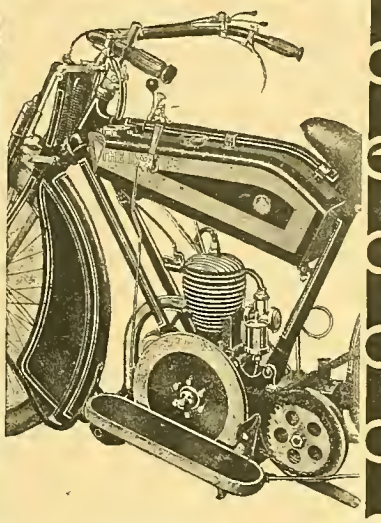
1912 Free Triumph; £25; perfect going order.—12, Heywood Rd., Prestwich, Manchester. [X6663

3½h.p. Triumph, 1909, free engine, lamp, hora, tools; £25, or offers.—Knott, Burton Salmon, Yorks. [X6799

1913 Triumph and Coachbuilt Sidecar complete, lamps, etc.; £48.—Cross, Jeweller, Rotherham. [X6881

TRIUMPH, 1913, free engine, good condition; £34.—Thompson, 50, Cambridge Av., Whitley Bay. [2722

The "IVY" TWO STROKE



Above illustration shows our new pattern frame that will from now be fitted to our "De Luxe" Model Two-Stroke machines only. It is our registered design No. 531848, and the principle is as follows:—Instead of the usual round down tube coming from the ball head, we bring two oval blades from a specially designed ball head down on each side of the exhaust pipe to the crank case. Each of these blades is double the strength of the ordinary round down tube, and is made of a specially toughened steel which will stand being twisted a number of times without breaking. This frame is no heavier than the ordinary diamond frame, and is

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MOTOR CYCLES FOR SALE.

Triumph.

1912 Triumph, standard model, recently overhauled; £27, or nearest.—Spicer, 31, Trentham Rd., Longton. [X6952

TRIUMPH, 1912¾, clutch model, excellent condition, carefully used; £30.—Shaw, Ashleigh, Monmouth. [X6914

TRIUMPH, 1911-12, 3-speed, clutch, in superlative condition.—5, Bonheur Rd., Bedford Park, 948 Chiswick. [2754

TRIUMPH 1912 3½h.p. Free-engine Model; £23/10.—Else and Co., 15, Bishopsgate Av., Camomile St., E.C. [0551

1915 Junior Triumph, lamp, hora, speedometer, not run 1,000 miles; £44.—Oswald, Bruce Hotel, Carnoustie. [X6656

TRIUMPH, 1911, new Bates tyres and belt, spares, guaranteed perfect; £25, or nearest.—6, Norfolk Rd., Dorking. [2747

TRIUMPH, clutch model, good order, speedometer; £26.—Hazel Motors, 24-28, Woodford Rd., Forest Gate, E. [2725

TRIUMPH, excellent condition, new Avon covers; £17/10; seen any time.—T. M. Walker, Linden Av., Darlington. [2579

1913 New Triumph, Canoelet sidecar, 3-speed, lamps, horn, speedometer; £66.—Smith, High St., Fenstanton, Hunts. [X6652

TRIUMPH 1911 Free Engine Model, lovely condition, re-bushed by makers last week, accessories; £30.—Moss, Wem. [X6890

TRIUMPH, 3½h.p., clutch, 1913, splendid condition, £36; accept Levis part; approval, deposit.—George, 28, Burgate, Canterbury. [2623

1915 4h.p. Triumph, countershaft, new May, splendid condition, F.R.S. lamp, spares, tools.—Julian, 49, High St., Marlborough. [X6647

1913 Triumph, 3-speed, accessories, Millford sidecar, recently overhauled, excellent condition.—Waterworks, Tewkesbury. [X6904

TRIUMPH, 1910, Grado pulley, new cover back, wicker sidecar, side door, and apron; £26.—Johnson, 6, Wheelgate, Maltoa, Yorks. [X6753

1911 Triumph, free engine, new Dunlop tyres, lamp, horn, etc., splendid condition; £24.—Williams, Headmaster, Blaenffos, Pembs. [X6726

TRIUMPH, 1911, late, clutch model, first-class condition, head lamp, etc.; £25.—Derry, 25, Huddart St., Burdett Rd., Bow, London, E. [2780

TRIUMPH, 1914, 4h.p., free engine, lamps, watch, and spares, perfect, £38; also 4h.p. 3-speed, as new, £48.—Hooper, King St., Leicester. [2505

2½h.p. Triumph, new B. and B., perfect, £9; new ½ Grado gear, fit old Rex, £3/5; new belt, fit Douglas, 6/-.—East, Maude St., Grimsby. [X6368

TRIUMPH, 1912 (November), 3½h.p., clutch, Stewart speedometer, lamp, horn, running splendidly; £35.—Lieut. Hurd, Herts. Regt., Newmarket. [X6780

TRIUMPH Junior, 1915, ran 200 miles, all accessories; £38, or exchange for modern sidecar machine.—Richards, R.E. Mess, Aldershot. [X6763

TRIUMPH, 3½h.p., 1909, frame and tank just enamelled, tyre and belt nearly new, splendid condition; nearest £20.—72, Northfield St., Worcester. [X6912

1913¾ T.T. Triumph, clutch model, Dunlops, fast machine, perfect condition; owner at Front; £35, or near offer.—24, Lakehouse Rd., Wanstead. [2571

TRIUMPH, re-bushed, new piston, cylinder, tyres and belt, mag., overhauled, bills shown, splendid condition; £21; any trial.—1, Garden Place, Leamington. [X6743

1912 F.E. Triumph, lamp, speed indicator, etc., good order guaranteed, £29; 1911 ditto, £26; 1911 ditto, fixed engine, £24.—Ewen, King's Lynn. [X7024

1914 4h.p. Triumph, Swan sidecar, 3-speed, free engine, Lucas lamps, horn, etc., excellent condition; bargain, £55.—36, Mildenhall Rd., Lower Clapton. [2699

1913 Triumph, 3-speed, just thoroughly overhauled, fitted with lamp and horn, tyres in good condition; only 36 gns.—Julian, Broad St., Reading. 'Phone: 1024. [X6858

TRIUMPH, 1912, 3½h.p., clutch, just re-bushed, and in really excellent condition; £28/10.—Miller, West Bank, Catherine St., Ashton-under-Lyne. [X6876

TRIUMPH and Gloria sidecar, late 1913, 3½h.p., 3-speed, engine and tyres in excellent condition, lamp, horn, etc.; £45.—Grevett, 113, Pevensey Rd., Eastbourne. [X6760

TRIUMPH, 1909, excellent condition, overhauled and re-enamelled, new Kempshall on back, good climber, accessories; trial.—J. V. H. Turner, Allestree, Woodcote, Epsom. [2715

TRIUMPH, 1914½, 3 speeds, 4h.p., clutch, 2 lamps, all accessories, fitted Phillipsnn pulley, perfect condition; 45 gns.—Rumbold, Suffolk House, Swanage. [2795

1913 3½h.p. Triumph and sidecar, 3-speed, clutch, lamp, horn, tools, perfect condition, little used; owner bought car; £49.—2nd Lieut. Gott, Holm Place, Sheerness. [X6749

MOTOR CYCLES FOR SALE.

Triumph.

TRIUMPH, late 1913, 3-speed, free engine, just re-plated and overhauled by makers, with racing sidecar, very fast; £45, or nearest offer.—Wiltshaw, Carlton House, Stone. [X6870

TRIUMPH Junior, 1915, ridden 75 miles only, really brand new, mileage guaranteed, specification as list, 2 lamps, horn; £41.—Robinson's, Green St., Cambridge. [6866

FAST 1914 T.T . Triumph, 3-speed, Montgomery £14 sidecar, Lucas lamps and horn, Cowey speedometer; cost £85, sacrifice £49.—Showell, 20, Dalgarno Gardens, Wormwood Scrubbs. [2706

THREE 1914 Model Triumphs, 3 speeds, neither machine run more than 500 miles, condition as new; £48 each.—Apply, Alfred Jones and Co., Automobile Engineers, Dunstable, Beds. [2756

1915 Triumph, 3-speed countershaft, and Millford Empress sidecar, 3 lamps, generators, and horn (all Lucas), done few miles, like new; £78.—Popham, 460, Fore St., Edmonton, London, N. [2622

TRIUMPH, 2-speed, clutch, kick-start, speedometer, new lamp sets, spares, tools, oilskins, all in tip-top condition; £25, no offers, giving away price.—After 7, 8, Geary Rd., Dollis Hill Station, N.W. [2777

1913 3½h.p. 3-speed Triumph, with 17 gn. brand new Gloria sidecar, luggage rail, lamp, etc., perfect throughout; £55; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0720

TRIUMPH 3½h.p. Combination, F.E., 2-speed, handle start, Cowey, 3 lamps, hood, screen, 4-point, sidecar stand, spare valve, tubes, belt, tools, 1915 engine, mag., gear, carburetter; £39.—2, Barfield Rd., Leytonstone, E. [X6384

31h.p. Triumph, 1912, just overhauled throughout, re-enamelled, new 1915 cylinder, piston, and valves (bill shown), nearly new tyres and belt, all accessories, splendid condition; £28.—Davis, Chauffeur, Pantglas, Goldengrove, Carmarthenshire. [X6895

TRIUMPH, 1911¾, 2 speeds, 2 clutches, Montgomery sporting £15 sidecar, re-enamelled, re-plated, overhauled, no running since; any trial; will drive 20 miles real buyer; £38, or offers.—Eric Dower, 17, Sussex Place, Regent's Park, London. [X6960

1911-12 3½h.p. 3-speed Triumph and coachbuilt sidecar, screen, lamps, horn, speedometer, new tyres, belt, 2 spare tubes, grid; trial anywhere; or exchange 5-6h.p. Clyno or Indian combination, cash adjustment; £38/10.—Stallwood, 19, Richardson St., High Wycombe. [2784

TRIUMPH Junior, delivered in April, only done about 800 miles, exceptionally fast, condition perfect, absolutely unscratched, Lucas horn, Bosch mag., insurance for next 6 months; £35; no offers; owner buying car.—Hedgeland, 6, Cripley Rd., Oxford. [2730

TRIUMPH, late 1910, 3½h.p., clutch, covers (Palmer, Kempshall), new, F.R.S. lamp, new horn, Brooks leather box on carrier, engine perfect order, re-bnshed last January, wants re-plating and enamelling; £22.—Smith, Ivy Cottage, Dinerth Rd., Colwyn Bay. [X6713

TRIUMPH, 1914, 4h.p., 3-speed, clutch, coach sidecar, screen, hood, electric horn, Lucas horn, Watford speedometer, head and tail lamps, several spares, including tyre, 2 new tubes, new belt, etc., and tools complete; £65, cost £95; new November last, done 2,800; trial any time by appointment; this combination is better than new.—L., 38, South View Av., Caversham, Reading. [2689

Trump.

TRUMP-J.A.P., 1914, 4h.p., 3-speed, kick start, clutch, perfect condition; bargain, £33.—28, William St., Rochdale. [2654

Vindec.

6h.p. Vindec Special, and sidecar, 2-speed, free, foot start, with dickey seat; £26.—A. E. Walker, 90a, Elsinore Rd., Forest Hill. [2465

VINDEC Special, 1911-12, 5-6h.p. Peugeot, free engine, sidecar, very good condition; £23.—108, Bennerley Rd., Wandsworth Common. [2480

Velocette.

VELOCETTE, all models in stock, from £28.—Marston's, 26, Bridge St., Chester. [X6927

VELOCETTE 2-stroke, 2-speed, only 6 weeks old, as new; £30.—Wells, Salway Hill, Woodford. 'Phone: 14. [2720

V.S.

V.S. Combination, 8h.p., 2 speeds, F.E., just overhauled, Jones, and accessories; bargain, £30.—Dodson, 50, Perkins Rd., Newbury Park, Ilford. [2587

Williamson.

WILLIAMSON 8h.p. 1913 Combination, good condition; £45; exchange lower power.—Spurling, The Cottage, 2, Brondesbury Park. [2783

WILLIAMSON 1913 Water-cooled Combination, P. and H. lamp, speedometer, new Clincher back; £55.—Lamb, 96, Thornton Av., Chiswick. [2530

Wolf.

WOLF 2½h.p. Lightweight in stock; generous deferred terms if desired.—Lamb's, 151, High St., Walthamstow. [2440

WOLF, 2½h.p. J.A.P., as from makers, never ridden; owner gone to Front; price £24.—Apply, Thomas, 24, Townley Rd., East Dulwich, S.E. [X6740

LAMB'S IN STOCK.

New 1915 Models

LEVIS No. 1's (3 just arrived) **£36 17**
ENFIELD 6h.p. Combinat'n **£84 0**
De Luxe **£100** model due in.
HARLEY-DAVIDSON, 11J, and Sidecar, electric model .. **£92 0**
HARLEY-DAVIDSON, 11F, and Sidecar (2 in stock) **£84 0**
ALLDAYS Allon, single-sp. **£31 10**
ALLDAYS Allon, 2-sp. (2 in stock) **£38 17**
CALTHORPES, all models in stock.
NEW HUDSON Big Six, fawn Combination, luxurious outfit **£92 8**
NEW HUDSON, 2-stroke, 2-speed, Model C (3 in stock) ... **£36 0**
Model A **£29 17**
Model E **£31 0**
JAMES 4½h.p. Combination (just arrived) ..... **73 gns.**
QUADRANT Canoelet 4½h.p. all-chain Combination, B.S.A. 3-sp. countershaft gear **£71 10**

LAMB'S, 151, High St., Walthamstow.

WOLF, 2½-3h.p., 2-stroke, **£35 3 6**
SUN de luxe, standard, 2-str., **£29 8**
IMPERIAL-J.A.P. (just arrived) **35 gns.**
Second-hand complete List sent on application, free.
F.N. 1914 4-cyl. 6h.p. 2-seater Combination, ridden 1,500 miles, innumberable valuable accessories **75 gns.**
B.S.A., 1912, semi-T.T. model, all accessories **£29 10**
ROVER 1913-14, 3 sp., fawn Combination, speedometer, lamps, horn ..... **50 gns.**
WILLIAMSON, 1913, 8 h.p., water-cooled, Combination, heap of accessories ..... **60 gns.**
BAT-J.A.P., 1913, 2-sp., coach Combination, all access.. **£50 0**
P.V.-J.A.P., 3½h.p., twin, 3-sp., and access., chocolate finish.. **24 gns.**

CARS IN STOCK.

CHATER-LEA, 1913 (late), 8 h.p., water-cooled, 3-sp. and reverse, hood, screen, lamp ..... **90 gns.**
SAXON, 11h.p., water-cooled, all on (just arrived) **£120 0**
ROVER, 6h.p., water-cooled, 3-sp. and reverse, hood, screen, grey finish ..... **40 gns.**
RITZ, 11h.p., 2-seater, all on (due in) **£120 0**

SIDECARS (NEW).

Swan de luxe, hood, electric lamp **21 gns.**
Express (Harley-Davidson). **£18 14**
Canoelet **£16 16**
Canoelet (Indian) **£13 1**
Watsonian, models G and H **10 gns.**
Phœnix, several models from **£8 15**
Also several Second-hand Sidecars and Bodies. List on application. TERMS—¼ down and balance in 12 payments. Liberal discount paid in 1, 3, or 6 months. EXCHANGES—Good allowances.

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Hours—8 to 9.30. Thurs.—9 to 1.

MOTOR CYCLES FOR SALE.

Yale.

YALE Motor Cycle in stock, 8h.p., 2-speed, kick start; 60 gns.—Jones, The Broadway, Muswell Hill. Sole agent for N. London, trade and retail. 'Phone: Hornsey 2562. [7636

Zedel.

3h.p. Zedel, C.A.V., mag., B. and B. carburetter, fine condition, very low and fast, F.R.S. lamp; bargain, £14/10.—90, Burton Rd., Lincoln. [X6875

Zenith.

ZENITH, 6h.p., 1912½, clutch, kick start, Canoelet sidecar; £45.—Seen at Stag Motor Works, East Finchley, London, N. [2627

ZENITH, 1912, 6h.p., Millford spring wheel sidecar, accessories, excellent condition; £35.—M., Ingleside, Hook Heath, Woking. [2799

ZENITH Combinations, 3 in stock, all as new; £55, £65, and £75.—Percy and Co., 337, Euston Rd., London. 'Phone: Museum 1337. [2766

ZENITH, 1914¾, 6h.p., Enfield sidecar, lamp, horn, spare cover, and belt, condition excellent, would separate; £56.—Lyndhurst, Devonshire Rd., Palmer's Green. [2513

ZENITH-GRADUA, J.A.P., 4h.p., 1913, Middleton coachbuilt sidecar, nearly new, smart lot; £37/10.—Dairy Manager, Victoria Terrace, Tottenham Lane, Hornsey. [2709

ZENITH-GRADUA, 1914, 5h.p. twin, excellent order, horn, 2 lamp sets, plugs, tools, new tyre back; £40 cash.—Tom Simpson, Outfitter, Stalybridge, near Manchester. [2660

ZENITH-J.A.P., 1913, 4h.p., fixed engine, perfect condition, £3/3 head light, horn, tools, spares; £24; appointment.—Austin, 15, Pemberton Gardens, Highgate, N. [2687

ZENITH-GRADUA, 4h.p., thoroughly overhauled by makers Easter, new back tyre, inner tube, Service belt, sidecar, all excellent condition; any trial; £38.—13, Mayow Rd., Forest Hill. [2792

ZENITH-GRADUA, 4h.p., single, 1913, clutch, new May. 1914, new belt, tyres good, speedometer, lamps, spares, and Service cane sidecar; would separate; £39.—Aitken, 339, North End Rd., Fulham, S.W. [2551

ZENITH, 1914½, 8h.p., countershaft, coachbuilt sidecar, fitted with hood, screen, luggage grid, Terry links, spare driving chain and belt, 3in. tyres, 3 lamps, condition as new; bargain, £78, cost £110.—Hawkins, 206, Hard Lane, St. Helens. [X6947

ZENITH-GRADUA, 1915, countershaft models, delivered from stock, 8h.p. model H, 73 gns.; 3½h.p. twin model B, 59 gns.; other models 7-10 days. Pricea subject to 5% increase; exchanges or extended terms arranged.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0481

Miscellaneous.

HEBDEN'S Have in Stock:

1915 Enfields, 6h.p. combination, and 3h.p. and 2¼h.p. lightweights.

1915 Indians, 3½h.p., 5h.p., and 7h.p., with or without sidecars.

1915 Wolf, 2¼h.p., 3h.p., 2-stroke, 2-speed; £31.

1915 Wolf-Peco, 2¼h.p., 2-stroke, 2-speed; £33.

1915 New Imperial-Jap, 2½h.p., 2-speed; 35 gns.

1915 New Imperial-Jap, 2½h.p., 2-speed, with clutch and kick starter; 41 gns.

1915 Wolf, 3h.p., 2-stroke, 2-speed, not run 300 miles, as new; £27, complete.

1914 Enfield 6h.p. Motor and Sidecar, fit with lamps, horn, speedometer, equal to new; £65.

1914 7-9h.p. Indian Motor, 2-speed, and sidecar, brand new, fit with electric lamps, horn, speedometer; a gift, £70.

1912 Humber, 3½h.p., 2-speed, 1914 engine, new Canoelet sidecar; £38, complete.

1913 8h.p. Williamson, water-cooled, 2-speed, and Canoelet sidecar, hood, screen, lamps, horn, speedometer; £50, a gift.

1913 2¾h.p. Douglas, 2-speed, free engine, clutch, and kick-starter, lamp, horn, equal to new; £37/10.

1915 Brand New Humberette Light Car, 3-speed and reverse, fit with non-skid tyres on back; any trial; best offer accepted.

1915 Brand New Williamson Cyclea Light Car, water-cooled, 3-speed; any trial; £120.

A FEW Cane Sidecars to clear from £2/10; brand new coachbuilt sidecar, Phelon and Moore, £15/15 model to clear.

BRAND New Canoelet Sidecar, coachbuilt, £16 model to clear.

HEBDEN'S Motor Mart, St. James' St., Burnley. Tel.: 488. [2272

FOR a good, cheap motor cycle, see Morgan and Maxwell. The London Motor Mart, 80, High Rd., Streatham, and branches. [X6241

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NEW ZEALAND.—Gordon and Gotch, Ltd., Wellington, Auckland, Christchurch, and Dunedin. INDIA.—A. H. Wheeler & Co., Bombay, Allahabad, and Calcutta.
SOUTH AFRICA.—Central News Agency, Ltd. PARIS.—Smith's English Library, 248, Rue Rivoli.

Solo Machines in Winter.

A MONTH ago we dealt with the design of motor cycles used for Government purposes, and drew attention to certain slight weaknesses in those mounts which cause constantly recurring breakages. We have no knowledge whether some such scheme as we outlined to overcome the trouble has been adopted, but an article in the present issue on the question of mudguarding calls to mind the fact that with the approach of winter and muddy roads this important matter is one which should also receive immediate attention. Maybe the subject of proper mudguarding of motor cycles has been studied already in anticipation of the winter campaign, but the latest deliveries of mounts we have seen still have the standard English guard. Last winter it is a well-known fact that despatch riders were in some districts unable to progress more than three or four miles at a time without stopping to remove the thick mud which had caused the wheels to clog, due to the close-fitting guards. The trouble got so bad that practical riders, in many instances, removed the front guard entirely, and fitted in its stead a shield made of wood or leather, or whatever stiff material was handy, and attached it to the front down tube. It seems that all these difficulties are likely to be renewed this winter unless a very hasty change is made, the reason apparently being that there is no one in authority to study the specially severe conditions under which the machines are used in France, and to report upon desirable amendments in design.

On the subject of winter riding we should like to urge a trial of lightweight motor cycles for despatch riders' use. It is extremely doubtful if the non-motor cycling authorities who control Government orders realise that a lightweight machine fitted with a two-speed gear is a far more suitable mount for solo riding in grease. A rider may pick his way through the thickest and most treacherous grease on a handy, low built mount of about 125 lb. weight, where a heavy one is extremely difficult to handle and keep upright. Speed is of no avail on slippery winter roads, comfort and safety are of paramount importance. Being in touch with many despatch riders at the Front, we know it is a general rule for them for winter work to select the lightest machine they can get hold of consistent with reliability. On dry summer roads the case is different.

A Competition for Munition Workers.

THE ball has been set rolling in the matter of competitions for Army and Navy motor cyclists by reason of an officer's suggestion to *The Motor Cycle*. Already two highly successful and enjoyable events have been held at Brooklands, which, it is generally agreed, have been beneficial to mind and soul of the men engaged in them, and this week-end we are to have a hill-climb for members of both services. But in the enthusiasm for the events named some may have been inclined to have overlooked the munition worker, the man who is as indispensable to the success of our arms as the man in the trenches. A suggestion from a munition worker appears in our Correspondence columns this week, advocating the organisation of a competition in some convenient part of the Midlands, where thousands of busy war workers are to be found, and we must say that the suggestion strikes us as a particularly happy one, and just as deserving of encouragement as the meetings already held for the United Services. The writer pays us a compliment by suggesting that *The Motor Cycle* carry out the organisation, but this is impossible, as under the rules of the governing body of motor cycling all events must be organised by a recognised affiliated club. Here is a chance for some enterprising club to fill the breach. In the meantime, the views of other motor cyclists on war work would be interesting.

An index to the advertisements in this issue will be found on the page facing the back cover.

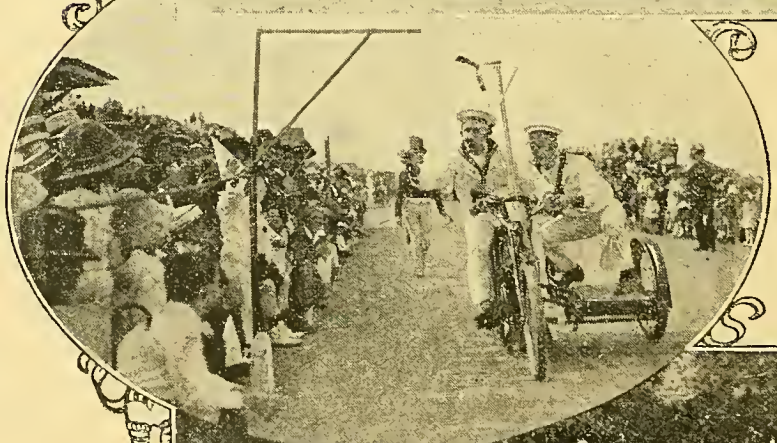
A Motor Cycling Gymkhana in South Africa.

COLONIAL CLUB RAISES MONEY FOR A WAR FUND.

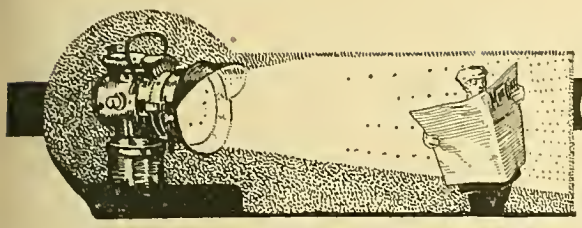
IT is quite refreshing in these trying times to read of a successful motor cycle gymkhana such as was held on August Bank Holiday last by the East London (S A.) Motor Cycle Club. The object was to wipe off a deficiency in one of the local war funds, and it appears to have been achieved with plenty to spare, thanks to the whole-hearted manner in which members of the club participated in the event and the enthusiasm of the spectators who numbered 2,500.

Judging by the photographs we have received, the results achieved in the way of decorating both machine and rider were excellent, and would rival many similar events held at home in the days before the war. The sidecar outfit disguised as a man-o'-war is particularly effective, though we cannot help feeling that the whiskers of the two occupants have something to do with the general pleasing effect!

The proceedings started with a procession of competitors and their decorated mounts through the streets of East London. This was in the morning, and in the afternoon the gymkhana events were run off, to the great amusement of competitors and spectators alike.



The East London M.C.C. recently undertook to augment the local war fund by holding a gymkhana, which proved highly successful. As the illustrations show, the costumes of the motor cyclists, as well as the decoration of the machines, were original and effective. One member of the club adopted a dress to represent *The Motor Cycle*.



Occasional Comments

"By Ixion"

My Epitaph.

A course of baby two-strokes has made a milksop of me; and, incidentally, it has spoilt the quondam refinement of my driving. It accustomed me to slamming the throttle recklessly open whenever I wanted an acceleration, however mild, for the babies do not get away with it like a T.T. racer. When summer arrived, I transferred my person to a 4 h.p. Douglas and a 6 h.p. Motosacoche, and applied the same throttle-slamming methods to them. Gee whizz! The bicycle went ahead all right in each case, but it was very nearly a case of "also ran" with poor me. My sorrowing wife has been instructed to have the following legend inscribed on my tombstone, "Unseated by acceleration." Joking apart, the way in which the modern twin jumps if its throttle is banged open is a positive revelation. I should much like to know how its capacity in this respect compares with a racing car. Both my twins are fitted with sidecar gears, and the leap they make under my crude driving methods is literally colossal. The difference between sidecar work with a 3½ h.p. and a 600 c.c. or 750 c.c. twin is indescribable.

Testing a Lighting Circuit.

With the decay of accumulator ignition the average motor cyclist has forgotten how to test the somewhat complex and lengthy accumulator wiring circuits in the event of a fault. The other week I struck a distinctly clever rider hopelessly baffled by a wee flaw in his lighting circuit. and without a notion how to proceed except by the crude method of tightening his terminals and inspecting his connections. Unless the fault is of the obvious, mechanical sort—*e.g.*, frayed wire ends at a connection shorting to some other terminal—a voltmeter or a glowlamp of the same voltage as the accumulator is really essential to tracing the trouble. For example, let us suppose that a single-pole circuit, in which the metal of the frame is utilised as the negative half of the circuit, is under discussion. The voltmeter on the switchbox indicates that the battery is fully charged, but no light is obtainable at any lamp. The first test might then take the form of placing one terminal of the voltmeter (or glowlamp) on the plus terminal of the accumulator, and the other on any convenient clean piece of metal on the frame, the switch being on. If the voltmeter registers no current, it is plain that the earth wire is at fault, which happened to be the case with the machine under notice. Examination showed that the earth wire was connected to a screw holding a footboard to a frame cross-spindle, and this spindle was stove-enamelled. The enamel obviously acted as a non-conductor, so a longer wire was coupled from the minus terminal of the accumulator to a polished steel crank case bolt. Instantly the lamps lit up. Supposing this first test had shown current on the voltmeter. it would be clear that the negative, or frame, half of the circuit was in order, and the next tests would take the form of coupling the voltmeter from some bright part of the machine to each terminal on the positive circuit in turn; we should have followed up the plus wire to its first anchorage on the switchbox, and tried for a reading across to the frame at that point; then from each plus terminal in turn, until at last the final cross reading would have been from the terminal in the lamp socket itself (against which the terminal in the bulb base presses) to the frame; if there were current here, a broken bulb would have been the fault. If there were no current here, the fault would have been in the last stretch of the positive wiring. All this was common knowledge amongst motor cyclists ten years ago, but the disappearance of the accumulator from our ignition systems has caused such information to die out from the average tinkerer's mind, and to-day many users of lighting outfits carry neither voltmeters nor testing lamps. Dynamo faults are much harder to identify, and the amateur can hardly hope to do more than expose his brushes, see that they are clean and unbroken, and that the portion of the armature on which they rub is also clean. Trouble at this point need not be expected within a decent mileage, the parts being almost (though not quite) as reliable as the carbon brush and slip ring of a magneto.

The 7-9 h.p. Harley-Davidson.

I have just had another spin on the new Harley-Davidson, and a jolly good mount it is; it is not every leviathan which can do 4 m.p.h. on top gear, and accelerate to a speed which only lunatics and experts

A NEW CONVERT TO THE MOTOR CYCLE.

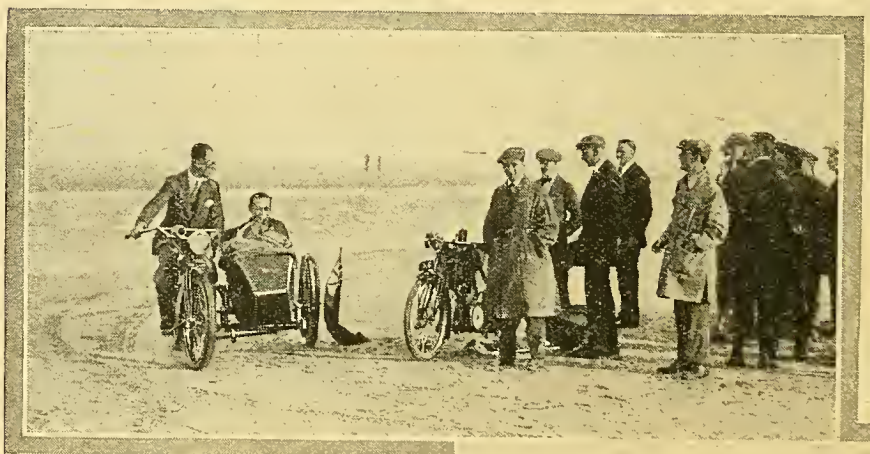
Mrs. W. Brandish, of Foleshill, Warwickshire, mounted on her 2¾ h.p. Douglas, which she has ridden nearly 2,000 miles during the summer.

Occasional Comments.—

consider safe on the public roads. Out of its general excellences I select a single item for commendation to the British trade. My sample was finished in a neat and workmanlike grey, and the enamel extended to the hooter and lamps. I admit I saw no reason why many plated details should not have been turned out in some rustless, untarnishable finish, but the non-plated finish of the lamp and hooter is a step in the right direction. Some British accessory dealers have got as far as blacking the bodies of their lamps and horns, but they usually cancel the good work by adding a plated rim or knob or two, just to relieve the monotony, so that the inevitable selvyt and metal polish cannot be given away after all. When will the trade understand that nobody but the very green novice really enjoys the daily furbishing of a multitude of plated twiddlies? We all understand that no enamelling process is applicable to metal parts liable to friction, and that nuts must have a finish of more resistance. Let us first get the hub shells, lamp bodies, hooter twists, etc., finished in enamel, and then let us howl and rage till the nickel-plating shops find their occupation gone, and some genius comes along with an oxidising process which cannot tarnish, and yet will not wear brown or shiny, as some of the earlier black platings are known to do.

Broken Chains.

My worthy colleague "Road Rider" has burdened me with some heavy correspondence by reason of his dignified dislike for printing precise details, and I propose to supplement his remarks about broken chains. In my experience there are two principal reasons for a chain breakage—at least, I have never known a case in which one of the reasons was not responsible, since the early days when foolish manufacturers blindly fitted push bicycle chains to powerful twin-cylinder engines. The commonest cause is destruction of alignment during adjustments for length; an ardent novice notices his chain is slack, falls on the machine with a bunch of spanners, corrects the tension, and never troubles to see that the sprockets are properly lined up again. A patent which made it impossible for chains to get out of line save only by twisting of the cycle frame would almost put an end to broken chains. The other cause is thoughtless adjustments of the tension. When a chain is noticed to be sagging droopily between its sprockets, the owner should not instantly adjust it tighter; he should first revolve the chain through a complete revolution, testing its tension at every third or fourth link the whole way round. From this process he will emerge with the discovery that a worn chain is *never* evenly slack or taut the whole way round. At one point of the revolution the chain will seem so taut that he will ejaculate, "Why, the beastly thing doesn't need adjustment after all!" and at another, "Great snakes, it's lucky the chain hasn't jumped the sprockets!" When he has found what "Road Rider" calls the "tight spot" (he should have said "the tightest spot"), he must adjust that particular length of chain—it may be only two or three links—as tight as is safe, and he has then made the best adjustment possible under the circumstances. For it is obvious that if the tautest piece of the run is overtight, it will snap presently. This explains why chains must sometimes be scrapped when most of their links are apparently in good condition; if the tightest spot is not dangerously tight, the loosest spot may hop off the sprocket. I have never solved the mysterious problem of this uneven wear. The details which make up the chain are standardised in every particular, and they all pass over the same teeth at the same place, whilst the sprocket sizes are designed to avoid any one link having to bear the brunt of the explosion time after time, whilst its neighbours merely chip in and take up the good work after the big bang is over. But the fact remains that chains do not wear evenly.

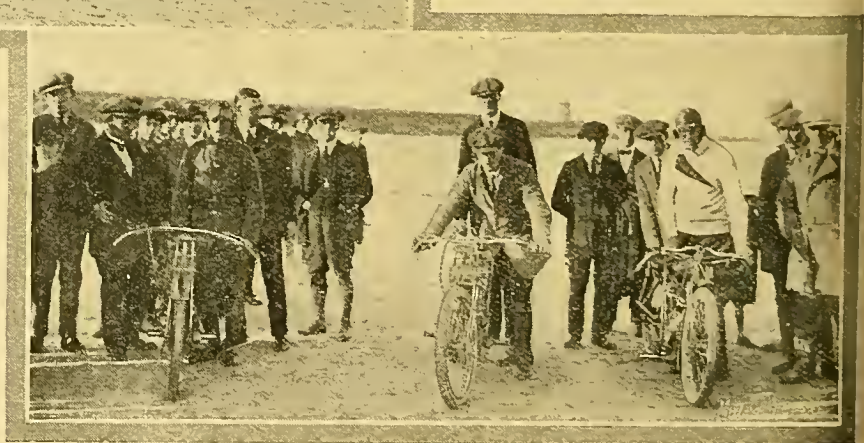


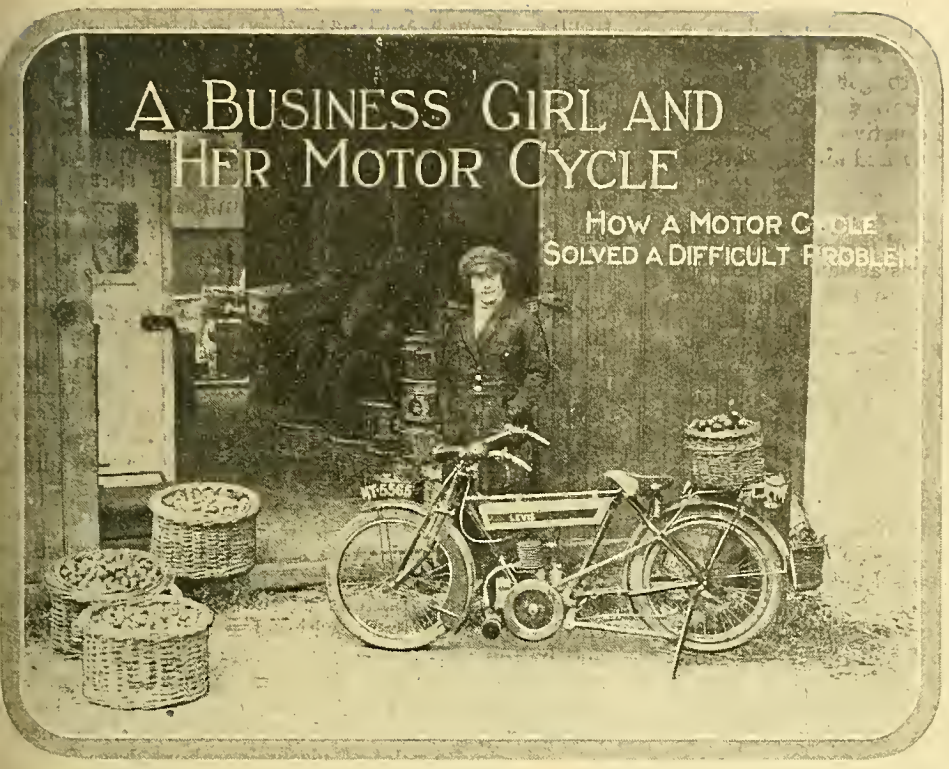
SCENES AT THE LAST PORTMARNOCK BEACH RACE MEETING.

(The results appeared on page 286.)

(1) G. A. M. Curtis (7-9 h.p. Indian), taking the turn in the sidecar handicap.

(2) The start of the 600 c.c. Scratch Race. Left to right, Corporal T. E. Greene of the A.S.C. (Rudge), F. Winstanley (Zenith), and C. B. Franklin (Indian).





I SUPPOSE after all it is the war that has caused such a great increase in the number of lady motor cyclists. Although it has also brought a tremendous lot of distress to the world in general, there is this little bit to its credit—it has made girls and women much more self reliant. Motor cycles were once thought too complicated for a girl to ride or manage, but, after my experience this summer, I am quite convinced that it is quite easy to learn to drive a motor cycle. As far as management is concerned, I know that, if I keep my machine clean and take reasonable care of it, nothing is likely to go wrong. I do not suppose, however, that I should have thought about having a motor cycle unless it had been forced upon me, as it were. Two or three years ago I was one of that great army of lady stenographers. I lived in London, lunched in the Strand, took my amusement in the form of a weekly visit to the theatre, and was generally a "Towny" girl.

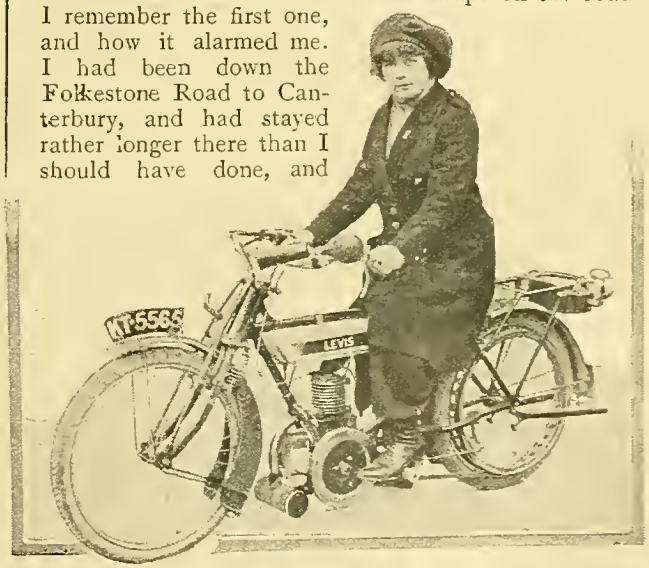
One may, therefore, imagine my disgust when I was told that the offices of the company with whom I was engaged were to be moved twenty-five miles out into the country and that I could either go with them or leave my position. As I was fairly happy with my employers, I thought at any rate I would try it for a month or two while I looked out for something else. I well remember the day when we first came down to Kent. It was raining, and the country did not come up to my conception of its delights. I only knew it in the summer time, when the sun was shining, the birds singing, and the corn was being harvested. I could only imagine what it was like in the winter, but on that cold dismal January day it struck me as being the most miserable place that one could possibly conceive. However, I remained until the spring came; then I began to know people, and so decided to stay the summer through.

My Purchases.

In August the war broke out, and nearly all the men on our staff joined up in some capacity or other. Then my chance came. Up to then I had not done outdoor work at all. The work of my firm—the Rural Development Co.—necessitates the employment of messengers from one department to another. These departments are spread over roughly 1,000 acres. In addition to that, we had 150 men to pay in various parts of the farm. I found that I could do the work of some of the men who had enlisted, but got tired of walking from place to place, and so bought an ordinary cycle, but soon sold it again. Then I bought my motor cycle—a splendid little two-stroke—and, from the business and the pleasure points of view, it has made all the difference to me. I can now realise the advantages of living in the country, and the journeys which were previously irksome interruptions to my work are now pleasing interludes.

In addition to the business advantages, of course, there is the pleasure side of the question. Leaving business at 5.30 p.m., I can now get up to town (twenty-three miles), go to a theatre, and get home by midnight.

Of course I have had a few mishaps on the road! I remember the first one, and how it alarmed me. I had been down the Folkestone Road to Canterbury, and had stayed rather longer there than I should have done, and



Miss D. Clegg and her two-stroke Levis.

A Business Girl and Her Motor Cycle.—

coming up Wrotham Hill at dusk my petrol gave out. Now I have never done any night riding before, and very much wanted to get home before dark, and here I was about a quarter of the way up the hill with no apparent alternative but to push the machine up the rest of the way and about a further six miles.

A Kindly Action.

I did what most other girls would do—sat down and felt "humpy." But deliverance was at hand! Coming round the corner was one of those tremendous cars which move so noiselessly and smoothly to the pleasure of their owners, and to the extreme irritation of "broken-down" wayside motor cyclists. As the motor neared me coming down the hill it stopped, and the man driving it very kindly asked me if he could be of assistance. Of course he could, and I told him I wanted a little petrol to get home with. Curiously enough, he had only a very little, so we sat down on the roadside and divided it between us. I found that he had to get back to Canterbury, so his generosity in letting me have some of the petrol was very pleasing in this hard and unsympathetic age.

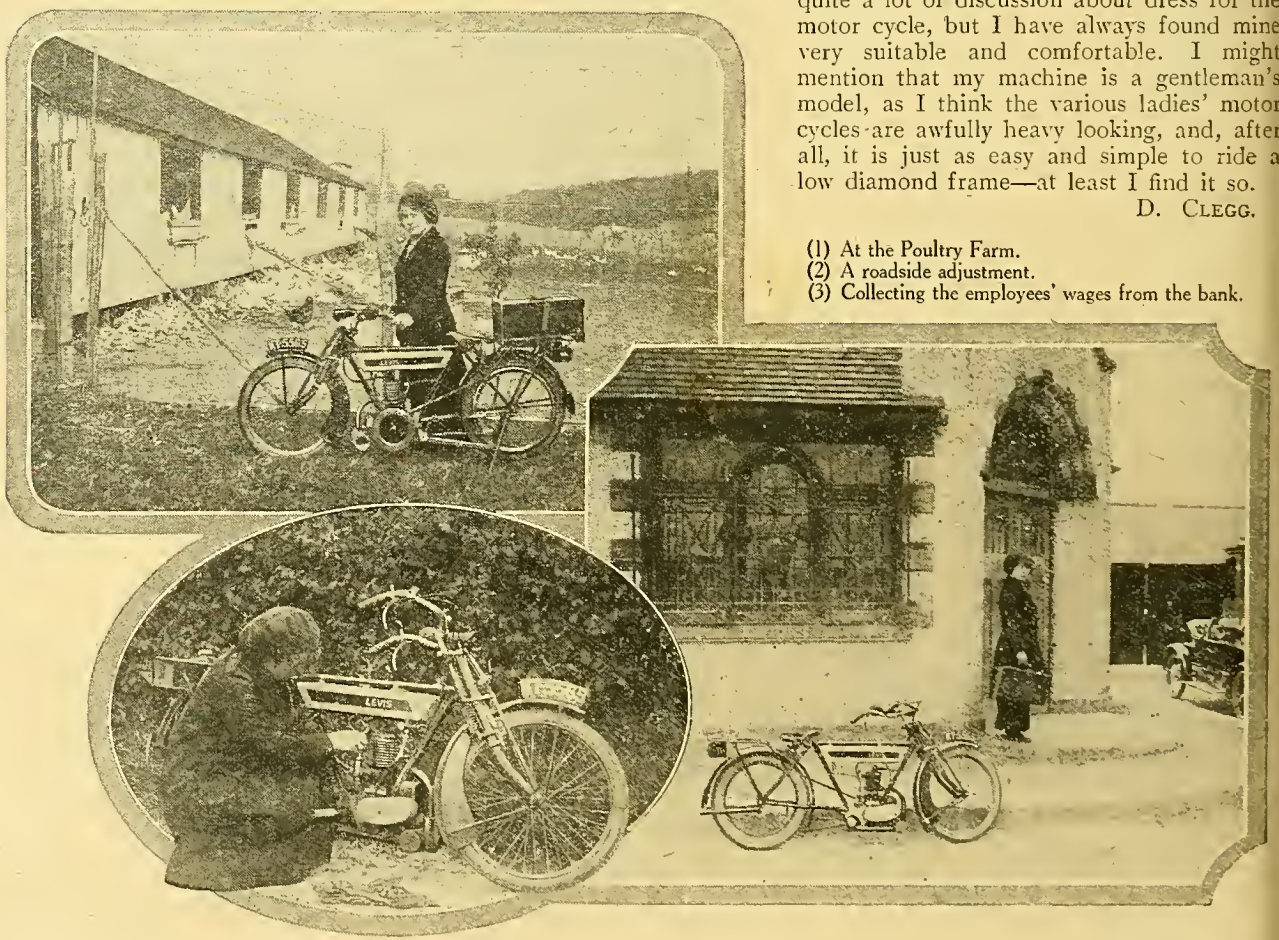
Another of my little mishaps occurred on Westerham Hill, when the machine stopped halfway up—a most unusual occurrence. I knew I had plenty of petrol and plenty of oil, and the only thing I could think of likely to happen was a "sooty sparking plug." I found, however, that this was not the cause of the trouble. Here again I was helped by a fellow motorist, who, while passing, called out, "Have you konked out?" I did not at the time understand this expression, and answered that "I thought so." He very kindly stopped, and, after some investigation, found that the carburetter had become obstructed by dirt owing, he said, to the petrol not being strained. I always used to think that petrol was such clean-looking liquid and never thought it required a strainer, but I know better now, and so shall not have a similar trouble again.

With regard to the general question of motor cycling for ladies, I think a girl has to be careful as to the exact type of motor cycle she purchases, as it is unwise to get a high-powered machine in the first instance or one with a heavy and awkward frame. Mine is perfectly satisfactory, but without *The Motor Cycle* I should have been at a loss when I first had a motor, and even now it is very helpful in difficulties which are apt to arise.

The Question of Dress.

Then, of course, there is the never-tiring question of suitable dress. I wear an ordinary walking skirt which has three buttons at the bottom in the front and three at the back, which I unfasten when riding and button up for walking. A short mackintosh coat and close fitting cap complete an admirable motor cycling costume. I also wear very high riding boots and driving gloves. Of course there is and has been quite a lot of discussion about dress for the motor cycle, but I have always found mine very suitable and comfortable. I might mention that my machine is a gentleman's model, as I think the various ladies' motor cycles are awfully heavy looking, and, after all, it is just as easy and simple to ride a low diamond frame—at least I find it so.

D. CLEGG.



(1) At the Poultry Farm.
(2) A roadside adjustment.
(3) Collecting the employees' wages from the bank.

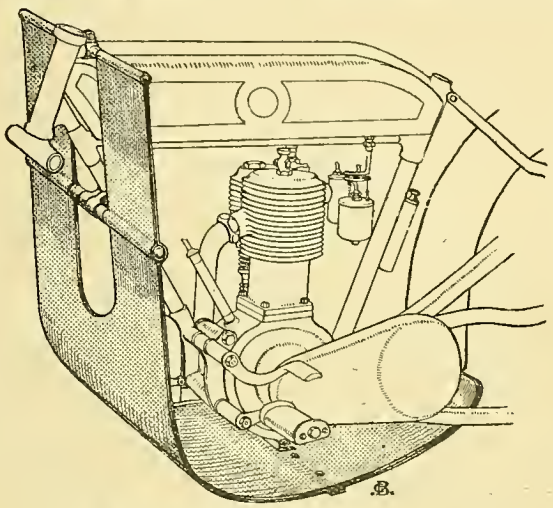
Shields Instead of Mudguards for Military Machines.

Suggestions for a Much-needed Improvement.

By H. Mortimer Batten.

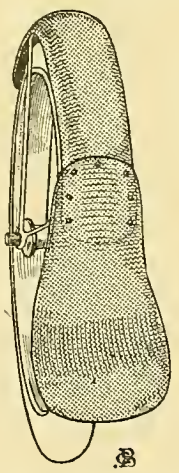
CONSIDERING how much despatch riders in France had to say last winter regarding the inefficiency of mudguarding, it is rather surprising that those responsible have not, apparently, deemed it necessary for any extensive alterations to be made in the mudguarding of stock machines now going over to France. It is true that slight improvements have been enforced, but no serious effort has really been made to adapt the machines to the strenuous conditions of winter warfare.

Last winter it was amply proved that the mudguarding of the ordinary touring mount was not only inadequate but quite wrong in principle; in fact, it was made clear that mud *shields* rather than mud *guards* would best meet the demands. Riders stripped the mudguards from their machines, and improvised crude shields of one kind and another to take their place, and there is no doubt that wide, flat shields, which could be stripped from the machine by the loosening of a nut or two, and clipped back into place just as simply, might profitably take the place of the front wheel guard for military use. For while providing not only the machine but also the rider with shelter, such an arrangement could not "make up," and, being attached to the frame, would not be so likely to rattle loose through engine vibration at high speeds.



Mudshield designed to protect machine and driver.

Now the adapting of a suitable shield would be a comparatively simple matter compared with the designing of an efficient wheel guard. Take, for example, the P. and M. leg shield; this simple and obvious device not only keeps the rider warm and dry, but on the vilest of roads it protects the whole of the power unit from spray and splash caused by the front wheel. A device of this sort certainly fills the bill, but it needs to be extended both under the engine and upwards towards the handlebars. If this were done the front wheel mudguard, if so designed as to stop splash and the spray from the brake block (which, by the way, is more trouble than its existence warrants), might be cut off short on a level with the bottom of the air space in the shield.



Short front guard with extended leather flap.

The advantages of such a system are more or less obvious. We are given a fixture which is permanently a part of the frame, and the front wheel mudguard, now covering perhaps one-third of the circumference of the wheel instead of one-half, would not be so likely to make up with mud, since it would have no vertical inner surface on which the mud could rest and accumulate. It is to be noticed that when a mudguard "makes up," the jam first occurs an inch or so below that portion of the guard on the same level as the axle of the wheel, for at this point the mud falling back towards the road on the inside of the guard is met by a constant stream of mud attempting to travel in the opposite direction, while the rivet heads of the mudguard stay form a convenient anchorage. The short mudguard would allow the mud to drop out, therefore, ere the jamming point was reached, and for the same reason jamming in the vicinity of the forks would not occur so readily if the guard were thoughtfully designed.

Further, the shield does what the widest of guards cannot do: it provides the rider with shelter from wet and cold, and protects the whole power unit from mud and water, while it does not upset the steering of the machine in a high wind. Another advantage of the short wheel guard is that it cannot foul the ground when the machine is pushed or ridden through deep mud, and, finally, if offers a degree of accessibility impossible to attain with the present standard fittings.

Possibly the greatest point in favour of the shield system is in its solidity. The breaking and rattling loose of mudguards are features which are difficult to overcome, whereas with the shield we have a solid contrivance attached to a portion of the machine which is not subjected to great rattling strain.

Now produce this wide, flat shield under the machine to the point at which it meets the back wheel mudguard. This can be done without appreciable loss of ground clearance, and it will be seen that rider and engine are now completely protected from all splash except for that thrown by the back wheel, which is

Shields Instead of Mudguards for Military Machines.—

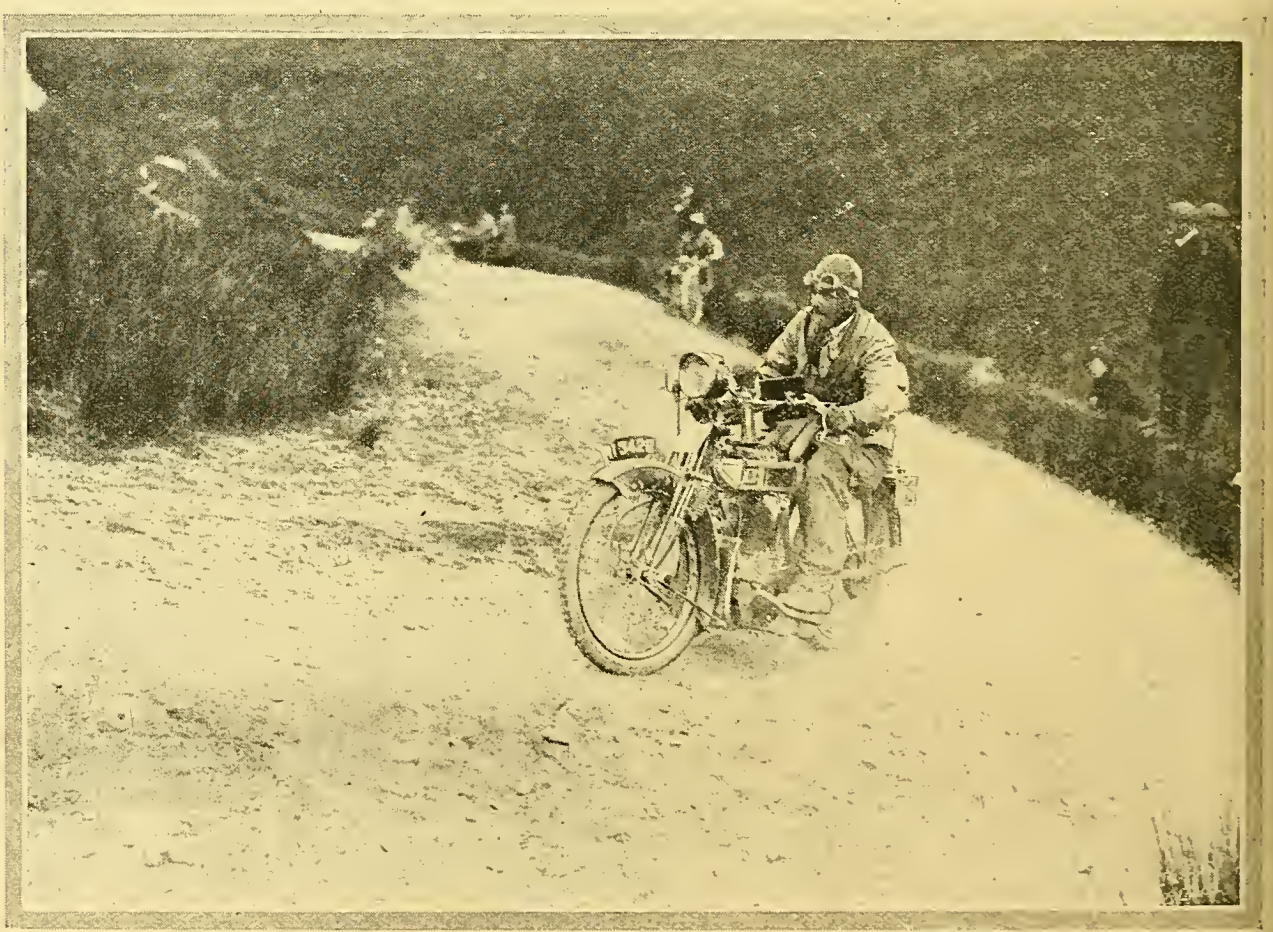
not considerable. The nooks and corners about the silencer and crank case cannot collect great clods of earth, the removal of which necessitates the use of a coal pick, while rear wheel brake control, magneto, and on some machines the kick starter, obtain an equal amount of shelter. The smooth surface of the shield shakes clean, since it provides no point of anchorage for the accumulation to begin.

Regarding the enclosing of the back wheel, there is, perhaps, no great ground for complaint, most manufacturers having abandoned the narrow, winged guard, made to the curvature of the tyre, for the wide, almost flat, shield so obviously superior.

Use Before Ornament.

I do not pretend that the system described, which is put forward merely as a suggestion, would be highly ornamental with its freakishly short guard, but it would be infinitely more businesslike and more suitable for military or colonial machines than the present system. Each season we have perceived the enclosing process produced one stage further, and it cannot be doubted that in due course we shall find all the nooks and corners of the power unit entirely shielded from road contributions, while it is not unlikely that the cylinder itself will be protected from rain by detachable wings hinged to the underside of the tank, which will concentrate the draught on to the engine and shield the legs of the driver from oil and the fine spray from the valves. Such an arrangement, similar to the early Motosacoche idea, but produced several steps further, would prevent the rattle of the engine from rising up into the rider's face, while it would mean a cooler engine and immunity from sparking plug troubles in wet weather. Proper protection would tend to make the pastime infinitely more popular, and, after all, there is no particular reason why the vitals of the machine should be exposed to the weather and the world.

The objection to shields is, we are told, that they are apt to rattle when the machine gets old, but this is because they have hitherto been designed on such slip-shod lines that nothing else could be expected. They are by no means ugly: is not the 1915 twin Sunbeam one of the most handsome machines on the road to-day? The wide shields give the finishing touch in the way of luxurious appearance, and, if you doubt their value, try them (if you are lucky enough to get the chance) on the first wet day.



A NOTED IRISH TEST HILL.

The photograph was taken in the Irish twenty-four hours trial, and shows J. C. Cunningham (4 h.p Bradbury) tackling Glengesh Hill—considered to be the steepest and most difficult hill in Ireland. It resembles Amulree Hill in Scotland

Town & Country

¶ No surface comes amiss to a Bates-built tyre. The smooth, slippery, setts of the city—the flinty, rough, lanes of the country side—are ridden in perfect comfort and security. A firm grip of the road, with almost complete immunity from puncture, and an extraordinary freedom from shock and vibration, are assured to the man whose mount is shod with Bates-built.

"The tyre of no regrets."

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I have ridden several machines in the past twelve years but have never had one which gives me so much satisfaction as the

QUADRANT Combination.

Its even running is really remarkable and proves the sound way the Quadrants are built.

I have now ridden 427 miles since I left your factory, and it has never caused me one moment's anxiety. I have had no occasion to adjust any part, which is another proof of the Quadrant's sterling quality.

Those words were penned by an enthusiastic Quadrant rider — E. P. D., of Thornton Heath.

You, too, will share his enthusiasm if you ride the "query-less Q," for its service is always sure and none of those irritating "unexpected happenings" will ever mar the full enjoyment of the Tour.

Ask for particulars of our several models, including the **4¾ h.p. Sidecar Combination with B.S.A. Countershaft three-speed gear—£66 11 0.**

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Because you run a Lightweight machine, do not be misled into fitting Tyres that are inadequate for the work, but use

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A NEAT DIVIDED SKIRT.

LADY motor cyclists will be interested to see the accompanying illustrations of a divided skirt, which is an eminently suitable garment for those who enjoy the sport and pastime of motor cycling. According to a well-known lady motor cyclist, the divided skirt illustrated, which is the design of Mr. Harrison, of 41, the Grove, Hammersmith, W., has very marked advantages over other designs which have been hitherto used by the fair sex. It is neat in appearance, and has a close resemblance to the ordinary walking skirt, and it may be worn in the house or street with comfort. The skirt is made rather short, with useful pockets at the sides, and is finished with a well cut high waistband, which is fastened with two plain brass buckles. It will not blow about when the wearer is mounted on her machine, and there is no exposure of the limbs when mounting or dismounting. The garment, which should be ideal for use on both open and diamond frame motor cycles, is made in duck back cloth; this the maker guarantees as quite waterproof. It can also be had in gabardine, covert coating, or serge

The Harrison divided skirt, showing neat appearance presented by wearer, both on the machine and off.

A STORY FROM AUSTRALIA.

Here is a striking story from *The Motor in Australia*. Henri Meyer was a racing cyclist. He was a German, but had spent twenty years of his life in France, and could speak French like a native. Also, he had begun to look more like a Frenchman than a German, and disguised as a French sergeant-major he seems to have had a successful career as a spy. His method was to enter the lines and represent himself as an officer belonging to some other division (the one whose whereabouts he wanted to discover for his officers) and enquire how to reach this corps. All went well until he ran into a party of Australian motor cycle despatch riders, some of whom had raced with him on the track. Someone called out, "Hello, Meyer, what are you doing here?" His yarn was unconvincing to men who personally knew him. He was then found to have incriminating German passes concealed in his clothes. He was shot as a spy.

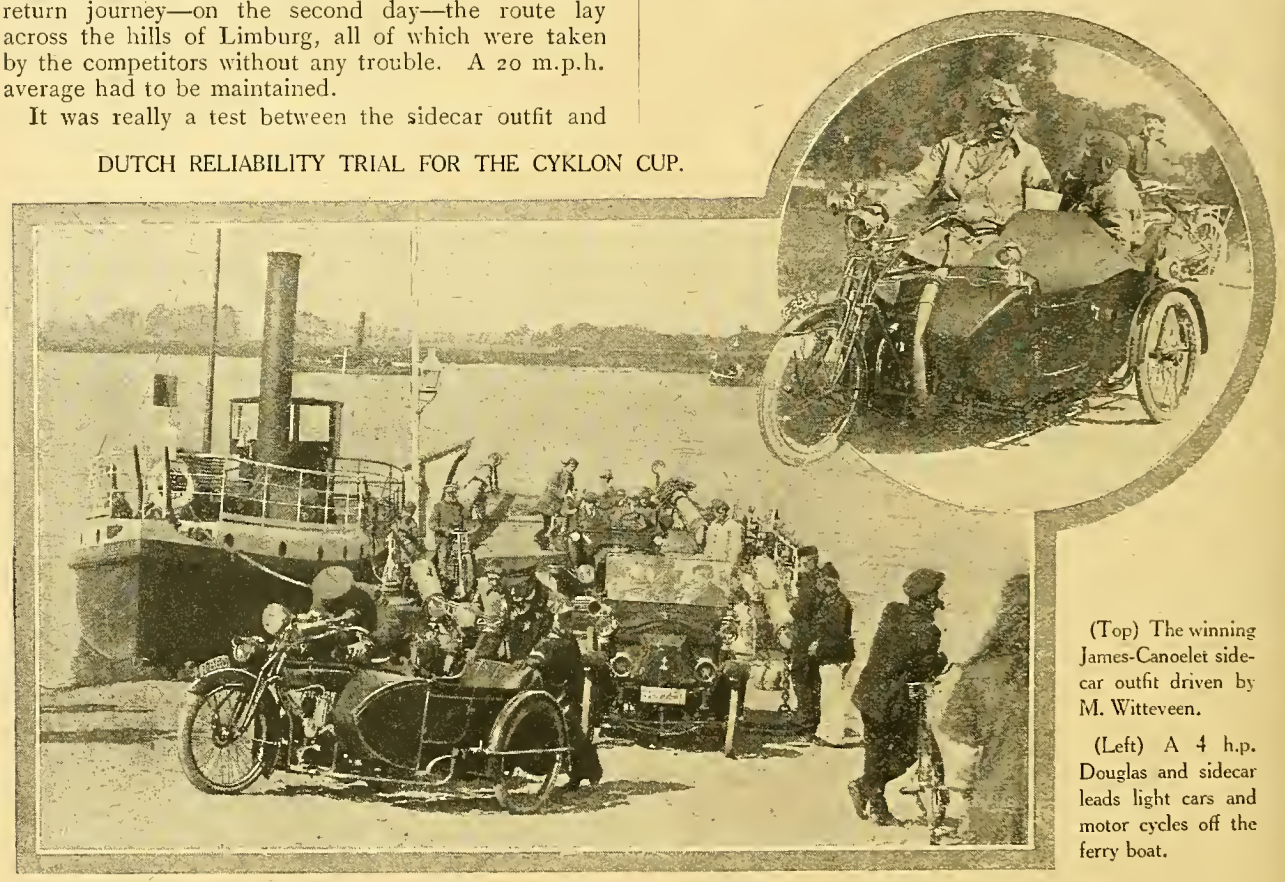
DUTCH TRIAL FOR PASSENGER MACHINES.

British Sidecar Outfit Wins. Contest for Light Three and Four-wheeled Vehicles.

ON September 11th and 12th our Dutch friends ran the final contest for the Cyklon Cup. It was a reliability trial confined to sidecar outfits, three-wheeled cycle cars, and light cars, and the total distance amounted to 325 miles. The route was from Amsterdam to Maastricht and return, and on the return journey—on the second day—the route lay across the hills of Limburg, all of which were taken by the competitors without any trouble. A 20 m.p.h. average had to be maintained.

It was really a test between the sidecar outfit and the cycle car, and both the reliability and economy of running were taken into account, also the condition of machines at the finish. A few British machines were entered, and it is gratifying to know that one of them brought home the winner, *i.e.*, M. Witteveen, on a James sidecar outfit. There were eleven starters.

DUTCH RELIABILITY TRIAL FOR THE CYKLON CUP.



(Top) The winning James-Canoelet sidecar outfit driven by M. Witteveen.

(Left) A 4 h.p. Douglas and sidecar leads light cars and motor cycles off the ferry boat.

ULSTER HILL CLIMB.

Handicap Competition Run in a Thick Fog. A Win for the Douglas.

THE Belfast and District Motor Cycle Club wound up a season that has been a very active one with an open hill-climbing handicap on Saturday last. The event was held at Red Brae Hill, Carrickfergus, where a straightaway hill of a mile and a half in length, with a considerable portion of single figure gradient, gave a very sporting course for the event. The entry for the climb was not a very large one, and a dense fog that settled down on the hill before the start of the proceedings made things rather uncomfortable for the competitors, but fortunately it was not sufficiently thick to make speed dangerous.

The handicap for the climb was made by the Ulster Centre of the Motor Cycle Union of Ireland, and the event was decided on the "knock-out" principle, the men being despatched in pairs. J. Shaw, on a 3½ h.p. Norton, was the scratch man, but he had the misfortune to get away badly in the semi-final, and was not able to give 26 seconds to T. Stewart (2¾ Douglas). The latter also won the final rather easily from D. Hunter (3¾ Scott).

The following qualified for the semi-final: J. Maxwell (3½ Norton), 7s.; D. Hunter (3¾ Scott), 11s.; J. Shaw (3½ Norton), scr.; T. Stewart (2¾ Douglas), 26s. Semi-final: Hunter beat Maxwell: Stewart beat Shaw. Final:

		Start.
1.	T. Stewart (2¾ Douglas)	26s.
2.	D. Hunter (3¾ Scott)	11s.

NOTICE.

The Editor disclaims all legal responsibility in any way for loss of copy in the form of manuscript, drawings, or photographs submitted to him. Rejected matter will only be returned provided a stamped addressed envelope is enclosed for the purpose.

GRAND PRIX AUSTRALIA WON ON WAKEFIELD 'CASTROL'

Read the opinions of the winner — Mr. J. E. Meller—and those of his brother concerning "Castrol" as a lubricant.

5, Cairo,
North Sydney.

Messrs. C. C. Wakefield & Co.,
Cheapside, London, E.C.

Dear Sirs,

It gives us much pleasure in stating we have used your Castrol Oil for the past two years.

We have used it exclusively in our racing and reliability trials and successes, and on every occasion it has given us utmost satisfaction.

Yours faithfully,
J. E. & F. MELLER.

Advance Australia C.O.C.

Advance Castrol

During the past two seasons these well-known racing cracks have captured the principal motor cycling contests "down under."

C. C. WAKEFIELD & Co.

Wakefield House, Cheapside, London, E.C.

In answering this advertisement it is desirable to mention "The Motor Cycle." B3

ROYAL ENFIELD
MADE LIKE A GUN

Even American Automobile Engineers,

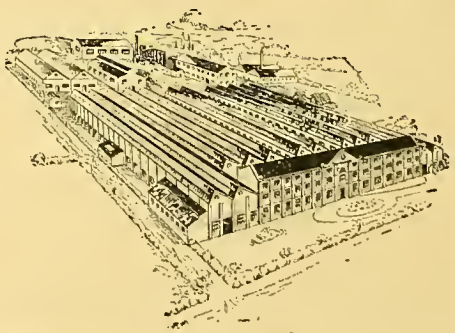
men who design and build machines in their own country, buy Royal Enfield motor cycles. Only a few days ago a leading engineer from Detroit—America's great automobile producing city—called at our works before taking ship for home. Over here on a holiday, he had searched around for the best motor cycle and sidecar combination. Ultimately, his choice rested upon a 6 h.p. ROYAL ENFIELD, and after a road test of over 1,000 miles he was proudly taking his purchase back with him.

That is one of the finest compliments ever paid to Royal Enfield motor cycles.

Complete catalogue of all Royal Enfield motor cycles free on request. Mention "The Motor Cycle" when writing.

The ENFIELD CYCLE CO., LTD., Redditch,
and 48, Holborn Viaduct, London, E.C. Agents Everywhere.

Contractors to His Majesty's Government, the Belgian Government, and the Russian Imperial Military Authorities.



In answering this advertisement it is desirable to mention "The Motor Cycle."

"THE MOTOR CYCLE" RECRUITING SECTION.

Excellent Response to Appeal for Recruits. Three more men from South Africa.

MOTOR MACHINE GUN SERVICE FULL UP.

THE training centre of the Motor Machine Gun Service is full up, and it is unlikely that there will be further vacancies for motor cyclists or cyclists for some weeks to come. At the invitation of the Commanding Officer, Lieut.-Col. R. W. Bradley, the editor of this journal paid a visit to the camp last week, and saw the men busily engaged in the different phases of their training. It was remarkable how quickly the men had taken up their new duties. The camp is situated in an ideal spot, and there was a broiling sun on the day of our visit.

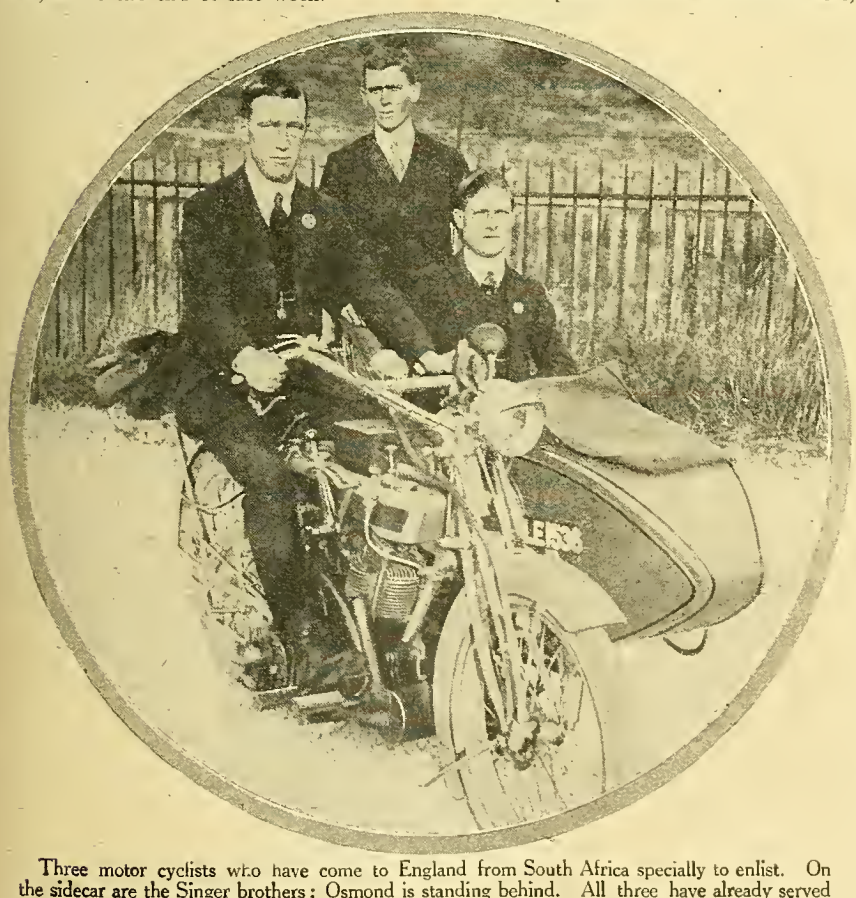
R.E. DESPATCH RIDERS.

MOTOR cyclists all over the country sent for particulars of the above Service to the Editor, though it was clearly stated last week that there are inspecting officers for despatch riders in most districts. As far as possible particulars have been issued to applicants, and the name and address of the nearest inspecting office furnished.

The number of applications from recruits dealt with by Mr. Geoffrey Smith, editor of this journal, had grown to 4,028 at the end of last week.

TWO GALLANT SOUTH AFRICAN MOTOR CYCLISTS.

WE recently had a visit from Regimental Sergeant-Major Harold Singer, who, with his brother (of the 2nd Durban Light Infantry), has come over to enlist in the Motor Machine Gun Section. Singer was in the Garrison Artillery at the start of operations in South-West Africa, but at Luderitz he joined the South African despatch riders, and was attached to General Botha's staff. The Triumph which he rode behaved extremely well, and he could ride for hours at a time on the low gear (14 to 1 Sturmey-Archer) through the thickest sand, against which the smaller machines were of no avail, as their tyres did not present sufficient gripping surface. Evidence of the wonderful organisation prevailing throughout the campaign is the fact that Singer never ran short of petrol. Every depot and communication post had a case or more, and the majority of the transport waggons carried it. It is one of those important details that were properly attended to, and, in a country like that in which the South-West African campaign was brought to a successful conclusion, it is no mean achievement. It is indeed splendid of these two brothers, who were accompanied by a chum Osmond, after "doing their bit" in South-West Africa, to come over to the Old Country to re-enlist, and, as our readers know, they are not the only men from South Africa to do so.



Three motor cyclists who have come to England from South Africa specially to enlist. On the sidecar are the Singer brothers; Osmond is standing behind. All three have already served in the German South-West African campaign.

ROYAL FLYING CORPS.

THE response to the paragraph in last week's issue referring to vacancies in the Royal Flying Corps for motor cyclist despatch riders was remarkable. The R.F.C. is a very popular section with sporting men, and it is, therefore, not surprising that more than sufficient applications were received to satisfy immediate requirements, and, consequently, no more applications should be made until the appeal is renewed. All those who filled in the form in last week's issue should have received instructions by this time as to their procedure. All recruits for the R.F.C. must be finally approved by headquarters after passing a riding test and an examination in their knowledge of a motor cycle. Some applicants had had very short experience of a motor cycle, and could hardly expect to be accepted for the R.F.C.

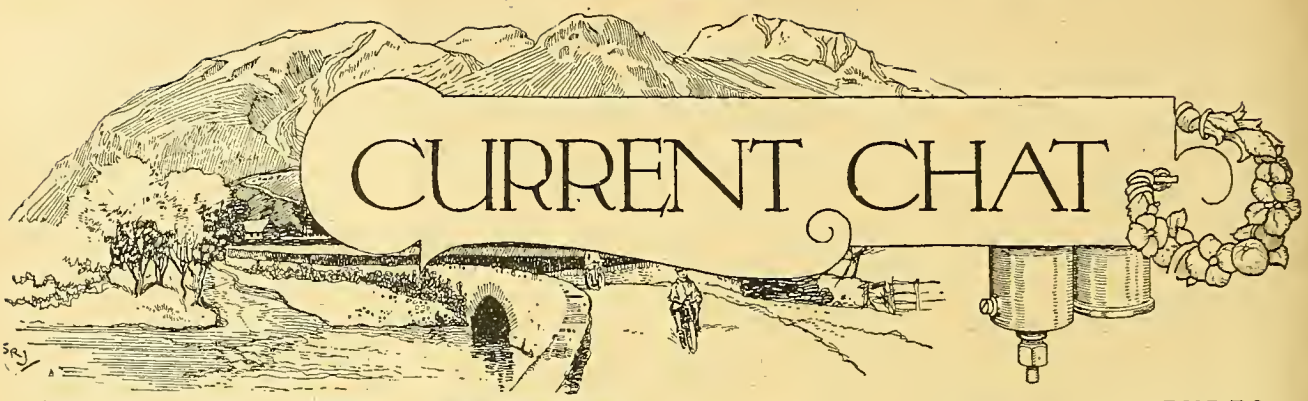
THE MILITARY MOTOR CYCLE IN FRANCE.

A WELL-KNOWN motor cyclist who has had many opportunities, in his capacity as driver of a motor ambulance, of observing the manner in which motor cycles stand up to military work in France, has favoured us with his views on the subject. From these it would appear that the ideal military machine is still to be devised, though the great majority of those out there are, under the trying circumstances, standing up remarkably well. Of course, different makes have their own particular weaknesses, but engines throughout, generally speaking, give no trouble. This speaks well for the design and workmanship, as it is not unusual for water-cooled oil only to be obtainable, and this is burnt away very quickly.

Our informant emphasises the great need for rear springing. This will be well understood by even those at home, and out there many riders suffer severely from fatigue due to excessive vibration. Another interesting point he brings forward is that there is no call for a very fast machine—speed is not so necessary as ease of control, ease of starting, and ability to run slowly to enable the despatch rider to pass safely lorry convoys. For these reasons he considers that there is room for a two-speed lightweight, which should be of very low build and easily controlled. He suggests an engine such as the 2 h.p. Precison, with crank case and gear in one piece.

Tyres should be on the heavy side; 26in. × 2¼in. for lightweights, and 26in. × 2½in. for the ordinary 3½ h.p. machine.

In conclusion, our correspondent says that belts appear to give no trouble, and that a nail catcher is a useful fitment omitted by most makers.



TIMES TO LIGHT LAMPS.

Sept.	23	... ...	6.58 p.m.
,,	25	... ...	6.53 ,,
,,	27	... ...	6.48 ,,
,,	29	... ...	6.45 ,,

In London half an hour earlier.

The Ways of the Army.

A recruit accepted by the Editor last week had to pass simple arithmetic and dictation test, although he was a school teacher and University B.A.

Red Rear Lights on All Vehicles.

We understand that steps are to be taken immediately to enforce the Home Office regulations that cycles and other vehicles should carry a rear red light.

New Use for a Sidecar.

A motor cyclist we know has found an easy method of mowing a big lawn. He simply hitches a good-sized mower to his sidecar outfit, gets someone to guide the mower, and the work is soon done.

Racing in Australia.

A five and a half mile road race was recently held by the Hamilton (Victoria) M.C.C., with the following result: 1, C. Whitford (3½ Rudge-Multi), scr.; 2, J. Quigley (3½ Rudge-Multi). The winner was giving a start of several seconds to powerful American twins.

From the Eastern Counties.

On the Colchester-London road a great many more motor cyclists than motorists are to be seen, the majority being officers attached to the various regiments stationed in the numerous towns in the vicinity. The road is in very good order, and is a safe one, possessing several fast stretches.

Photographing.

Motor cyclists who are photographers should exercise care when photographing on or near the East coast. Recently one of our staff was delayed for an hour while being questioned by an officer of the regiment stationed in the locality, this despite the fact that he photographed quite openly, and after first asking permission of the various sentries who happened to be standing near the photographer. The slight inconvenience caused was nothing serious, and we simply quote this instance as a warning, even when photographs are taken in places where there are, as far as one knows, no objects of military importance, and in which there is no apparent need for secrecy.

Motor Cycle Thefts.

Two privates of the West Riding Regiment, Henry Collumbine and J. Hawcroft, were recently sentenced at Mansfield to two months' hard labour for stealing a motor cycle. They took the machine from outside the Grand Theatre, Mansfield, and rode it to Yorkshire, getting free supplies of petrol on the way by stating that they were despatch riders.

A Good Climb.

We have received information that E. W. Flower, riding a 3 h.p. Enfield and carrying a heavy passenger, recently made the ascent of Mount Troodos (Olympus) in the island of Cyprus. This mountain is 6,000 feet in altitude, and is approached by a zigzag roadway, which, in places, is somewhat dangerous. This is said to be the first ascent of Mount Olympus.

Prominent Trade Man in the R.F.C.

Flight-Commander Frank Smith, whose photograph we reproduce on this page, will be known to many of our readers as the assistant managing director of the Enfield Cycle Co., Ltd. He has already been to the Front, was subsequently transferred to the Royal Flying Corps, and was recently home on leave. Flight-Commander Smith is one of the many motor cyclists in the Flying Corps.

MOTOR CYCLISTS IN THE ROYAL FLYING CORPS.
Flight-Commander Frank Walker Smith, assistant managing director of the Enfield Cycle Co., Ltd.

SPECIAL FEATURES.

SHIELDS INSTEAD OF MUDGUARDS (Illustrated).

A SUGGESTED COMPETITION FOR MUNITION WORKERS.

THE PEN-Y-BALL HILL-CLIMB (Illustrated).

A Lancashire Road Puzzle.

Correspondents so far agree with us that the more direct route from Warrington to Preston, viz., *via* Wigan, is preferable to the R.A.C. avoiding route. A Liverpool correspondent objects to our reference to "cobblestones" on this route.

Probably the Lightest Four-wheeler.

A Beverley, Mass., agent has built a very light four-wheeler with cycle wheels and tyres, and attached an Auto-wheel. It is driven about the streets for advertisement. The whole outfit, we understand, does not weigh so much as a motor bicycle.

The late Mr. J. H. Cocker.

We regret to record the death of Mr. J. H. Cocker, the Northern Counties representative of the Enfield Cycle Co. Mr. Cocker was well-known to T.T. riders, and used to look after the Enfield competitors in the Isle of Man.

A Coloured Head Light.

At the Moot Hall Police Court, Newcastle, a motor cyclist was recently summoned for riding a motor cycle which displayed a blue head light. He was ordered to pay the costs. It was pointed out that according to the Act the head light should not be coloured—a fact of which few people seem to be aware.

A Competition for Munition Workers.

A competition for motor cyclists engaged on munitions is the latest suggestion by a reader of *The Motor Cycle*. We deal with the matter editorially. It would be easy to limit the event, if held, to war workers by stipulating that all entrants must be in possession of the official war badge.

Second-Lieutenant Lodge Killed.

Our readers will be sorry to learn that Second-Lieutenant Raymond Lodge, the youngest son of Sir Oliver Lodge, and associated with the Lodge Sparking Plug Co., Ltd., has been killed in action. He was twenty-six years old, and was attached to the South Lancashire Regiment, which he joined just after the outbreak of the war.

A Curious Fact.

In contradistinction to the Army and Navy meetings held at Brooklands, when practically every official was an Army and Navy man, not a single official announced for the Army *v.* Navy hill-climb on Saturday is attached to the Services.

The Army v. Navy Hill-climb.

We have received the following particulars regarding the hill on which it is proposed to hold the Army *v.* Navy hill-climb, starting at 2 p.m. on Saturday next. The length is approximately 1,000 yards. The maximum gradient is 1 in 8 near the start, afterwards easing to 1 in 20. The surface is excellent. The name of the hill will be found on the notice board of the Streatham and District M.C.C., which is organising the event, at the Crown and Sceptre, Streatham Hill, on Saturday morning. The committee of the Streatham and District M.C.C. will present a silver cup for the best performance on formula of a member of this club.

NEW TAXES ON CARS, MOTOR CYCLES AND PETROL.

In the House of Commons on Tuesday afternoon, the Chancellor of the Exchequer outlined the following new taxes on motor cars, motor cycles, and motor spirit.

Motor spirit: 3d. per gallon.

Motor cars, motor cycles, } Duty of 33⅓% ad valorem.

Liverpool Club's Hill-climb in North Wales.

The photographs in this issue of Saturday's Pen-y-ball hill-climb are exclusive to this journal as usual. It is amusing to observe that a contemporary publishes a single and very old photograph of a Pen-y-ball hill-climb, but the bare trees in the background look very cold, and suggest another great journalistic feat which may yet be described as the first illustration of autumn "leaves."

The Testing of Metals.

The final instalment of "The Testing of Metals" will appear next week.

Average Prices

We give below the average prices for the various second-hand models offered for sale in *The Motor Cycle*. We quote those machines of which at least five weekly averages have appeared in the past two months, and where it is possible to obtain a sufficient number. We give the average for the past week.

Make.	Year.	H.P.	Last week's average.	Average for past 8 weeks.
A.J.S.	1914	6 3-sp. sidecar	—	£77
"	1913	6 3-sp. sidecar	—	£58
"	1914	2¾ 3-speed	—	£44
Bat	1913	8 3-sp. sidecar	—	£49
Bradbury	1914	6 3-sp. sidecar	£60	—
"	1914	4 3-sp. sidecar	—	£47
"	1913	4 3-sp. sidecar	£40	—
B.S.A.	1914	4 3-sp. sidecar	£56	£58
"	1915	4 3-sp. sidecar	—	£67
Calthorpe	1914	2 2-speed	£18	£19
Chater-Lea	1914	8 3-sp. sidecar	—	£60
Clyno	1914	6 3 sp. sidecar	£73	£69
"	1913	6 3-sp. sidecar	£53	£53
"	1914	2½ 2-speed	£30	£32
Douglas	1914	2¾ 2-sp. T.T.	£41	£42
"	1914	2¾ 2-sp. kick start	£45	£44
Enfield	1914	6 2-sp. sidecar	£63	£64
"	1914	3 2-speed	£34	£37
Humber	1913	3½ 3-sp. sidecar	—	£39
Indian	1914	7 2-sp. sidecar	£60	£60
"	1914	7 T.T. free eng.	—	£43
James	1914	4½ 3-sp. sidecar	£53	£54
Levis	1914	2½ 2-speed	£30	—
Matchless	1913	8 2-sp. sidecar	—	£53
New Hudson	1914	6 3-sp. sidecar	—	£60
"	1914	4 3-sp. sidecar	—	£48
O.K.	1914	2 2-speed	—	£24
P. & M.	1914	3½ 2-sp. sidecar	£55	£57
Premier	1914	3½ 3-sp. sidecar	—	£48
"	1913	3½ 3-sp. sidecar	—	£39
Rex	1914	6 3-sp. sidecar	—	£59
"	1913	6 3-sp. sidecar	—	£39
Rover	1914	3½ 3-sp. sidecar	—	£57
"	1913	3½ 3-sp. sidecar	—	£40
Royal Ruby	1914	3½ 2-speed	—	£44
Scott	1914	3¾ 2-sp. sidecar	£52	£54
"	1913	3¾ 2-sp. sidecar	£41	£42
Sunbeam	1914	6 3-sp. sidecar	£78	£79
"	1914	3½ 3-speed	—	£56
Triumph	1914	4 3-sp. sidecar	£60	£56
"	1914	4 3-speed	£47	£44
"	1913	3½ 3-sp. sidecar	£49	£46
Williamson	1914	8 2-sp. sidecar	—	£75
Zenith	1914	6 Gradua sidecar	—	£63

Among the steadily increasing number of ladies who are taking up motor cycling are many of the theatrical profession, and these illustrations show two actresses, Miss Sybil Arundale and Miss Betty Fairfax, out on the road. The lower picture shows that they are not afraid of tackling tyre repairs by themselves.

Entries for Next Saturday's Hill-climb.

At the time of going to press entries had been received from the following for the Army and Navy hill-climb on Saturday next:

C. P. O. Kingston
Sergt. Milner
Flight Sub-Lieut. Openshaw
Capt. G. W. Huntbach
Capt. P. W. Inglebach
Lance-Corpl. Thompson, R.E.
Flight Lieut. Warneford.
Capt. Storey
Lance-Corpl. Wardlow
Lieut. J. Everard Storey
Pte. H. Johnson, A.S.C.
Sergt. Barker, A.S.C.

As entries did not finally close until Wednesday, the above list cannot be taken as being complete.

At the starting point. W. Jones (2¾ h.p. A.J.S.) getting away.

H. W. Coopland (6 h.p. A.J.S. sidecar) nearing the top of Pen-y-ball.

THE PE
HILL

Fifty-six Comp
organised by t
Club. The p
devoted to w
prizes consis
vc

IF any answer wer
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would be forthco
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last at Pen-y-ball, F
tain evidence that su
for there were certai
spectators assemble
five-eighths of a mile

The course was slig
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spread on the top p
officials decided shou
timed ascent. The h
tion, but the fast tin
mishap whatever, sho

All proceeds were
or other, consequentl
for programmes, whi
lady members of the
an estimated profit
grammes, whilst it
will be the sum realis

Promptly at two o'
off by the starter,
being by telephone,
top of the hill oper
seventy-one entries (w
if one takes into con
officials have had to
present times), no few
started. So smoothly
that by 4.45 the ev
concourse of spectator

Observations

Generally speaking,
being lost in some ca
although solo riders
and passenger machi
R. Grice, of Colwyn
could not get his e
yards allowed by the
field, made a perfect
the bend and out of s
both being on Baby
countershaft gears.
four 2¾ h.p. A.J.S. r
W. Heaton, O. Wad
consistently and equ
touring Sunbeam rid
never been up the h

Class 3 (500 c.c.)
and in this Victor E
pulley coming adrift,
following class, he

N-Y-BALL CLIMB.

itors in an Event e Liverpool Motor ceeds are to be funds, and the d of War Loan chers.

eeded as to whether sup- attendances of the public, g at an open motor cycle promoted, very success- Motor Club on Saturday well, provided no uncer- support would be given, between 2,000 and 3,000 he whole length of the hill.

ly shorter than usual, this of loose sand or shingle on of the hill, which the not be included in the was in rather loose condi- recorded, all without any that it was not unsafe. marked for some war fund no fixed charge was made were distributed by the ub. Incidentally, there is about £8 on the pro- thought that about £20 in all.

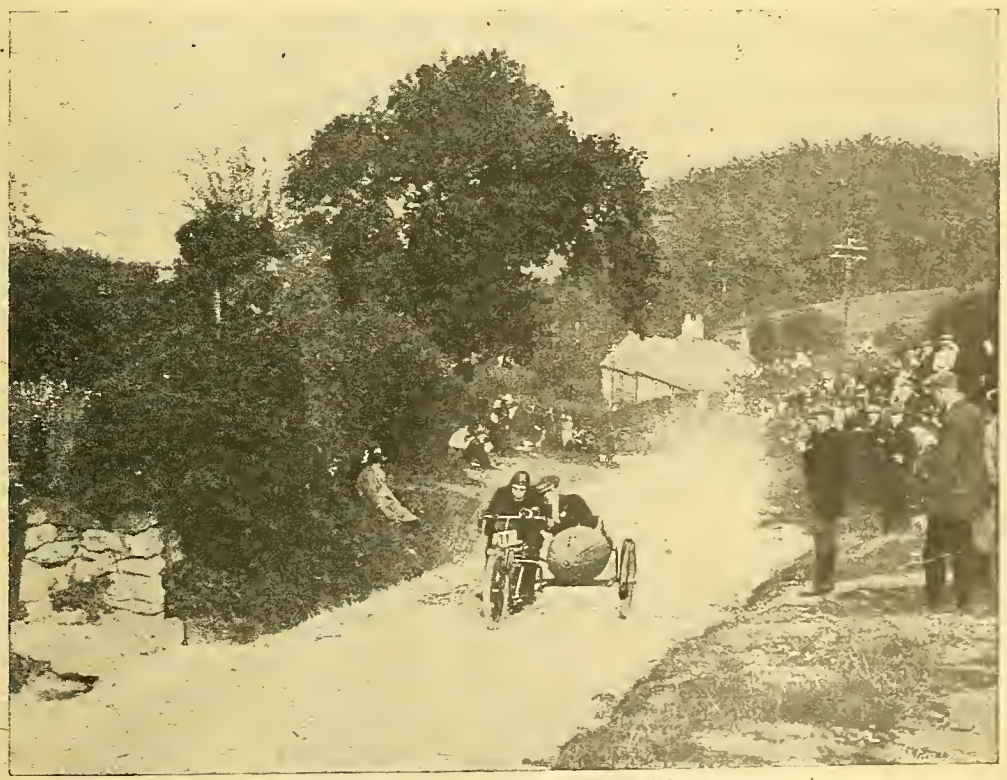
ck the first man was sent S. W. Phillpott, timing h Mr. H. N. Ellis at the ng the watches. Of the h must be considered good, eration the short time the ganise the event and the than fifty-six actually were id the arrangements work was over, and the huge treamed down to the town.

the Starting Point.

e starts were poor, seconds before the man got going, ere allowed one pusher-off two. The first man off, y, claimed a restart, as he ne going within the fifty es. The next man, Butter- tart, and was soon round likewise Howard Newey, vis machines with Enfield ss 2 (350 c.c.) consisted of hines ridden by W. Jones, and H. Heath, which were noisy and fast, and one by a local rider who had before the event.

oduced the largest entry, sman had hard luck in his hen, as he showed in the fast enough to win. A

C. B. Franklin, mounted as usual on an Indian, competing in the 500 c.c. class.



A 3½ h.p. Singer sidecar, driven by Victor Horsman, in the 500 c.c. passenger class.

Pen-y-Ball Hill Climb.—

mild diversion was caused at the starting line by Simister's Dot-Jap getting on fire, but it was quickly put out without damage. C. B. Franklin (3½ h.p. Indian) looked all over the winner as he left the line, and his win compensated him for his journey across the Irish Sea.

Few Failures.

Failures on the hill were but few. These were Horsman, as mentioned; J. Moore, who broke his belt within sight of the finish when going well on a Triumph, which gossip on the hill reported as formerly ridden by Jimmy Cocker; H. J. Hughes, whose Matchless mysteriously dried up *en route;* G. Scholes, whose 6 h.p. Bradbury sc. fairly konked out; and two 10 h.p. American Ritz cars, which were only unpacked on the morning of the climb, and were thus not run in or tuned up.

Seen from the steepest part of the hill, with its natural circular grass gallery either side, both being literally covered with spectators, many of the men were noticed to be erratic in their steering, and this was probably due to the water gulleys and the loose surface. Both Newey and Horsman had their stands down, evidently through the jumps over the gulleys. Amusement was caused by the position adopted by the passenger in Bottoms's sidecar, as he was quite out of sight until the machine was alongside, when he was seen to be kneeling backwards face downwards.

A noticeable feature was the large proportion of khaki-clad visitors, particularly officers, whilst in distinct contradiction only one competed in khaki, *i.e.*, Sergt. F. C. Jones, who thus with his Singer light car took the prize awarded for fastest time of the day by a member of H.M. Forces.

Results.

CLASS I.—SOLO MACHINES UP TO 275 C.C. (4 Entries).

1.	W. H. Butterfield (2¼ Levis)	63⅗ sec.	1st Expert & 1st General.
2.	Howard Newey (2¼ Levis)	65⅘ sec.	2nd Expert.
3.	R. Grice (2¼ New Imperial)	67⅘ sec.	3rd Expert & 2nd General.

CLASS II.—SOLO MACHINES UP TO 350 C.C. (6 Entries).

1.	H. Heath (2¾ A.J.S.)	48⅘ sec.	1st Expert & 1st General.
2.	W. Heaton (2¾ A.J.S.)	53⅗ sec.	2nd Expert.
3.	W. Jones (2¾ A.J.S.)	54 sec.	3rd Expert & 2nd General.
4.	O. Wade (2¾ A.J.S.)	54⅘ sec.	
5.	S. Hughes (2½ Sunbeam)	64⅕ sec.	3rd General.

CLASS III.—SOLO MACHINES UP TO 500 C.C. (15 Entries).

1.	C. B. Franklin (3½ Indian)	45⅘ sec.	1st Expert & 1st General
2.	T. Simister (3½ Norton)	49⅘ sec.	2nd Expert & 2nd General
3.	H. Riddell (3½ Precision)	50 sec.	3rd Expert.
4.	W. Heaton (2¾ A.J.S.) / O. Wade (2¾ A.J.S.)	51⅘ sec.	
6.	C. W. Jobborn (3½ A.J.S.)	52⅕ sec.	3rd General.
7.	W. Jones (2¾ A.J.S.)	52⅘ sec.	
8.	E. Hickling (3½ Premier)	58⅘ sec.	
9.	W. Nolan (3½ Rudge)	69⅕ sec.	
10.	C. Hughes (3½ Sunbeam)	74 sec.	

CLASS IV.—SOLO MACHINES UP TO 750 C.C. (10 Entries).

1.	Victor Horsman (3½ Singer)	43⅕ sec.	1st Expert.
2.	T. Simister (3½ Norton)	49 sec.	2nd Expert & 1st General
3.	H. Riddell (3½ Precision)	49⅘ sec.	3rd Expert.
4.	O. Wade (2¾ A.J.S.)	51⅘ sec.	
5.	W. Heaton (2¾ A.J.S.)	51⅘ sec.	
6.	E. Hickling (3½ Premier)	56⅕ sec.	2nd General.
7.	C. Binks (5 Indian)	56⅘ sec.	3rd General.
8.	T. Dehanys (5 Victoria-Jap)	60⅘ sec.	

CLASS V.—SOLO MACHINES UP TO 1,000 C.C. (9 Entries).

1.	A. H. Alexander (7 Indian)	40⅕ sec.	1st Expert.
2.	C. B. Franklin (7 Indian) / T. Simister (8 Dot-Jap)	43⅗ sec.	2nd Expert & 1st General
4.	O. Wade (2¾ A.J.S.)	51⅘ sec.	
5.	W. H. Kelly (7 Indian)	64⅘ sec.	3rd General.

CLASS VI.—PASSENGER MACHINES UP TO 500 C.C. (5 Entries).

1.	W. Heaton (2¾ A.J.S.)	71⅕ sec.	1st Expert.
2.	Victor Horsman (3½ Singer)	79⅓ sec.	2nd Expert.

CLASS VII.—PASSENGER MACHINES UP TO 750 C.C. (7 Entries).

1.	H. Bottoms (6 Bradbury)	63⅘ sec.	1st Expert.
2.	H. Taylor (6 J.H.)	80⅗ sec.	2nd Expert & 1st General
3.	Victor Horsman (3½ Singer)	81⅘ sec.	3rd Expert.
4.	H. W. Coopland (6 A.J.S.)	83 sec.	2nd General.
5.	W. Heaton (2¾ A.J.S.)	83⅘ sec.	
6.	C. Binks (5 Indian)	98 sec.	3rd General.

CLASS VIII.—PASSENGER MACHINES UP TO 1,000 C.C. (12 Entries).

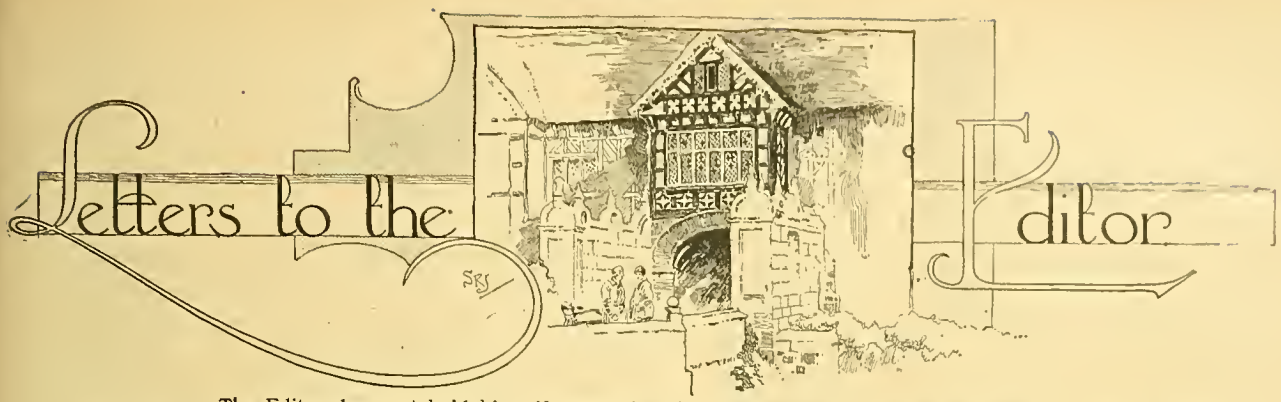
1.	H. Bottoms (6 Bradbury)	62⅕ sec.	1st Expert.
2.	A. H. Alexander (7 Indian)	65 sec.	2nd Expert.
3.	P. Tolfree (7 Harley-Davidson)	78 sec.	3rd Expert & 1st General
4.	E. Longden (8 Morgan)	78⅘ sec.	
5.	H. Taylor (6 J.H.)	80⅗ sec.	2nd General.
6.	S. Parker (7 Harley-Davidson)	84⅘ sec.	3rd General.
7.	W. H. Kelly (7 Indian)	87⅘ sec.	
8.	A. W. Montgomery (8 Morgan)	88⅘ sec.	

CLASS IX.—CYCLE CARS (3 Entries).

1.	Sergt. F. C. Jones (10 Singer)	2m. 13s.	1st Expert & 1st General

A. C. Whitney and A. Cleator (both 10 Ritz cars) failed to climb the h

Manchester motor cyclists took 100 wounded soldiers for a run into Cheshire on Sunday last. The photograph shows some of the sidecar outfits with their gallant occupants starting homewards from Kerridge Farm, Macclesfield. H. Reed, of Dot fame, is the marshal on the left in Volunteers' uniform



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

A Lady's Record Ride in Lakeland.

Sir,—May I be allowed to congratulate Mrs. Mary Riley upon her wonderful performance described in the last issue. It is a splendid piece of driving, and readily appreciated by anyone who knows the country and the conditions.

I should like to say how much I enjoy the articles from the very able pen of Mr. George D. Abraham, not forgetting the excellent illustrations which accompany his writings, and which have appeared from time to time in your journal.

I rather hoped that in the reference to Three Shire Stone the inscription would be mentioned, which reads, "Lancashire W.F. 1816." I have never been able to find out the meaning. Perhaps Mr. Abraham can enlighten me. Baddeley, in his guide, although referring to the inscription, offers no explanation.

R. HOLFORD JONES.

A Lancashire Road Puzzle.

Sir,—With reference to your enquiry *re* Wigan-Warrington route, I was over both these routes about five weeks ago when going south and returning from Blackpool. Going down we chose the R.A.C. avoiding route, and did not see a single R.A.C. post all the way, but the ordinary posts were fairly numerous. Had we not known, however, that, after Ormskirk, we had to make Rainhill, we should have gone astray, as after Ormskirk there are many signs pointing to Warrington which, I believe, would lead one into the main route before the road *viâ* Rainhill does. On a few occasions, through poor signposting, we had to enquire our way, and, generally speaking, found the roads rather poor, and certainly the route is much longer than the direct one. Coming back the weather was fine, and we decided to risk the through route, which we found very good. I think, on the whole, the road surface is better than the avoiding route, and we certainly seemed to get through to beyond Wigan very quickly. Personally, I think that this route is to be preferred if the weather be fine, and if wet I should choose the other, because the tramlines of the two towns appear badly set, and in grease through the traffic as well it would not be pleasant, to say the least of it. After Wigan towards Preston the road is certainly quite good, and if when entering Wigan from the south one takes the road to the right one can avoid a little more of the actual town of Wigan.

STANLEY WORSNOP.

Sir,—May I point out that this puzzle is entirely of motorists' own making. Every account of a motor trip from Warrington to Preston that I have ever read has contained a reference to "cobbles" or "cobble-stones," and even your article, though based on a recent trip over the road, also refers to "cobble-stones"; so there is no wonder the R.A.C. planned out an "avoiding route." The real fact is that there never have been any cobble-stones on this part of the Land's End to John-o'-Groat's route, and writers seem to have followed one another in perpetuating a maligning description. It has apparently been the proper thing to make mention of cobble-stones when coming to this part of the route, regardless of the fact that they did not exist. No one ever heard of a cyclist attacking the Land's End to John-o'-Groat's record using any other route, and the "R.A.C. avoiding route" is simply ridiculous. From Warrington to Wigan has always been mostly macadam, and even where the tramlines are encountered by Ashton there is a good deal of macadam at the side until Brynn is approached. From Brynn to Wigan is all setts, but setts and cobble-stones are very different things, and the going is really quite good right through Wigan, while, as you point out, most of the macadam now takes the form of Tarmac. There is certainly nothing gained by taking the R.A.C. route, but even if motorists preferred an extra ten miles to avoid the Brynn-Wigan setts the R.A.C. could have planned a much better route from Knowsley through Rainford and Lathom, joining the main Ormskirk road at Burscough Bridge.

W. P. COOK.

Scottish Officers and their Pleasure Mounts.

Sir,—I have just been reading your article under the above heading in the last issue of *The Motor Cycle*, and it has occurred to me that it would be a good plan to hold a meeting like the recent Brooklands contests, or a hill-climb, in Scotland. Is this feasible and practicable? It would be most interesting to us up here, seeing that we cannot get South to attend or witness your shows. I would suggest somewhere near Glasgow or Edinburgh as a suitable place. Of course, you most likely have thought of this before, but I thought I would write to you.

Arder, Ayrshire. A. R. MOWBRAY, Lieut. R.G.A.T.

A Competition for Munition Workers.

Sir,—We have had an All-khaki and a United Services race meeting, and I would like to suggest that an event of a similar nature be organised for the workers behind the scenes—that is, the hard-worked munition workers, among whom are some well-known motor cyclists.

I would suggest that the event take place one Saturday afternoon in some convenient part of the Midlands, where most of the workers are to be found, and that it should take the form of either a hill-climb or speed trials, and, lastly, that the organisation be carried out by *The Motor Cycle*. All entrants should be on War Service, of course.

I should be glad to see something done to relieve the monotony of the war workers, and I feel sure that such a meeting would meet with success.

E.T.E.

[We deal with this suggestion in a leading article.—ED.]

Spring Frames in 1906.

Sir,—I noticed in last week's issue a reproduction of the design of spring frame for which you awarded a prize to Mr. Alfred Scott, of *Leeds*, in 1906, with remarks attributing the same to me, and commenting upon my curious change of opinion.

Upon its first appearance in your paper I foresaw possible confusion later on; but, whilst complimenting the designer upon his award, permit me to affirm the constancy of my views on frame design, and although I rejoice in the same name, and appreciate the charms of the same district, "I deny with both hands" any complicity in the affair.

ALFRED A. SCOTT, of *Bradford*.

[We offer our apology for the incorrect assumption that the two Yorkshire motor cycle designers of the same name were one and the same person.—ED.]

Mind and Machine.

Sir,—I was very interested in the letter and leader on the psychic relationship between man and machine in your issue of September 9th. For some years I have been inwardly convinced that such a relationship does exist, but until reading your correspondent's letter I had regarded the subject as no more than a fancy.

I am of opinion that, besides the sympathy between man and machine, there is a character or temperament in every machine, which varies, as in men. Being a motor cycle tester, I notice such differences in machines of identical form and design, and should like to hear the opinion of other readers more able to speak with authority and experience than myself. I have noticed in many cases that a man's temperament is reflected in the machine he rides and the results he obtains from it. This may be definitely due to some material cause. TESTER.

Sir,—I am not prepared to admit the contention put forward in your "leader" (issue, September 9th), and in the excellent letter by your correspondent "M.S." (issue, September 16th), that, before we can seriously consider the psychic relationship between mind and machine, we must prove the existence of an "anima" or consciousness inherent in the mechanism. The theory of such a consciousness, though defensible, is not required by the argument. It is through direct association with the human mind that the engine can apparently display sensory attributes, and then only when set in motion. Thought itself is a phase of motion, and, by reason of its dynamic affinity with other phases of motion, not necessarily animate, it can transmit the phenomena of sensation and will to a piece of running mechanism. Such transmission is purely impersonal and must be classified with the subconscious activities of the mind, termed by psychologists "automatic."

No doubt the structural peculiarities of a given engine modify the action of this imparted consciousness, and we may thus refer to mechanical temperament and almost admit a moral distinction between one engine and another. The point to be borne in mind is this, that the rider does not of necessity establish an affinity between himself and his machine since the initial process of sensitising the mechanism is automatic, and the condition of sympathy is dependent on reciprocating qualities which may or may not be present.

Thus, the influence of the machine on the conscious mind presents a problem of the most complex nature, being partly reciprocal and partly suggestive.

Two points to be remembered are—(1.) That sensation and thought are states of motion. (2.) That transmissive sensation is impersonal, and is related to those forces which regulate matter and motion of which we have as yet a very limited knowledge, hardly more than speculation.

C. E. VULLIAMY.

Sir,—We now have news indeed: "a psychic relationship may exist between the rider of a motor cycle and his engine, or, indeed, between the human mind and any piece of running machinery." This were matter for the Royal Society, scarcely for motorists. It is far above our heads.

That a sort of sympathy (a much misused word) may exist on the part of the driver towards an engine which, obedient to careful manipulation, gives him little trouble and good service, is perhaps not impossible. More than one has spoken to his machine almost in loving words when it carried him faultlessly up hill and down dale to see one who was to become his wife, and also, at another time, when the same good old bicycle as faultlessly brought the doctor in a desperate hurry. Yet, in all seriousness, there was nothing like the psychic relationship between the machine and the man as there was, later on, between the man and the dog found licking the hand of his child it had brought from the water. Yet, has a dog a soul?

The influence of mind on machinery (without mechanical intervention) may be an interesting subject—indeed it is—though one which requires studious graduation from the mind itself. Psychic relationship is not fully established between humanity and other living forms downwards to the lowest form of animal life. Even when established, there is a further vast field for research in that other form of life—vegetation, again through a long line down to the verge of that form of matter understood by the mind to be inanimate. All this appears to be necessary before psychic relationship between mind and machinery can be successfully or reasonably studied. The gulf at present is too great. If the terms animate and inanimate have meaning, it is probable that a mollusc, diatom, or seaweed has a greater chance of psychic relationship with humanity than a motor cycle engine. Has seaweed a soul?

When the materialist, on the one hand, informs a gasping world that an animal feels no pain, that the cringing nervousness exhibited and the howl or other vocal noise is merely reflex action; and the psychologist, on the other hand, informs the world that the cry of a slipping clutch is not the noise of misused metal, but is the voice of pain, some latitude must be allowed to the normal individual who gives little credit to what he cannot understand—mistake or no mistake.

Prophecy, too, is apparently one of the psychologist's weapons for putting the ordinary individual to flight. "A sensitive motorist is aware of what is going to happen in the engine before obvious symptoms declare themselves." This, indeed, is a branch of study worthy of development to that stage of foresight when one would carry only the particular spares required for the prospective journey.

Mentality is a wonderful thing, and one of its peculiarities is that when it has not followed throughout the proper course of thought, it considers that other things have attributes foreign to their nature. If a sound, the cry of a night bird, the scent of an unseen flower, the flicker of a distant light, though unconsciously or subconsciously received by the mind, will (particularly in a state of loneliness) commence a train of thought or recall the memory of something, to that moment forgotten, so by a similar process the merest trifle, happening to the engine an appreciable time before obvious symptoms occur, may bring the mind unconsciously towards the conclusion which experience has taught it. There is no psychic relationship in this. In simple language, both wanderer and motorist wake up in the middle of the mental process.

The materialist and the psychologist cannot be both right. If it be true that you may kick your dog as much as you like because reflex action has taken the place of pain, and yet when the bicycle begins to spit and cough you must sympathetically place a wet compress round its dear little throttle—murmuring sweet nothings the while—'twould seem that the reign of terminological inexactitude were well-nigh established. One would rather imagine that any stage of mood or mind between tender sympathy and violent thought would not avail in running if the petrol lever be turned off; but apparently the average motor cyclist does not properly understand things.

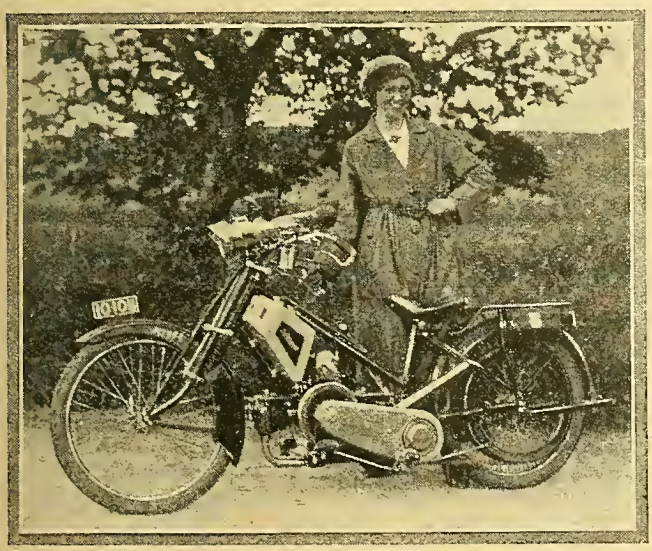
Poetical metaphor, whether rhyme or prose, is often a misuse of words—comforting, no doubt, but it is the veritable *bête noire* of reason. The statement "The cry of a slipping clutch is the voice of pain" is not wonderfully different in its inexactness from "The occupant of the sidecar is the fairest lily of the field."

S. McCLELLAND.

Capt. G. W. Huntbach, of the M.M.G.S., with the 3½ h.p. Premier on which he tied for first place in the 550 c.c. hill-climb at the Brooklands United Services meeting. This machine, which is fitted with a Philipson pulley, he expects to ride at the Army and Navy hill-climb on Saturday.

A Lady's Praise for her Mount.

Sir,—I have pleasure in herewith sending you a photograph of my 1915 lady's model 3½ h.p. Brough. As can be seen, it incorporates many excellent features. The frame is open, which is the important item, as a lady must look neat and graceful when mounted; it is also strong and rigid. In fact, the machine may be termed the Rolls-Royce of ladies' mounts, and if any other owner or maker think he has a right to this term I shall be glad to hear where he can supersede the Brough, and in what respect. The engine is of the horizontally opposed type, with overhead valves, and possesses a tremendous reserve of power, this being apparent at the first touch of the throttle. I have already had the speedometer touching "52," but this is not where the Brough scores most from my point of view. It stands alone because of its really comfortable riding position and ease of starting—just one push of the kick starter and you have it every time—it is minus vibration, and the engine will pull as steadily through the traffic at 8 m.p.h. on top as it would do at 20 m.p.h. What a vast difference there is on this up-to-date model compared with some of the "old-time gallopers" which I have had to pilot in the earlier days. Hills which I used to term the real Scotch terrors are not observed with the Brough, which roars to the summit and soon leaves everything behind. The three-speed Sturmey-Archer gear box is fitted, which with cork inset clutch and kick starter forms a complete unit. The clutch is controlled from the handle-bar; it works excellently, and does not "grab" when engaging.



Miss Mary Reid and her twin-cylinder Brough.

I am sure there must be many readers who live also in hilly districts, who would be glad to know that such a powerful model for ladies is to be had, with all the latest improvements. In fact, I am very much disappointed that the makers always seem to forget to talk to the ladies in the advertising columns; but we will excuse them, as we know they are doing their bit making the bombs to bring us back to the good old peaceful days.

(Miss) MARY REID.

American Design.

Sir,—It was with considerable interest that I read "The Trend of Design in America" as viewed by a "British Motor Cyclist."

American machines are built as they are for certain reasons, and very good reasons, too, and some of the improvements that seem to be lacking on American machines are left off for reasons known to the manufacturers only.

The average machine as produced in the United States has an engine of 1,000 c.c., which must pull a weight of some 500 lb. (allowing 150 lb. for a rider) on a top gear of 3¾ or 4 to 1. On these gears the machines in ordinary road trim, or all on, will do 65 to 70 m.p.h., and, what is more, they will hold a fairly rough road at high speed. This road-holding ability is the result of a big heavy machine having 28in. wheels and 3in. tyres, extremely efficient front forks, and some sort of rear spring, either for the rider or for the whole machine. On the same gear ratio the machines will, in most cases, throttle down to 5 or 6 m.p.h. without retarding the spark, and at that speed they are nearly, if not absolutely, silent. A good American twin with a two or three-speed gear (bottom gear about 9 to 1) will climb

anywhere with a sidecar where traction can be obtained, and solo stretches of 1 in 2 may be surmounted at speed on intermediate.

Take in comparison to the above an English single or small twin of, say, 500 c.c. The owner of such a machine is naturally anxious to hold his own on the road with the bigger American twins, and he is therefore forced to ride through deep ruts and over some stretches of road where the surface is composed entirely of loose stones two to four inches in diameter. These are all taken at speeds of from 30 to 60 m.p.h., and the unfortunate owner of an English machine, with its small tyres and low footboard clearance, must put up with a lot of rim cutting and stone bruising on his 2¼in. or 2½in. tyres, and in ruts he is continually in danger of spilling on account of his footboards catching on the sides of the ruts. Then again, the average English medium-weight machine has no rear springing other than the saddle, and the rider is jolted about fearfully on comparatively good roads, while on really bad roads it is next to impossible for him to "navigate." His machine has the speed, and a good three-speed gear with a wide range of ratios enables him to go as fast as he desires and climb practically any hill he desires, but if the surface is poor (and it nearly always is) it is impossible for him to hold his own with the heavier American machines.

Mudguarding is a point which has been carefully considered by American manufacturers, and although the American system of mudguarding "leaves much to be desired," it is impossible to make it much more efficient. When it comes to "mud-plugging" it is either necessary for the average English machine to fall out of the running on account of plugged guards, or else remove the guards altogether (which is not a very nice task on a muddy road and in the rain). Lots of clearance and the design of the guards on American machines make it possible to go nearly anywhere without the guards plugging, and when tyre chains are fitted the guards will positively not fill up with mud.

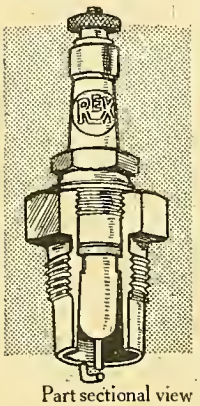
Now, I do not want it said that I am taking a prejudiced view of the subject, for I will admit that in detail work, chain guarding, etc., the English machines "have it on" the American-made machines, also when it comes to obtaining efficiency from a motor of given capacity the Englishman is without an equal, but in order to compete with American manufacturers in countries where the roads are poor or only partially improved it is absolutely necessary that English manufacturers turn out a machine with (1) lots of power and speed, (2) quick pick-up, (3) large tyres and heavy rims to withstand rough roads, (4) some sort of rear springing, (5) plenty of mudguard clearance, (6) a front fork where the action is *back* and *up*, (7) more footboard clearance, and also folding footboards (see illustration).

Calgary, Canada. LESLIE MUNRO.

[Our correspondent's views from the other side are most interesting and instructive. From experience gained in this country, we cannot agree that an American twin in the average owner's hands will take a sidecar "anywhere where traction can be obtained" on a 9 to 1 gear, nor should we care to take a road covered with 4in. stones at 60 m.p.h. on any machine. Nevertheless, the letter gives some interesting pointers to those who are studying the Overseas market. We should be glad to hear if there is any reason for the inaccessibility of many American twins, *i.e.*, the impossibility of removing the cylinders without removing the engine from the frame, etc. Machines with detachable heads (as the Indian) are, of course, exempt from this criticism.—ED.]

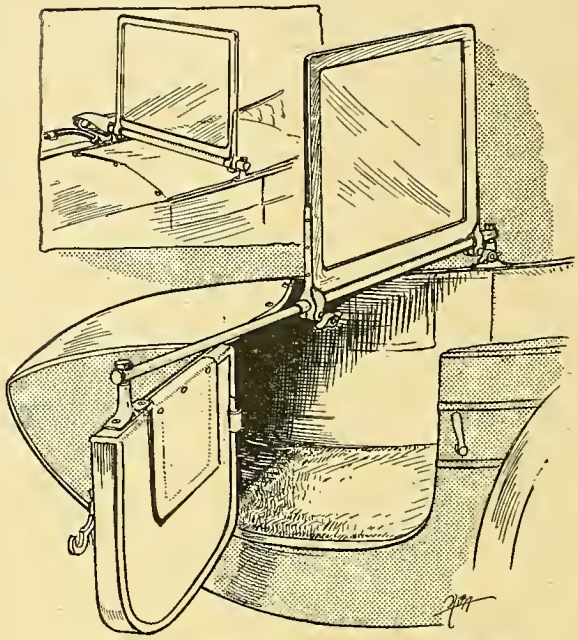
THE REX SPARKING PLUG

THIS is an American production, sold at a moderate figure, and possessing the important quality of extreme durability. The porcelain is of a special type, which is said to stand any amount of heat, while the central electrode is baked into the insulating material, and it and the other electrode are composed of a special alloy of platinum and nickel steel. The plug is easily demountable by removing the gland nut, and spare porcelains can be obtained and fitted without difficulty. One of the chief features is the shape of the porcelain, which is tapered at the point, where the washer is forced down by means of the gland nut, therefore forming a gastight joint. The cap at the top of the insulator is baked on, and is very firmly fixed. The plug is handled by Messrs. Robertsons Motors, Ltd., 157b, Great Portland Street, W., and Mr. Robertson Brown in our presence subjected it to a most rigorous, if not unfair, test. The plug was heated to a dull cherry red by means of a gas blow-pipe, and the whole plug insulator and body were absolutely glowing when it was dropped into cold water. The plug was then taken apart, and the porcelain was found to be absolutely intact, and the brass cap at the top perfectly firm. The plug is claimed by the makers to be oilproof, heatproof, and guaranteed for one year, no matter what mileage is covered in that period. At present it is provided with a thread suitable only for Harley-Davidson motor cycles, but plugs suitable for the standard De Dion thread are in the making.



Part sectional view of the Rex sparking plug.

THE ORTO WINDSCREEN.



The Orto—an ingenious form of sidecar windscreen.

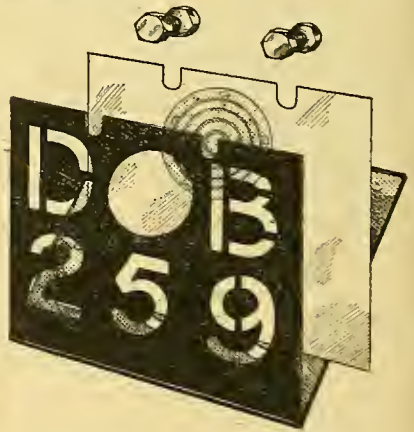
AN ingenious form of sidecar windscreen, which is patented by Messrs. Atkinson and Co., 24, Arminger Road, Shepherd's Bush, W., was lately demonstrated to us at Messrs. Robertson's Motors.

It is known as the Orto, and possesses the great advantage of being placed in a position on the sidecar in which it will most adequately protect the passenger from draught or rain. As will be seen in the lower of the two illustrations, it is pivoted at its base, and mounted telescopically, so that, when the door is opened, it causes the screen to swing back and permits the passenger comfortably to take her seat. When the door has been closed, the thumbscrews may be loosened, and the screen set to any angle desired. The screen is certainly one of the most practical we have yet seen fitted to a sidecar.

A TRANSLUCENT NUMBER PLATE.

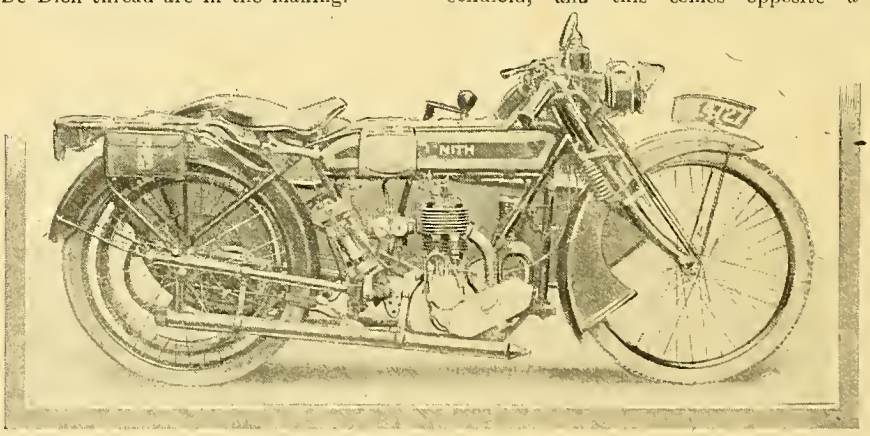
AN interesting number plate is about to be put on the market by Mr. W. O. Wood, of Lowfield Road, Stockport. The plate is made up of two metal sheets hinged together at the bottom, one of the sheets being bent over at the edges to form a bead into which the other sheet may fit when closed. Letters and numerals are cut in each sheet in such a manner as to register with each other.

Between the two metal sheets a translucent sheet of celluloid is placed; in the latter a circular hole is cut, over which is fastened a disc of red transparent celluloid, and this comes opposite a similar hole in the metal plates. The whole is closed up and held together by two small bolts and nuts, as shown in the sketch.



A novel rear number plate, in which translucency, instead of the usual reflection, is relied upon.

The object of the inventor is to provide a number plate which is made distinguishable at night by placing it in such a position that the light from the rear lamp shines through from the back, showing up the number and at the same time providing a red light. At any time the celluloid sheet may be taken out and cleaned, so doing away with the necessity of repainting.



A 3½ h.p. single-cylinder Zenith and sidecar, the driving wheel of which is fitted with the sliding mudguard described on page 209, August 26th issue. The machine belongs to Mr. R. E. Dicker, the patentee of the device referred to, who has also embodied one or two other modifications from the maker's standard practice. Among these may be mentioned the separate oil tank fitted at the bottom of the seat tube. It is fitted with a B. and H. drip feed, and the main tank is now all for petrol. Shorter back stays have been fitted in order to give a lower saddle position, different type of footrests, and heel brake.

The main improvement to the horizontally-opposed twin-cylinder Brough since the first model was introduced is the re-designed overhead valve gear and valve lifter mechanism, which latter is now enclosed in the crank case.

DIXIE MAGNETO

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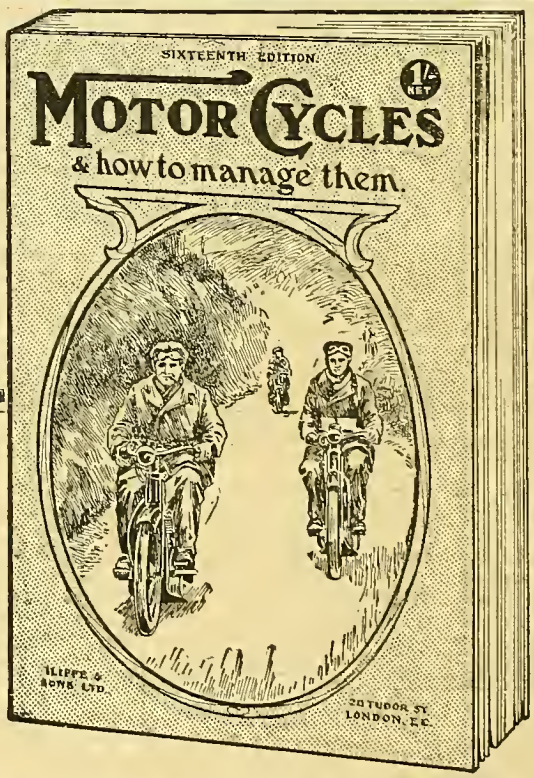

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¶ There is no doubt as to the supremacy of this book over all others of a similar kind. It is constantly being checked and revised by the staff of "The Motor Cycle," and consequently carries the weight and authority of this journal.

¶ Its contents embrace a multitude of subjects relating to motor cycles, their care and management. It is clearly written and well illustrated. Every motor cyclist—whether beginner or experienced rider—should keep a copy handy for reference.

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A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Two-stroke Lubrication.

I have lately bought a 2¼ two-stroke T.T. model, and am at a loss to know how much oil should always be in the crank case. It seems I have been over-lubricating to a great extent, as oil comes through the exhaust pipe. I regulate the drip feed to eighty drops a minute. Should one have the same amount of oil in the crank case as in a four-stroke, or would this affect the compression?—J.H.K.

If oil comes from the exhaust port you are certainly giving rather too much. Thirty to forty drops per minute is sufficient at ordinary speeds, but more should be given according to the conditions of running, such as travelling at high speed, against a strong head wind, or in very hilly districts. No; there should not be so much oil in the crank case as in a four-stroke. It would not affect the compression, but it would upset the mixture.

The Power of Two-strokes.

I should be glad to have your advice as to whether a 2½ h.p. two-stroke would carry a 16 stone man comfortably in a somewhat hilly town district? I do not want great speed, but reliability and fair climbing power. At present I ride a 1912 2¾ h.p. twin, but it has seen much wear, and is costing me a large sum in repairs. It carries me, but is not too strong on the hills. Probably the engine needs rebushing and the cylinders decarbonising. If I thought a lightweight costing, say, £38, would carry me reliably I would invest. My engine misfires a great deal, and occasionally I suspect only one cylinder is acting. Can you advise me? I am only a novice.—H.C.

A 2½ h.p. two-stroke, fitted with a variable gear, would carry a 16 stone man, but you would not have much reserve of power. These small two-stroke machines are good value for the money, and give wonderful power for their size. Of course, you could, for a small sum, have your machine made quite up to date, and to pull as well as ever. The misfiring might be due to air leaks in the induction pipe, faulty carburetter joints, etc. You can easily tell if one cylinder is firing by short-circuiting the plug from the terminal to the cylinder with a screwdriver. In this case, if you happen to short-circuit the good cylinder the engine would, of course, stop.

Hints to a Beginner.

(1.) My machine is a 5 h.p. twin combination. When I have an adult and two young children in the sidecar, and an adult on the carrier, in going down a bad hill, should I coast down or keep the engine working? By keeping the engine working, will it affect it in any way? (2.) My sidecar wheel is slightly buckled, but it does not affect the running. Ought I to have it put right? (3.) Does driving slowly on top gear, say 8 m.p.h., harm the motor?—E.W.V.

(1.) Coast down a hill with the machine in gear and the exhaust lifter raised. If you have a switch, also switch off. This helps to cool the engine. If you are descending a very steep hill put in the second speed, and if it is excessively steep put in first speed. This will act as a brake. (2.) The wheel could probably easily be trued up by a competent mechanic. We should advise you to have this done. (3.) It does not harm the engine to drive as slowly as 8 m.p.h. if it is running smoothly.

Valve Trouble.

Will you be good enough to inform me as to the probable causes of an engine burning out its exhaust valves very quickly? The valve seating is not cracked, but when I last ground in a valve I noticed that the angle of the valve face where it actually touched the seating was less acute than the general angle of the valve face. I use my spark retard lever rather freely when riding in traffic. Would this affect the valve by causing the gases to be hotter than usual at the moment when the exhaust valve rises, by reason of the more recent explosion? A new valve is required about every 600 miles.—B.T.

The trouble may be caused by the valves being made of incorrect material, or through driving too much on a retarded spark, and also through injudicious use of the exhaust valve lifter. We should advise you to have your valve seating recut and the valve trued and correctly fitted.

Hill-climbing.

I would like your advice on a 3½ h.p. combination fitted with a three-speed countershaft gear. Do you think it quite capable of going up any main road hill in Derbyshire or Wales, carrying about 20 stone? I went to Sheffield recently on a 3½ h.p. on middle gear, the low gear being broken, and I had to push up all hills which were in any way steep.—J.F.

We should say that the machine in question would take you practically anywhere, provided a suitable gear were fitted, with ratios not unduly high.

Tyre Wear.

I have just secured a 4 h.p. solo mount, and as it differs from my previous motor cycle I want your advice on a few points. (1.) The wheelbase being long and the hub having no three-speed gear, will the wear on front and back tyres be more equal? (2.) There is a three-speed gear box and clutch. These are luxuries, and no doubt of delicate construction. Is the top gear a direct drive, and if I confine myself to it as much as possible are the other gears absolutely at rest and likely to last a longer time? (3.) For a sidecar, do I need a stronger belt than the ⅞in. fitted, and do I need security bolts?—J.S.H.

(1.) As the back wheel has to take the driving and most of the braking strain, the back tyre will naturally wear more rapidly than the front, but this should certainly be less in the case of a long wheelbase machine without a hub gear. (2.) We regard the three-speed gear and clutch not in the light of luxuries at all, but of necessities. They are of standard design, and similar to those which have been fitted to motor cars for the last twelve years. The top gear is direct. These gears being of specially hardened material are built to wear. In changing gear you have to consider not only the gears but also the engine. If the engine is labouring on a hill it is necessary to change speed at once, and if you want to climb a hill quickly it is advisable to change early. In the gear box when the top is in engagement the other wheels revolve idly. (3.) A 1in. belt would be better if the pulleys are suitable. Security bolts are desirable.

Four-stroking.

I have a 1915 two-stroke which sometimes does not two-stroke. Both carburetter and magneto have been experimented with, without success. The machine has run 1,000 miles over Scotch roads since July, when new, and has run remarkably well. But now, unless it is accelerating or hill-climbing, it four-strokes persistently and regularly. I have tightened the magneto chain, so it is not that. The ignition appears good (C.A.V. magneto). In your opinion, does the engine want taking down? Is there a possibility of the ports being partly choked with carbon? Or the silencer choked? Or is there a possibility of one of the piston rings being stuck? The engine still pulls well, but only does about ninety miles to the gallon as against over a hundred a month ago.—P.V.S.

We should advise you to take off the cylinder and thoroughly clean your engine, paying special attention to the ports and piston rings. Four-stroking is sometimes caused by a weak mixture; therefore the carburetter should also be inspected for obstructions in the jet or petrol pipe.

READERS' REPLIES.

Repairing Punctures.—"C.T.'s" experience related in your issue of the 19th ult. was my own with a certain make of tube particularly, and I put it down to the materials employed by the makers in toughening the rubber. Petrol should not be used to clean the surface, as it is not a solvent and only makes the rubber swell. Pure benzole may be used, as this is a solvent; better not use either. Use a clean scratch brush (a file cleaner will do) to roughen the surface, and expose new rubber to the repair solution; rub the latter well in with an old toothbrush handle or clean screwdriver blade and apply when tacky and press with a pocket patch press for ten minutes.—E. Chapman.

Water in Petrol Tank.—While giving my experience, I have in mind another tip. I have seen it recommended on several occasions to detach the tank and thoroughly dry it. This is not necessary. Empty the carburetter and petrol pipe; pour in the tank half a pint of good methylated spirit and agitate. The spirit will immediately settle out below the petrol, dissolving all the water. Run it off, washing the carburetter and petrol pipe with it, connect up, and the job is done. If benzole is in the tank, run it off and then add the methylated spirit and empty and filter back the benzole through the finest gauze. Methylated spirit will not mix with petrol. It will dissolve in benzole, but, if water is added to the mixture in equal quantities, the methylated spirit leaves the benzole immediately and mixes with the water, settling out below the benzole. It should be possible, though I have not tried this, to add the methylated spirit to the wet petrol or benzole in the tank, and agitate after cleaning the carburetter and pipe with methylated spirit, and then to start up on the methylated spirit; the dry petrol would then follow on. These are facts.—E. Chapman.

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"H.C." (Sheringham).—Lister two-stroke engine. Efficiency and reliability.

"S.A.G." (Notts).—Two-stroke Triumph. General experiences. How often must cylinder be removed?

"D.J.B." (South Wales).—A.B.C. model A. Reliability in wet weather, efficiency, and general experiences.

"W.J.D." (London, N.W.)—Old pattern (1911) P. and M. clutches. How to fit the new type of split bars and prevent slip.

"J.T.S." (London).—Particulars of difference in running and general efficiency between four-stroke and two-stroke lightweights.

"E.P.F." (Somerset).—Suitability of roads in Assam for motor cycling, particularly between Mangaldai and Bishnauth.

"J.S.H." (Boston Spa).—4 h.p. Douglas with three speeds and clutch, and Watsonian folding sidecar. Suitable attachment for slanting back stay.

"H.C." (Marston).—1915 A.B.C. model B. Consumption, reliability, comfort, and general experiences.

"J.R.M." (Kingstown).—Low motor cycle generator, powerful acetylene lamp to fit Indian lamp bracket, and Binks carburetter on Indian.

"G.P." (Margate).—1914 or 1915 Henderson, or 6 h.p. twin Sunbeam. Reliability, comfort, economy, and weatherproofness.

RECOMMENDED ROUTES.

Epsom to Bexhill.—W.G.

Epsom, Tadworth, Reigate, East Grinstead, Wytch Cross, Uckfield, East Hoathly, Horsebridge, Ninfield, Bexhill. The distance is approximately seventy miles.

St. Neots to Ilfracombe.—G.E.

St. Neots, Eaton Socon, Bedford, Newport Pagnell, Buckingham, Bicester, Oxford, Faringdon, Swindon, Avebury, Devizes, Trowbridge, Wells, Glastonbury, Durston, Taunton, Wiveliscombe, Bampton, South Molton, Barnstaple, Ilfracombe; or Glastonbury, Bridgwater, Williton, Dunster, Porlock—at the foot of Porlock Hill go through the toll gate so as to avoid the hill—Lynton, Coombe Martin, Ilfracombe. The latter route is bad and very hilly, but the scenery is beautiful.

Bedford to Folkestone.—W.H.

Bedford, Shefford, Hitchin, Stevenage, Ware, Hertford, Harlow, Ongar, Brentwood, Orsett, Tilbury, by ferry to Gravesend, then through Meopham, Wrotham Heath, Maidstone, Charing, Ashford, Hythe, Sandgate, Folkestone.

Leicester to Swaffham.—R.P.

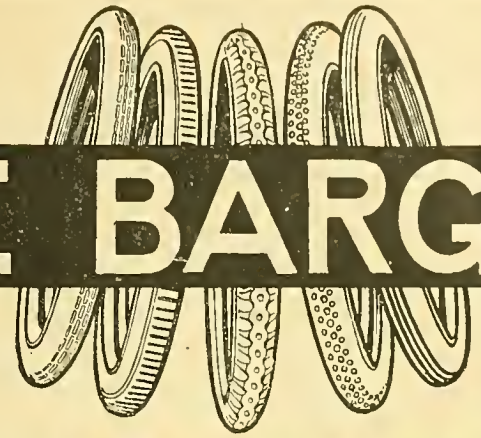
Leicester, Billesdon, Uppingham, Stamford, Market Deeping, Crowland, Thorney, Guyhirne, Wisbech, Downham Market, Stradsett, Swaffham. Approximately 92 miles.

Studham to Ashbourne.—H.W.

Studham, Dunstable, Fenny Stratford, Stony Stratford, Northampton, Husbands Bosworth, Leicester, Derby, Ashbourne.

EXTREMES MEET.

An American group. Seated on the Excelsior motor cycle is Thomas Woods, aged 21, height 6ft. 3in., weight 452 lb., whilst standing on the carrier is Albert Anderson, also aged 21, height 4ft. 1in., weight 85 lb.



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COVERS.

		Our Price.	Usual Price.
CONTINENTAL—			
Ribbed	26×2¼	12/6	15/-
Standard	26×2	14/-	19/6
„	26×2¼	14/6	22/6
T.T. Basket Pattern	26×2	16/9	23/3
„ „	26×2¼	19/-	26/6
„ „	26×2⅜×2¼	20/-	28/-
„ „	26×2½	20/9	28/9
„ „	26×2½×2¼	20/9	28/9
„ „	26×3	25/-	34/-
Basket Pattern Heavy	26×2	20/9	29/9
„ „	26×2¼	24/6	34/-
„ „	26×2½	27/-	37/6
„ „	28×3	35/-	48/3
Combination	26×2¼	36/-	50/-
„	26×2½	39/6	54/6
„	26×3	45/-	62/9
Autobi Basket Pattern	650×65	29/9	39/6
Autobi Rubber-studded	650×75	31/6	44/3
KEMPSHALL—			
26×2¼ heavy anti-skid		28/-	38/6
26×2¼ „ „		24/6	32/6

COVERS.

	Our Price.	Usual Price.
BEST ENGLISH MAKE (1913 Pattern)—		
650×65 Pillion	21/-	50/-
ELITE—		
3 Ribbed Lightweight cover	30/6	
CLINCHER—		
24×2 Clincher de Luxe	19/6	28/-
26×2¼ (for 2½) Dreadnought	35/-	47/3
26×2½ Dreadnought	32/6	50/10
26×2½ de Luxe	25/6	30/9
26×2⅜ (for 2¼) de Luxe	23/6	41/-
26×2¼ A Won, wired-on, Ribbed	18/-	—
26×2¼ de Luxe, wired-on, R/S..	21/-	—
26×2½ ribbed	13/6	
26×2½ rubber studded	15/6	
26×2¼ „ „	22/6	35/-
26×2½ „ „	22/6	37/6
26×2⅜ „ „	22/6	36/6
28×3 de Luxe	35/-	

COVERS.

	Our Price.	Usual Price.
GOODYEAR—		
26×2⅜ for 2½ heavy rubber studded	23/-	40/9

TUBES.

	Our Price.	Usual Price.	
CONTINENTAL—			
26 × 2	5/3	7/3	Butt ends 1/6 extra.
26 × 2¼	6/-	7/9	
26 × 2⅜	6/6	8/6	
26 × 2¼ × 2¼	6/9	8/9	
26 × 2½	6/9	8/9	
26 × 3	8/9	10/6	
650 ×65	7/9	11/6	
650 ×75	10/-	14/-	
ELITE BEST QUALITY (guaranteed)—			
26 × 2	4/6		Butted 1/3 ex.
26 × 2¼	4/9		
26 × 2½	6/-		
26 × 3	7/3		
28 × 2½	7/3		
28 × 3	9/3		
PALMER			
650×65 Butted	9/9	12/6	
CLINCHER—			
24×2 Extra Heavy	6/-		

BELTS.

		Our Price.	Usual Price.
CONTINENTAL—			
1¼in. section	foot	1/4	2/6
1 in. „	„	1/3	2/2
¾in. „	„	1/-	1/11
⅝in. „	„	11d.	1/7
CLINCHER FLEXIS—			
⅝in. (for ¾in. pulleys) (7ft. length only)	foot	1/-	2/2
SHAMROCK-GLORIA—			
¾in. section (7ft. 6in. only)	foot	1/-	1/11

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SPECIAL HEAVY - - - - - 15/-

HEAVY - - - - - - - - - 12/6

MEDIUM - - - - - - - - 10/-

Fitted by special process.

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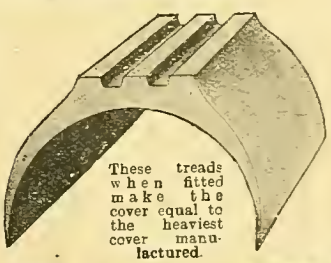
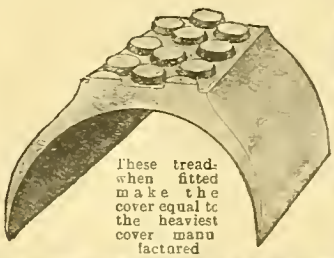
15% allowance made for old covers, clearance lines excepted.



These treads when fitted make the cover equal to the heaviest cover manufactured.



These treads when fitted make the cover equal to the heaviest cover manufactured

ELITE RUBBER Co., TUDOR WORKS,

266, Vauxhall Bridge Road, Victoria, S.W.

One minute from Victoria Station.

'PHONE: VICTORIA 8553.

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PRICES.

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All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle" Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

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Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade Labour Exchange, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, 2d. will be charged for registration, and three stamped and addressed envelopes must be sent for forwarding replies. Only the number will appear in the advertisement. Replies should be addressed, "No. 000, c/o 'The Motor Cycle,' Coventry"; or if "London" is added to the address, then to the number given, c/o "The Motor Cycle," 20, Tudor Street, E.C.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

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OFFERS CANNOT BE BEATEN.

They enable you to choose the exact machine that suits you from the biggest stock in the kingdom. Best makes at lowest prices. Cash or easy terms, or any machine taken in part payment and most liberal exchange allowance made. All machines delivered ready to ride, and fully guaranteed.

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9823.	2¾ h.p. 1912 2-sp.	**ROYAL ENFIELD**	£27 10
9837.	4¼ h.p. 1913 3-sp.	**JAMES** Comb...	£45 0
9839.	3½ h.p. 1907 2-sp.	**TRIUMPH** & Sc.	£22 10
9840.	3½ h.p. 1911 F.E.	**TRIUMPH**	£28 0
9842.	2¼ h.p. 1914	**VELOCETTE**	£20 0
9844.	5-6h.p.	**N.S.U.**	£16 10
9847.	4½ h.p. 1915 3-sp.	**QUADRANT** and Sidecar	£57 10
9848.	3 h.p. 1913 twin	**ENFIELD**	£35 0
9853.	6 h.p. 1914	**ENFIELD** Combinat'n	£67 10
9854.	2¾ h.p. 1914 T.T.	**DOUGLAS**	£40 0
9857.	3 h.p. 1915 2-sp. twin	**O.K.**	£38 10
9860.	2½ h.p. 1915	**WOLF**	£25 0
9865.	3½ h.p. 1913 3-sp.	**ARIEL**	£35 0
9866.	3½ h.p. 1913	**ZENITH-GRADUA** ..	£27 10
9867.	2¾ h.p. 2-sp.	**ENFIELD**	£26 0
9869.	7 h.p. 1915 T.T. roadster	**INDIAN**	£50 0
9772.	3½ h.p. 1914 3-speed Water-cooled	**HUMBER**	£42 0
9778.	3½ h.p. 1914 3-sp.	**NEW IMPERIAL** and Sidecar	£50 0
9801.	3½ h.p. 1915 3-speed	**RUDGE**	£50 0
6421.	3½ h.p. 1908	**MINERVA**	£15 0
6842.	3½ h.p. 1912 F.E.	**RUDGE**	£27 10
6863.	3½ h.p. 1910	**BAT**	£20 0
7521.	5-6h.p. 1911 4-cyl.	**F.N.** and Sidecar	£22 10
7708.	3½ h.p. 1908	**N.S.U.**	£15 0
7992.	3½ h.p. 2-sp.	**FAFNIR** and coach-built Sidecar	£22 10
8165.	6 h.p.	**BAT** and Sidecar	£22 10
8175.	6 h.p. 1913 2-sp.	**N.S.U.**	£45 0
8320.	3½ h.p. 1911	**ARIEL**, variable gear.	£20 0
8529.	5-6h.p. 4-cyl.	**F.N.** and Sidecar ...	£45 0
8561.	3½ h.p.	**VINDEC** and Sidecar	£17 10
8682.	6 h.p. 1913 2-sp.	**V.S.-J.A.P.**	£37 10
8718.	3½ h.p. 2-sp.	**FAFNIR** and Sidecar.	£22 10
8802.	7 h.p. 1914	**INDIAN**, with electric starter	£60 0
8832.	1¾ h.p. 1909	**MOTOSACOCHE**	£9 0
9076.	5 h.p. 1907 F.E.	**ROC**	£20 0
9155.	1½ h.p. 1910	**MOTOSACOCHE**	£10 10
9423	5-6h.p.	**AUTO-CARRIER**	£37 10
9429.	7 h.p. 1913	**PREMIER** and Sidecar	£57 10
9448.	2¾ h.p.	**FAIRY**	£10 10
9449.	8 h.p. 1915 2-seater	**SUPER** Car..	£57 10
9542.	2¾ h.p. 1915 2-sp.	**SUN VITESSE**..	£33 10
9565.	6 h.p. 1912	**CLYNO** and Sidecar..	£37 10
9584.	8 h.p. 1914 w.-c.	**WILLIAMSON** and 2-seater Sidecar	£65 0
9594.	5-6h.p. 2-sp.	**N.S.U.**	—
9597.	6 h.p.	**ZENITH** and Sidecar	£37 10
9633.	2½ h.p. 1912	**PREMIER**, varia. gear	£18 10
9656.	2¾ h.p. twin	**N.S.U.**	£17 10
9713.	6 h.p.	**WALL** Tricar	£67 10
9732.	3½ h.p. 1913 2-sp.	**P. & M.**	£45 0
9738.	2¾ h.p. 1912 2-sp. lady's	**DOUGLAS**	£32 10
9746.	6 h.p. 1914 3-sp.	**NEW HUDSON** and Sidecar	£65 0
	5 h.p. 2-sp. twin	**REX** and Sidecar	£27 10
9813	2¾ h.p. 1910 Twin	**MOTOSACOCHE**	£16 10
9821	3½ h.p. 1913 3-speed Twin	**JAMES**	£55 0

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ABINGDON, 1913, 3½h.p., 2-speed, spare tube, belt; £28.—Hedley, 610, High Rd., Chiswick. [2859

A.J.S.

A.J.S., new 1915, 2¾h.p., 3-speed model, actually in stock.—Moss, Wem. [X7825

6h.p. A.J.S. Combination in stock; full retail price secures.—Cross, Agent, Rotherham. [X7678

1915 A.J.S., 2¾h.p., 3-speed sporting model; cheap. —Mitchell, Manor House, Lees, Oldham. [X7659

6h.p. A.J.S., December (1914) combination, good as new; £60.—Sheldon, Collieries, Ingleton, Yorks. [X7097

A.J.S. 1915 6h.p. Combination in stock for immediate delivery.—M. C. Jobboro, ageot, Willenhall, Staffs. [2499

A.J.S. Lightweight, 2 speeds and Iree, clutch model, chain drive, fine order; £26.—Hall, Bnilder, Hyde. (D) [X7769

A.J.S. 4h.p. Machine, also 6h.p. combination in stock for immediate delivery.—Doncaster Autocars and Cycles, Ltd., Doncaster. [0719

A.J.S.—Prompt delivery of all models, 6h.p., 4h.p., and 2¾h.p.—P. J. Evans, Birmingham and District Agent, 87-91, John Bright St. [3052

A.J.S., 2¾h.p., 3-speed, 1914, Lucas lamps, horn, speedometer, mirror, etc., beautiful condition, cost over £60; price £43.—Stanley, Arboretum Rd., Walsall. [3125

A.J.S. 1915 4h.p. Combination, wind screen, hood, footrest, speedometer, lamps, spares, condition as new; cost £95; any trial; £80 cash.—156, Stockwell Rd., S.W. [2980

A.J.S., 1913, 6h.p., and coachbnilt Gloria sidecar, 3 lamps, horn, speedometer, Brooks luggage case, excellent condition; £55.—Kennington, 1 Mill Hill, Musselburgh. [X7457

1914 A.J.S., 6h.p., 3-speed, clutch, kick starter, lamps, horn, all accessories, spares, Millford sidecar, guaranteed; £75; exchange modern solo machine and cash.—Goodman, 20, Woodstock Rd., Redland, Bristol. [X7709

A.J.S. 1913 6h.p. Combination, just overhauled, good condition, 1915 coach sidecar, Binks carburetter, Lucas head and tail lamps, new Palmer tyre on back wheel, spares, also tyre; reason for selling, owner enlisted; 52 gns.—T. Wilson, Mitchell Taithes, Dewsbury. [X7089

A.J.S., 1914, 6h.p., and Gloria No. 5 coachbnilt sidecar, hood, screen, Lucas lamps and horn. Cower. 2 loggage valises, 2 spare tyres (one new), spare chains, electric rear lamp, engine overhauled, and in perfect condition throughout; £75.—H., 11, Station Parade, Muswell Hill. [2868

A.J.S. Combination, 6h.p., 3-speed, 750 engine, detachable wheels, spare wheel and tyre, hood, screen, apron, overall apron for solo riding, luggage carrier, 3 Lucas lamps, speedometer, horn, spares, splendid tyres, very little used; cost Nov., 1914, £114, accept £85.—Allen, Windybraes, Speldhurst, Tnnbridge Wells. [X7508

A.J.S., 1915, 4h.p. model, with Millford Empress sidecar, finished to match machine, Lucas lamp set, Lucas horn, electric sidecar lamp, rear lamp, etc., combination in perfect condition, had exceptionally little and careful use; cost over £95, accept £75.—H.B., c/o The Morris Garages, Oxford. [X7561

LEFT by a gentleman on sale.—1915 6h p. A.J.S., detachable wheels, fitted with De Luxe sidecar, wind screen, speedometer, Lucas lamps and hooter, sidecar lamp, spare wheel and tyre, not n scratch on combination, fast bike, new; cost with all extras £125, price to clear £107.—Wnuchope's, 9, Shoe Lane, London. [X7727

Alldays.

1914 2½h.p. Alldays 2-stroke; £17.—53, Brownhill Rd., Catford. [3087

ALLON, 2-stroke; best deliveries these fine machines. —W. P. Edwards, Taunton. [X7463

ALLON, nearly new; bargain, £26; unused Amac, £1/1.—Lieut. Bettinson, Upavon Aerodrome, Wilts. [X7325

ALLON, 2-speed, June, 1915, 800 miles; £34.—Letters only, McGowan, 195, Aldborough Rd., Ilford. [X7431

1914½ Alldays Matchless, 2-stroke, 2¾h.p., spare belt, tools, P. and H. head light, splendid condition; £24.—C.B., 4, Cedar Terrace, Enfield, Middlesex. [3059

ALLDAYS Allon Single and 2-speed in stock, £31/10 and £38/17 respectively; deferred payments speciality; keen price for large deposits.—Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green. [2934

ALLDAYS 2¾h.p. 2-stroke, 1914, December, Duulop, 3-speed, F.E., kick starter, speedometer, P. and H. lamp and tail, horn, splendid condition; nearest 30 gns., original price complete £43.—86, Manor Rd., Brockley, S.E. [2808

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1915 2½ h.p. **ROYAL RUBY,** 2-speed	**£36 10**
1915 2½ h.p. 2-speed **ROYAL RUBY-J.A.P.** (new)	**£39 10**
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CLYNO Combination and Lightweights for hire or sale.—Aero Sidecar Co., 27, Queen's Mews, Porchester Gardens, Bayswater (side of Whiteley's). [3105

CLYNO 1914¾ Conchbuilt Combination, 6h.p., 3-speed countershaft, kick starter, spare wheel, lamp, horn, etc., low mileage, and in good order; price £66.—Hindmarsh, Otterburn, S.O., Northumberland. [X7605

CLYNO 6h.p. Combination, late 1914, 3 speeds, kick starter, fitted August, 1915, with new hood, wind screen, spare wheel and tyre, Miller lamp, electric rear, luggage board, costing £15, guaranteed; any trial; price £75, no offers.—Ritchie, 623, Great Eastern Rd., Glasgow. [X7098

Connaught.

CONNAUGHT, 1914, 2-stroke, 2½h.p., Sturmey-Archer 3-speed, splendid conditiou; cost £44.—5, Morrab Rd., Penzance. [2811

CONNAUGHT, 2-stroke, standard model; £35/3/6.—Lamb's, 151, High St., Walthamstow.—Depot, 50, High Rd., Wood Green. [2933

CONNAUGHT 2-stroke, in splendid condition, good tyres, footboards, fast, and powerful; £20.—P. Riddelsdell, Boxford, Suffolk. [3014

CONNAUGHT, 1915, 2½h.p., single speed, done 400 miles, £25; lamp and horn 30/- extra.—Geo. Powell, 12, Claremont St., Shrewsbury. [X7087

1915 Connaught, 2¾h.p., 2-stroke, 2-speed, with clutch, new condition; cost with Stewart, horn, etc., £45, sacrifice £30; owner leaving England.—Farmer, c/o Cook and Sons, Ludgate Circus, London. (D) [2891

Dot.

1913 Dot-Jap, 8h.p., 2-speed, 1914 Gloria sidecar, Binks, P. and H., Xl'all, 2 new tyres, re-enamelled, excellent order; £48.—Walker, Buchlyvie, Stirlingshire. [X7092

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1914 T.T. Douglas 2-speed, in good condition; £42.—Seen, 223 High Rd., Kilburn. [3072

1914 Douglas, 2 speeds, complete lamps, horn, etc.; £41.—Cross, Jeweller, Rotherham. [X7675

DOUGLAS, 1910, recently overhauled; £15 lowest.—Thomas, 32, Colfe Rd., Forest Hill. [3040

DOUGLAS, late 1914, 2¾h.p., model W, new condition; £44.—Stone, Cobham, Surrey. [3025

DOUGLAS, 1911, splendid order throughout; £17/10.—A. Speechley, 45, Church Rd., Acton. [3209

DOUGLAS, 2¾h.p., 1914, clutch model; £45.—W. Tugnett, Boreham St., near Hailsham. [2847

DOUGLAS, 2¾h.p. to 10h.p. models.—Gourlay, the great Douglas agent, Fallowfield, Manchester. [4241

1913 (December) Douglas, single speed, very reliable, fast; £28.—Vernon, Nantwich Rd., Crewe. [X7667

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1915 Douglas, 2¾h.p., 3-speed, scarcely used; £52, no offers.—3, Hustler Terrace, Bradford, Yorks. [X7703

DOUGLAS, 1914, 2¾h.p., T.T. model, perfect specimen, as new; £44 complete.—Tollady, Bicester, Oxon. [X7691

1915 4h.p. Douglas 3-speed Combination, in good condition; £67/10.—Seen, 223, High Rd., Kilburn. [3073

DOUGLAS, models U and W in stock; first cheque secures.—Colmore Depot, 261, Deansgate, Manchester. [3069

DOUGLAS, 2¾h.p., 1914, T.T., 2 speeds, accessories, new tyres; £44.—Auto Mart, 133, Hammersmith Rd., W. [3001

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1915 2¾h.p. 3-speed T.T. Douglas, fine condition; cost £60, what offers?—Martin Wright, Riverside, Nottingham. [X7737

DOUGLAS, 1913, T.T., lamps, tools, etc., topping condition, very fast; bargain, £31.—96, Church St., Croydon. [2943

DOUGLAS 1913 and 1914 second-hand machines in stock, £28 to £43.—Turpius, 22 and 29, Preston Rd., Brighton. [0716

1915 4h.p. Douglas Combination, new, driven 500 miles; bargain, 70 gns.—Morgan, 24, Glyn Mansions, Kensington. [3019

DOUGLAS, 1914½, 2 speeds, clutch, kick starter, accessories, spares; £42/10, lowest.—Sinclair, East Molesey. [X7790

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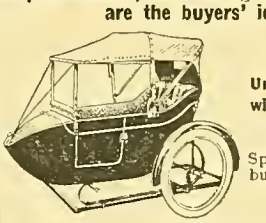

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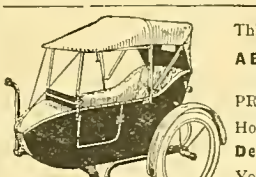

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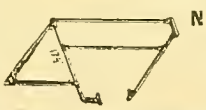

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DOUGLAS, 1915, 2¾h.p., Colonial model, 2-speed, several spares; bargain, £45.—Savage, 41, Cowley Rd., Brixton, London. [2940

DOUGLAS, 1915, 2¾h.p., 2-speed, T.T. model, condition as new; £45.—The Premier Motor Co., Aston Rd., Birmingham. [2801

DOUGLAS, 2¾h.p., model V, 1915, excellent condition; £45; trial with pleasure.—H., c/o Clacksons, 119, Fleet St., E.C. [2955

DOUGLAS, late 1914, T.T., something extra, good accessories; £44.—Wire, Bartter, St. James Rd., Kingston-on-Thames. [3008

DOUGLAS, 1915, immediate delivery any 2¾h.p. model, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [9203

DOUGLAS, 2¾h.p., 2-speed, clutch, kick starter, good condition, lamp; £33.—Ogilvies' Garage, Grafton St., Oxford Rd., Manchester. [X7674

1915 4h.p. T.T. Douglas, 3-speed gear, been few miles, exceptional machine; fine opportunity; £60, no offers.—Moss, Liphook, Hants. [3178

DOUGLAS, 1912, £26, in good order; a 1913 Douglas at £33, a 1914 T.T. at £42.—Percy and Co., 337, Euston Rd., London. [3102

DOUGLAS, 1910, been well kept, faultless condition, powerful, fast; £16/10; appointment.—Sharp, Meliden, Northway, Wavertree, Liverpool. [X7773

DOUGLAS, 1913¾, 2-speed, T.T., just overhauled, perfect condition; £35, or nearest offer.—B., 358, Upper Richmond Rd., Putney. (D) [2860

1915 Douglas, T.T., 3-speed, horn, knee-grips, Binks carburetter, 190 m.p.g.); trial arranged; £49.—Underwood, 19, Abinger Rd., Chiswick. [X7805

1915 4h.p. 3-speed Douglas Combination, with accessories and spares; £95 outfit; excellent condition; what offers?—Hoyle, Excise, Nairn. [2836

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DOUGLAS, 1914, 2¾h.p., new in November, very little ridden, really as new, specifications as list; £45.—Robinson's Garage, Green St., Cambridge. [6866

DOUGLAS, T.T., 1915, perfect condition, almost new, speedometer, lamp, etc.; owner enlisted; £45, bargain.—123, Queen's Rd., Finsbury Park, N. [X7742

1913 Model U Douglas, in absolute perfect condition, overhauled and tested by our Douglas expert; £37.—Colmore Depot, 31, Colmore Row, Birmingham. [X7434

DOUGLAS, 1915, 2¾h.p., model V, 2-speed, in perfect condition, had very little use, complete with lamp and horn; £45.—The Morris Garages, Oxford. [X7563

DOUGLAS, 1914, 2¾h.p., 2-speed, clutch, kick starter, Amac carburetter, head light, generator, speedometer, horn; £40.—Morton, 5, Monument Rd., Wigan. [X7716

DOUGLAS, 1915, 2¾h.p., War Office model, delivered from stock, 2-speed T.T.; £52, plus 5% increase.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0598

DOUGLAS, 1911, model E, 2 speeds, free engine, just overhauled and re-enamelled; must sell.—Godfrey, Felix House, Middleton St. George, nr. Darlington. [3004

DOUGLAS, late 1913, clutch model, fast, new belt, all accessories, in good order; £38, offers and exchanges.—Lieut. Beard, 3rd Northants, Fort Darland, Cheatham. [3021

DOUGLAS, 1914½, T.T., speedometer, 2 lamps, tools, etc., very fast, new condition; £42.—Lieut. Scott, 57, Glenmore Rd., Belsize Park. 'Phone: 1557 Hampstead. [3198

DOUGLAS Motor Cycle, 2¾h.p, 1913, clutch model, Palmer cord tyres, lamps, horn, and spares, in new condition; price £45.—Almond, 39, Harrowby St., Farnworth, Bolton. [X7525

IF It's a Douglas, remember this address, 8, St. James Rd., Kingston-on-Thames. Bartter, the bona-fide dealer, can usually supply where others fail.—'Phone: 1701. [3009

DOUGLAS, 2¾h.p., T.T., new 1914, 2 speeds, adjustable pulley, fully equipped, condition and tyres as new, very fast; £36.—1, Bowles Rd., Old Kent Rd., London. [3032

DOUGLAS, 1913, 2-speed, speedometer, footboards, all accessories, £26/10, perfect; Triumph, 1913, 2-speed, clutch, speedometer, £30, perfect.—21, Packington St., Islington. [3119

1914 Douglas Combination, just been thoroughly overhauled, as new in every detail, full range of accessories included; 58 gns.—Colmore Depot, 31, Colmore Row, Birmingham. [X7439

DOUGLAS, 1913, clutch, kick starter, engine recently overhauled Robinsons, Cambridge, good tyres, new Hutchinson back, belt, accessories; £35.—Tee, Solicitor, Bishop's Stortford. 'Phone: 148. [X7839

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1915 **WILLIAMSON** 3-speed CY-CL-CA ...£120 0
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7 h.p., Twin, 84 x 89, mechanical and hand lubrication, kick starter, high-tension magneto, spring forks, 2-gallon petrol capacity, 3-speed countershaft gear, multiple-disc clutch with hand and foot control, handle-bar control, spring seat-pillar, 3in. non-skid tyre, finish Excelsior grey, every possible refinement incorporated.

AND THE PRICE £62. COMPARE IT.

Exchange liberally considered.

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Latest 6 h.p. 2-speed twin REX de Luxe, kick starter, 650 x 65 Dunlops, only done about 400 miles, condition as new, fitted with new Rex coach-built Sidecar £59 10

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1912 6 h.p. 2-speed **REX** and Sidecar £37 10
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2¾h.p. Twin Enfield, 1912, £18; exchange 3½h.p. single.—18, North Parade, Penzance. [2528

1914 3h.p. Enfield, semi T.T., speedometer, and lamps; £37/10.—Blake, Waterlooville, Hants. [2901

1915 3h.p. Enfield, only ridden 600 miles; cost £61 with accessories; offers.—Blake, Waterlooville, Hants. [2902

ENFIELD, 1915, 3h.p., large lamp set, all as new; £45.—17, Tamworth Park, Commonside East, Mitcham. [2918

3h.p. 1914 Enfield, Binks carburetter, lamp, horn, new tyre back, nearly new front; £37.—Blake, Church St., Wantage. [X7452

1915 Enfield Combination; £84; actually in stock. Why wait?—Celtic Motor Works, East Hill, Wandsworth. [2814

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ENFIELD 1915 6h.p. Combination in stock for immediate delivery; also 3h.p. models from stock.—Sole agents, The Morris Garages, Oxford. [X7565

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6h.p. Enfield, 1913, 25 gn. Gloria sidecar, lamps, and spares, in splendid condition; a gift, £45, or would take solo machine part exchange.—Williams, Kentmere, Kendal. [X7093

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ENFIELD 1913-14 Combination, coachbuilt, speedometer, spare covers, tubes, valve, chain, engine, and tyres, splendid condition; £53.—Osborne, 177, New Park Rd., Brixton. [2975

ENFIELD Combination, 1913½, special roomy coachbuilt sidecar, Lucas lighting set and horn, spares, accessories, A1 condition; £60.—Stanley, 196, Alcester Rd., Moseley, Birmingham. [X7608

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J.A.P., 2½h.p., 1913, perfect condition; £18.—Minshall, 79, High St., Newport, Salop. [X7652

J.A.P., 2¾h.p., U.H. mag., Amac, Dunlops, Hermetic belt; bargain, £14.—10, Windermere Rd., Eadling. [3038

3½-4h.p. J.A.P., 2-speed, free, as new, take sidecar; owner enlisted; bargain, £27/10.—Side door, 152, Albion Rd., Stoke Newington, N. [3111

1912 3½h.p. Jap-Zenith and sidecar, tyres, engine, etc., good condition, enamel, etc., wants renovating; price £27.—Bray, Stationer, Potters Bar. [2937

J.E.S.

J.E.S., Triumph, exceptionally powerful, good condition; £9.—103, Little Heath Rd., Coventry. [X7404

J.H.

J.H. 1915 5-6h.p. Combination, M.A.G. engine, 3-speed countershaft gear, Canoelet coach sidecar; delivery from stock; 80 gns., plus 5%; exchanges or extended terms.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0492

Kerry.

3½h.p. Kerry-Abingdon, with Roc 2-speed, Best and Lloyd, in good order; £27; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0723

KERRY-ABINGDON, 3½h.p., free engine, pedal start, complete with full range of accessories; £24.—Colmore Depot, 31, Colmore Row, Birmingham. [X7435

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4h.p. Kynoch-Jap and sidecar, 3-speed, clutch, etc., speedometer, Lucas lamps, all running spares; £36.—Pearn, Kelsie, Birchfields Rd., Rusholme, Manchester. [X7701

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1915 Popular Levis; £28/1; in stock.—Streffords Garage, Ltd., Shrewsbury. [X7321

LEVIS.—Three No. 1's just arrived; £35/17.—Lamb's, 151, High St., Walthamstow. [2926

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LEVIS, 2¾h.p. Model de Luxe, 2-speed gear, free engine, speedometer, Lucas lamp, perfect condition, new October, 1914; cost £50, sell £35, lowest.—44, Newman St., W. [2840

LEVIS 2-stroke Motor Cycles, latest 1915 models.—Sole London and district agents, Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent. [0711

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1914 3h.p. Lincoln Elk, 2-speed countershaft, kick-starter, new condition, done only 2,000 miles; £31.—Coombs, Lockerley, Hants. [3129

LINCOLN-ELK, 1912, B.B., Bosch, good tyres and tubes, climb anything, splendid condition; bargain, £19.—Clench, 20, Emmott St., Mile End. [2867

3½h.p. 1912-13 Free Engine Lincoln-Elk, in splendid condition, Bosch waterproof, B. and B.; bargain, £17, or exchange lightweight.—Harper, Craven Arms. [X7651

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L.M.C. Combination, 2-speed gear, kick start, free engine and clutch, complete with 15 gn. special sidecar, absolutely new in every detail; £65.—Colmore Depot, 31, Colmore Row, Birmingham. [X7436

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MATCHLESS, 1913, 3½h.p. twin J.A.P., 3-speed; price £38.—1, Romola Rd., Herne Hill, S.E. [X7427

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MATCHLESS, 7h.p., and coachbuilt sidecar, speedometer, only ridden 2,000 miles; £76.—Brooks Garage, Worksop. [2890

MATCHLESS Combination, 6h.p., 1913, 2-speed, splendid condition; £42.—It. Gelder, Langmarton, Carlisle. [X7655

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MATCHLESS Combination, 1912, 6-6h.p., new tyres, belt, and spares; £38/10.—F. King, Victoria St., Dinnington, Rotherham. [2958

MATCHLESS, new 1915 model in stock, complete with Matchless sidecar; £92/17; ready to ride away.—Powell, Northampton. [X7096a

MATCHLESS 1913 Combination, 6h.p. J.A.P., 2 speeds, kick starter, fully equipped, as new; £46, bargain.—136, Lambeth Walk. [X7611

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MATCHLESS, 1915, latest 8B. combination, 7h.p., M.A.G. engine, 3 speeds, 6 weeks old, lamps, generator, horn, tools, spares; £86.—Bruce Wood, Home Park, Lee, Kent. [2949

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MINERVA Lightweight, good running order, low; £6.—C., 198, Bereeford St., Camberwell. [X7712

MINERVA, 3½h.p., m.o.v., mag., new B. and B., new saddle, lamp, fast; £13/10.—188, Lower Addiscombe Rd., Croydon. [3083

MINERVA, B. and B., horn, headlight, spare belt, thoroughly overhauled, in excellent condition; £8/10.—41, Flaxman Terrace, W.C. [3144

MINERVA Lightweight, 2¾h.p., mag., Amac, spring forks, just overhauled, £12; 3½h.p. m.o.v. machine, £3.—23, Balby Rd., Doncaster. [X7684

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2¼h.p. Motosacoche, mag., B. and B., new, spring forks; £7.—Bennett, Thorpe St., Shotton. [X7523

1912 Motosacoche, 1½-2h.p., Druids, mag., just overhauled, very nice machine; £14.—Alfred Proctor, Chepstow. [X7621

MOTOSACOCHE, 2¼h.p., perfect order, Bosch, B. and B. (new), Druids, fast; £15.—Barker, 12, St. Albans Mansion, Kensington Court, W. [3081

Moto-Reve.

MOTO-REVE 2¾h.p. Twin, Amac, Druids, condition like new, good tyres; £15.—12, George St., Wolverhampton. [X7312

MOTO-REVE 1½h.p. Lightweight, just overhauled by makers; bargain, £11/10.—7, Vale Terrace, King's Rd., Chelsea. [X7748

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1913 3½h.p. 3 speeds New Hudson; £30, or offers.—Thompson, 80, Viking St., Bolton. [X7315

1915 2¼h.p. New Hudson Lighweight, model A, hardly soiled, perfect, complete, lamp set, horn; £24.

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NEW Hudson 1914 6h.p. Combination, condition as new; any severe trial; £70.—Barnes, 17, Rannock Rd., Hammersmith. [X7081

NEW Hudson, 3½h.p., 1914, 3 speeds, speedometer, lamp, in perfect order and condition; £33.—Percy and Co., 337, Euston Rd., London. [3098

NEW Hudson, 3½h.p., 3-speed, coachbuilt sidecar, speedometer, lamps, etc.; £35, offers.—Hilton, Sharp, and Co., Ltd., Foxhall Sq., Blackpool. [X7330

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NEW Hudson, 1914, 6h.p. twin, coachbuilt combination, 3-speed, kick starter, speedometer, all accessories, as new; 58 gns.—57, Freegrove Rd., Holloway, N. [3080

NEW Hudson, 2-stroke, from £36; all models from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0603

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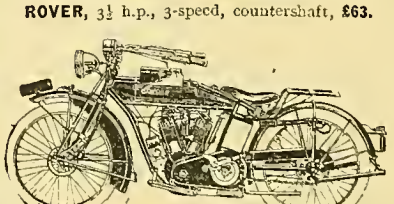

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1913 P. and M., 2 speeds, in fine order, complete; £41.—Cross, Jeweller, Rotherham. [X7676

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P. and M., 2 speeds, and sidecar, all accessories, good order, and ready for service; £25.—Arthur Stanbury, Liverpool. [X7637

P.M. and Sidecar, 2 speeds, accumulator, running up to last Sunday; £10. — 27, Queen's Mews, Porchester Gardens, Bayswater (side of Whiteley's). [3103

1914¾ P. and M. and Dalton coachbuilt sidecar, exceptionally smart, comfortable, splendid condition; £65.—114, Bruford Rd., Wolverhampton. [X7311

P. and M. 1914 Combination, 2-speed, kick starter, speedometer, lamps, watch, insurance, grand condition; bargain, £50.—25, Ashburton Av., Addiscombe, Croydon. [3053

PHELON-MOORE, late 1911, and Montgomery sidecar, little used, Sensspray, lamps, spares, just overhauled, perfect condition; trial; £39.—Write, Browning, 39, Knighton Park, Sydenham. [3151

P. and M., 1913, and wicker Service sidecar, Cowey (5,500), Lucas lamps, horn, watch, spare tube and case, valves, tools, etc., excellent condition; £45.—G. Norton White, Bradford-on-Avon. [X7549

PHELON and Moore, Ltd., 4, Percy St., W., have several good second-hand P. and M. machines for sale, which have been overhauled, and are in perfect order.—Can be seen at above address. [0131

P. and M., 1913½, and coachbuilt underslung sidecar, perfect, and as new, speedometer, and spares, 2 springs and valves, tubes and cover; £50; trial; no offers.—23, Richmond Rd., King's Cross. [X7082

P. and M., 1912 (new July, 1913), and 1914 Montgomery underslung lounge sidecar, 3 lamps, speedometer, luggage grid, watch, many spares, perfect condition; £43.—67, Ridge Rd., Stroud Green. [3152

P. and M., 1910, 2 speeds, Millford 1912 spring wheel sidecar, new heavy Kempshalls, new Stewart speedometer, spares, and accessories, splendid running order; any trial; £28.—Moorhouse, Joiner, Meltham. [X7660

P. and M., 1913, 3½h.p., 2-speed gear, chain drive, with Gloria sidecar, speedometer, head lamps, first-class combination; £45.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [2584

Peugeot.

PEUGEOT, 2½h.p., h.b. control, accumulator, in good running order; £4.—Arthur Staubury, Liverpool. [X7636

PEUGEOT 5-6h.p. Twin, smart, low appearance, very fast; £20.—Blake, 63, Somerset Rd., Tottenham. [3002

PEUGEOT, 3h.p., m.o.i.v., Amac, new coil, and accumulator, 120 m.p.g., good climber; £6/10; appointment.—Chandler, 6, Elder Av., Crouch End. [2885

5-6h.p. Peugeot and coachbuilt sidecar, Rex 2-speed, Bosch, B. and B., Druids, F.R.S. lamp set; bargain, £30, or exchange for Douglas.—Middlesex House, High St., Taunton. [3066

Precision.

PRECISION, 3¾h.p., 1912, B. and B., just overhauled; bargain, £22, or exchange.—Hewes, Thornton, near Leicester. [X7500

PRECISION, 3¾h.p., 1913, 2-speed, F.E., 1915, sidecar, Powell-Hanmer, Bosch, splendid engine, £26/10; Cowey, 45/-.—Write, 69, Kingscourt Rd., Streatham. [X7764

PRECISION, coachbuilt sidecar, Sturmey-Archer 3-speed, Stewart speedometer, Jones, horn, hood, screen, luggage grid, head, tail lamps, run 1,000, new in March; £65.—Green, Hairdresser, Brentwood. [X7713

Premier.

1911 3½h.p. Premier, W. and P. engine; £18.—53, Brownhill Rd., Catford. [3093

PREMIER, 1913, 3½h.p., countershaft 2-speed, good condition; £30.—224, Belgrave Gate, Leicester. [X7640

MOTOR CYCLES FOR SALE.

T.D.C.

T.D.C., 1914, 3½h.p. Precision engine, 3-speed gear, coachbuilt sidecar, lamp, horn, and tail lamp; £26.—The Premier Motor Co., Aston Rd., Birmingham. [3217

Torpedo.

1915 Torpedo Precision, 2¾h.p., Bosch, B.B., head and tail lamps, everything complete, spotless condition; seen any afternoon; £30.—Grover, Nutley, Sussex. [X7555

Trump.

1914 3½h.p. Trump-Jap, 3-speed gear and sidecar, full range of accessories; £40.—Colmore Depot, 31, Colmore Row, Birmingham. [X7445

Triumph.

1909 3½h.p. Triumph; £21.—53, Brownhill Rd., Catford. [3088

3½h.p. Triumph Clutch, 1912 model; £26.—Cross, Agent, Rotherham. [X7679

1914 4h.p. Trimph, 3-speed, and sidecar; £52.—53, Brownhill Rd., Catford. [3091

1911 3½h.p. Triumph, clutch; £26; good condition. —53, Brownhill Rd., Catford. [3089

1914 T.T. 3-speed Triumph, in good condition; £47. —Seen, 223, High Rd., Kilburn. [3074

TRIUMPH, 1912½, F.E., re bushed, new piston, tyres, belt, 63/- lamp.—6, Broadgate, Coventry. [X7873

1910 Triumph, new piston and carburetter; bargain, £23.—10, Oshorne Rd., Finsbury Park. [2959

TRIUMPH, 3½h.p., guaranteed in good order; £18/10.—Evans, Garage, Newport, Salop. [3187

1913 Triumph, free engine, perfect order, just overhauled; £35.—Hulme, Holmes Chapel, Cheshire. [X7658

1913 3½h.p. Triumph and Sidecar, complete lamps, etc., 3 speeds; £48.—Cross, Jeweller, Rotherham. [X7738

1908 3½h.p. Triumph, good order; particulars sent; 14 gns.—Waverly, Cohswood Rd., Harpenden. [2981

TRIUMPH, 1913-14, in new condition, only done 4,000 miles; £37.—F. Alderton, Fern Lea, Barnoldswick. [X7074

1914 Triumph, 2-speed, clutch; £45. — Aldershot Motor and Tyre Co., Ltd., Albert Rd., Aldershot. [3109

TRIUMPH, 1912, 3½h.p., clutch, little used, splendid condition, £35; sidecar, £2/10.—54, Jersey Rd., Ilford. [3037

TRIUMPH, late 1910, clutch, has not done 5,000 miles, splendid condition; £30.—20, Clifton Rd., Rugby. [X7496

1913 3½h.p. Clutch Model Triumph, perfect condition, Lucas lamp, rear light.—Moss, Liphook, Hants. [3181

1912 F.E. Triumph, condition as new, tyres and belt new, all accessories; £30.—20, Garden Av., Mitcham. [3071

TRIUMPH, 1909 (November), Mabon clutch, good tyres; £15, or nearest.—Butterworth, King St., Knutsford. [X7671

TRIUMPH, 1914, 3-speed, clutch, coachbuilt sidecar, done 2,000 miles; £55.—42, Howard Rd., Southampton. [2973

TRIUMPH Junior, brand new, 2-speed, 2-stroke, just arrived, in stock; £42.—Robinson's Garage, Green St., Cambridge. [6865

1908 Triumph, clutch, new tyre and tube, good condition; £17.—Woolley, c/o McGilp, 67, Nicolson St., Greenock. [2904

1913 Triumph (November), 3 speeds, condition perfect, used week-ends only; £39.—96, Bridgford Rd., Nottingham. [X7736

TRIUMPH, August, 1913, 3½h.p., 3-speed, excellent condition, lamp, spares; £37.—Collett, Music Warehouse, Daventry. [X7665

1908 Triumph, 3h.p., adjustable pulley, new belt, good condition; £12.—Delves, 4, London Rd., Pulborough, Sussex. [2888

TRIUMPH, 1914 (Nov.), 4h.p., 3-speed, clutch, not done 2,000; £46.—Thomas, Westley Buildings, Llanhilleth, Mon. [X7077

TRIUMPH, 3½h.p., 1910, officer's sold to clergyman, recently overhauled, tools, horn, lamp.—Smeeton, Rectory, Leicester. [2812

TRIUMPH, 3½h.p., T.T., 1911, excellent condition; £25; call Saturday.—5, Chandos Av., Chingford Rd., Walthamstow. [2809

TRIUMPH, 3½h.p., splendid condition, recently overhauled and re-bushed, accessories; £25.—B. Taylor, Stoke Rd., Guildford. [2866

TRIUMPH, 1913, 3½h.p., clutch model, perfect condition throughout, little used; £40.—Tymms, Victoria Hotel, Clacton. [2845

TRIUMPH, 1913, 3½h.p., clutch model, splendid condition, carefully used; bargain, 30 gns.—Tyler, 14, Belmont Rd., Uxbridge. [3064

TRIUMPH, 1913, 3h.p., with coachbuilt sidecar, 3-speed, lamps and horn, good condition; £37.—Cliff and Sons, Eltham. [2961

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TRIUMPH, 1912-13, clutch, perfect condition throughout, Lucas, Zenith, spares; £26.—7, Hawarden Av., Whalley Range, Manchester. [X7669

TRIUMPH, late 1913, 3½h.p., 3-speed, Lucas lamp set, and Stewart, sidecar to fit; £50. Langstaff, New Bolingbroke, Boston. [3188

TRIUMPH Junior, 1915, 2-speed, practically unused, purchased early this year, all accessories; £37.—1, Montserrat Rd., Putney. [3163

1911 Triumph, free engine, guaranteed good condition, all accessories, very fast; any trial given; £28.—18, Preston Gardens, Willesden. [2988

TRIUMPH, 1913, 3-speed, £35; light coach sidecar to suit if required; also an earlier model, £25.—Bunting, Wealdstone, Harrow. [3138

TRIUMPH, 1913½, 3-speed model, and sidecar, splendid condition, new tyres; £38/10.—Price, 8, Gifford St., Middlesbrough. [X7863

1914 3½h.p. 3-speed Triumph, little used, perfect condition; £43; Staffordshire.—No. 9,269, *The Motor Cycle* Offices, Coventry. [X7072

TRIUMPH, 1913, F.E., excellent condition, unused 1915, new tyres, no lamps; £32.—Feeny, 1, Madeira Rd., Streatham, S.W. [X7798

1911 Triumph, clutch model, adjustable pulley, new belt, lamp, horn, perfect running order; £20.—Salter, Dry Sandford, Abingdon. [X7520

TRIUMPH, 1912, clutch, cylinder and piston new August, good Dunlops, powerful, reliable, not worn; £33.—Ryan, Square, Castlecomer. [X7797

1908 Triumph, fitted with N.S.U. 2-speed gear, complete with sidecar, ready for the road; £22/10.—Wauchope's, 9, Shoe Lane, London. [X7726

1909 Triumph, new Grade gear, drip feed, Brooks B170, lamps, horn, perfect condition; £19/10.—Sindrey, 139, Graham St., Islington. [3149

TRIUMPH Combination, 4h.p., 3-speed, 1914 Millford coachbuilt sidecar seen any time; 50 gns., no offers.—Perkins, Architect, Bracknell. [2954

TRIUMPH, late 1913, 3½h.p., 3-speed, and coach sidecar, complete; £40, or near offer.—C/o Newsome's Garage, Park Rd., Crouch End. [3047

1914½ Triumph Combination, 3-speed, clutch, Millford coachbuilt sidecar, new condition; accept 52 gns.—77, Broughton Av., Doncaster. [X7071

TRIUMPH, 4h.p., 1914-15, with sporting sidecar, done 200 miles, 3-speed, and clutch; quick sale £58, no offers.—Turner, 137, High St., Acton. [3058

TRIUMPH, 3½h.p., overhauled recently, pulls sidecar, real bargain, £17; F.E. wheel, 37/6.—Particulars, Barfoot, 187, Locking Rd., Weston-super-Mare. [X7862

LATE 1913 3-speed Trimph and sidecar, engine and gears recently overhauled, splendid condition; price £45.—Panther, 64, Stimpson Av., Northampton. [X7648

TRIUMPH, 3½h.p., 1910, new Kempshall, tools, horn, engine recently re-bushed, splendid condition; £20.—81, Oakdale Rd., Leytonstone, N.E.; after 7. [3042

1912 F.E. Triumph, lamp, speed indicator, etc., good order guaranteed, £29; 1911 ditto, £26; 1911 ditto, fixed engine, £24.—Ewen, King's Lynn. [X7024

TRIUMPH, 1914, 4h.p., good order, done about 3,000 lamp, rear light, horn, Harcourt's; £44.—Hills, Solicitor, Fairview, Alexandra Rd., Epsom. [3157

TRIUMPH, 1914, 4h.p., 3-speed, free, clutch, speedometer, 2 lamps, horn, perfect running order; £45.—Neaum, 4, Western Parade, Southsea. [3113

TRIUMPH, late 1912, little used, clutch, Philipson pulley, Jones speedometer, lamp, and spares, tyres as new; £40.—L. S. Box, 16, Palmeira Av., Westcliff-on-Sea. [3153

1913 Triumph, 3-speed, just thoroughly overhauled, fitted with lamp and horn, tyres in good condition; only 36 gns.—Julian, Broad St., Reading. 'Phone: 1024. [X6858

3½h.p. 1914 Triumph, with sidecar, 3 speeds, clutch, and all accessories, lamps, horn, etc., splendid machine; 55 gns., no offers.—91, Loraine Mansions, Holloway. [2938

TRIUMPH, 1910, Zenith variable gear, cane torpedo sidecar, splendid condition throughout, complete with lamps, horn, spares; £32.—1, Melfort Rd., Thornton Heath. [2832

1915 Triumph Junior, 2-stroke, 2-speed, ridden 700 miles, brand new condition, perfect, all accessories; £34/10.—10, Pedley St., Brick Lane, Bethnal Green, E. [2955

TRIUMPH, 1914, 3-speed, Gloria coachbuilt sidecar, Cowey, Lucas lamp, electric horn, new Dunlop tyres and belt; £55. — Write, West, Coalway Rd., Wolverhampton. [3085

TRIUMPH, 1913¾, and Godiva coachbuilt sidecar, Sturmey 3-speed and free engine, speedometer, all accessories, splendid order; £40.—P., 9, Station Parade, Tooting Junction. [2843

LATE 1914 4h.p. Trimph, 3 speeds, free engine, with 2-seater coachbuilt sidecar, in perfect condition; £62, or will sell separate. 'Phone: 129.—J. Cain, Queen St., Hitchin. [2863

MOTOR CYCLES FOR SALE.

Triumph.

TRIUMPH, 3½h.p., B. and B., waterproof Bosch, Philipson pulley, new Pedley, wicker sidecar, splendid condition, accessories; £20.—Rayner, 154, Sandringham Rd., Watford. [3062

TRIUMPH, 1914, 4h.p., splendid condition, Arc lamp and generator, horn, Chanticler whistle, speedometer, overalls, all accessories; what offers?—Goble, Ore, Hastings. [X7791

3-SPEED 1913 Triumph, with 1914 Swan sidecar, in perfect condition, lamps, speedometer, spares; bargain; only wants seeing; buying car.—Frank Benham, Chobham, Woking. [X7547

TRIUMPH, 1914½, 4h.p., 16 gn. coachbuilt sidecar, speedometer, Lucas horn, Miller lamps, new rear tyre and belt, excellent condition; any trial; £57.—32, Balfour Rd., Derby. [2971

3½h.p. Triumph, 2-speed and F.E., in good condition, 1915, Millford C.B. Corvette sidecar, lamps, tools, and spares; £39, or separate.—42, Waterloo Rd., Hunslet, Leeds. [X7835

TRIUMPH, 1914, 3½h.p., T.T., Lucas lamp, speedometer, handle-bar controlled, Philipson, all in perfect condition, as new; £42; private owner.—Seen Newsome and Fletcher, Ealing. [3112

1914 Triumph, 4h.p., clutch, 3-speed, lamps, horn, speedometer, splendid condition, £45; also aluminium coachbuilt body, £5.—Hamilton, 108, Anerley Park, Penge, S.E. Tel.: Sydenham 718. [3018

1913 3½h.p. 3-speed Triumph, with 17 gn. brand new Gloria sidecar, luggage rail, lamp, etc., perfect throughout; £55; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0720

1910 Triumph, free engine, Sen-spray, practically new Palmer, Hutchinson, T.T. bars, lamps, horn, spares; trial, examination here; £20, exchange.—Pudney, Orchard Cottages, Walton-on-Naze, Essex. [X7603

TRIUMPH, 3½h.p., 1912, standard T.T. bars, lamp, horn, perfect condition, just overhauled; £29; officer owner, must sell at once; first cheque secures.—Box 9,292, *The Motor Cycle* Offices, Coventry. [X7402

TRIUMPH, late 1913, 3½h.p., 3-speed, Miller lamp set, horn, etc., new tyres, all accessories, with 1914 Mills-Fulford coachbuilt sidecar, all in absolutely perfect condition; £48.—Breakell, 63, Craithie Rd., Doncaster. [X7513

1914 Triumph, 4h.p., with 1915 Philipson variable gear, not covered 2,000 miles, carefully kept and well tuned, tyres and belt in excellent condition, lamp, bell, tools, etc.; 40 gns. cash.—Write, Grice, 8, Bedford Place, W.C. [X7681

TRIUMPH 1913 and Sidecar, 3 speeds, F.R.S. lamp and generator, new Dunlop belt, tyres in splendid condition, Cowey speedometer, 2 extra lamps, fully equipped for road, all spares; £45.—Walker, 15, Sneinton St., Nottingham. [X7717

TRIUMPH (September, 1914), 3½h.p., T.T., Philipson decompressor, Brooks's saddle, Clincher de luxe tyres, Lucas lamp, horn, knee grips, not done 4,000 solo, very fast, perfect condition; £42; ride 100 miles.—Smith, Oak, Kingswinford. [2962

4h.p. Triumph, 1914, T.T. roadster, 3-speed, free engine, clutch, re-bushed and completely overhauled, in splendid condition, lamps, horn, good tyres, accessories, very fast and reliable; £47/10. 'Phone: Hammersmith 445.—Dawson, 257, Goldhawk Rd., W. [3029

FOR Sale, Triumph, 1913, 3-speed, T.T. roadster, blue Canoelet, both new 1914, thoroughly sound, tyres perfect, belt and heavy Pedley on back nearly new; £45, very near offer; or exchange T.T. solo, fast, not under 3½h.p., and little cash.—K., Downe Cottage, Cheam, Surrey. [2841

1914 Triumph, 3-speed, clutch, 14 gn. Millford sidecar, new Bates, belt, Cowey speedometer, £10 accessories, storm apron, Lucas head and rear light, perfect powerful engine, been well looked after; cost £85, take £53; only run 100 miles this year; illness cause.—32, Armstrong Av., Newcastle-on-Tyne. [X7617

Tyler.

TYLER Lightweight, 1915, with combined 2-speed, nice little machine, nearly new; £25 complete.—Layton's Carage, Bicester, Oxon. [X7693

Veloce.

VELOCE, 1913, 2½h.p., 2 speeds, clutch and kick starter, thoroughly sound; £25.—P. J. Evans, John Bright St., Birmingham. [3044

Williamson.

WILLIAMSON, 8h.p., water-cooled, coachbuilt sidecar, hood, screen, lamps, Cowey speedometer, done 5,000 miles, painted dark blue; £80.—Midland Autocar Co., Warwick. [X7501

8h.p. Williamson 1914 Sidecar Combination, fitted with speedometer and all accessories, large 2-seated coachbuilt sidecar, ready for the road; any severe trial given.—Wauchope's, 9, Shoe Lane, London. [X7729

WILLIAMSON Combination, 1914-15, 8h.p., w.c., splendid condition, used very little; owner in France; hood, screen, lamps, only wants seeing; £60 for quick sale.—Turner, 137, High St., Acton. [2813

8h.p. Williamson coachbuilt Sidecar Combination, hood, wind screen, Pillion seat, set of lamps, Binks 3-jet carburetter, in splendid condition; trial given; £56, or near offer.—Morgan, 21, Parsons Green Lane, Fulham. [2899

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WILLIAMSON, 8h.p., 1914, water-cooled, 2-seater sidecar, hood, wind screen, mate, petrol carrier, 2 P. and H. lighting sets, Smith's speedometer, mirror spare tyre, tube, valve; cost £125; insurance policy transferred; £82.—Want, 574, Caledonian Rd., Holloway, London. [X7582

Win-Precision.

1913 4¼h.p. Win-Precision and coachbuilt sidecar, 2-speed Roc gear, tyres nearly new; £32.—Kinzett, Ideal, Cavendish Rd., Merton, Surrey. [3165

WIN-PRECISION, 1912, 3¾h.p., Cowley speedometer, new Hutchinson back, Dunlop front, new Lucas £3 lamp, decompressor; £23.—L. Boll, 1, Calabria Rd., Highbury, N. [2851

Wolf.

WOLF, 2½-3h.p., 1914, in splendid condition; £18, or near offer.—Cole, 104, Victoria St., Westminster, S.W. [2912

FOR Sale, Wolf 1915 motor cycle, 2½h.p., 2-speed, free engine, in splendid order, equal to new; 30 gns.—West End Forge, Boston, Lincs. [X7838

LIGHTWEIGHT Wolf, 2½h.p., outside flywheel, Dixie mag., B. and B. carburetter, guaranteed perfect; £12, or nearest offer.—F. Goddard, Swan House, Honiton, Devon. [X7512

2½h.p. Wolf 1915 Models, delivery from stock: 2-stroke 2-speed models £32/11/9, single-speed models £25/6/3; cash or extended payments.—Wauchope's, 9, Shoe Lane, London. [X7733

1915 Wolf Motors in stock, model B 32 gns., kick start, 2-speed, and clutch; another model B, 2-speed, Paco engine, 30 gns.; immediate delivery.—Streffords Garage, Ltd., Shrewsbury. [X7322

Yale.

YALE Motor Cycle in stock, 8h.p., 2-speed, kick start; 60 gns.—Jones, The Broadway, Muswell Hill. Sole agent for N. London, trade and retail. 'Phone: Hornsey 2562. [7636

Zenith.

ZENITH-GRADUA, J.A.P. 4h.p., good condition; £23.—565, High Rd., Leyton. [X7795

ZENITH 4h.p. 1911 Combination, overhauled; £30.—5, Gordon Terrace, Beauchamp Rd., E. Molesey. [3176

ZENITH, 6h.p. twin, 1914, fast, splendid condition; £45, perfect.—23, Market Place, Kingston, S.W. [3012

ZENITH-GRADUA, 3½h.p. J.A.P., 1912, sidecar, splendid runner; £37/10.—Jenkins, Photographer, Redhill. [X7785

6h.p. Zenith 1915 Combination, 2 months old, guaranteed like new; £70.—Percy and Co., 337, Euston Rd., London. [3100

ZENITH, 1913, 3½-4h.p., water-cooled Green engine, excellent order; £30.—P. J. Evans, John Bright St., Birmingham. [3047

1913 8h.p. Twin Zenith and Coachbuilt Sidecar, in real nice order and condition; £50.—Percy and Co., 337, Euston Rd., London. [3099

NEW 1915 6h.p. Countershaft Zenith, delivered from stock; £80/9/8; gradual payments or exchange.—Wauchope's, 9, Shoe Lane, London. [X7725

ZENITH-GRADUA T.T., 1914, 5-6h.p., no clutch, Lucas lamp sets, new tyre, very fast; £39.—Tom Simpson, Outfitter, Stalybridge, near Manchester. [2994

ZENITH-GRADUA and cane sidecar, Kempshalls; £29/10; deferred terms.—Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green. [2931

ZENITH, 1914, 6h.p., countershaft model, with kick starter and coachbuilt sidecar, excellent condition; £52.—P. J. Evans, John Bright St., Birmingham. [3045

5h.p. Zenith, 1915, countershaft, all accessories, Millford coachbuilt sidecar, new Dunlops, 2,300, do 45 combination, 60 solo; cost £90, nearest £70.—Cope, Ellesmere College, Shropshire. [X7551

ZENITH, 3½h.p., 1914, Gradua gear, and torpedo sidecar, automatic oil feed, speedometer, lamps, spare belt and tools, first-class running order, tyres nearly new; £37.—606, Green Lanes, N. [3068

ZENITH, 1914 model D, 4-5h.p., countershaft, semi T.T. bars, Lucas £3 lamp, brand new tyres and belt, complete with £13/13 Montgomery sporting sidecar, with Zenith connections; £54.—Bostock, County Bank, Northwich. [X7803

ZENITH, 1914, 5h.p., countershaft Gradua clutch, kick starter, F.R.S. lamp, speedometer, horn, spare belt, valves, all in excellent condition, £48; brand new 1915 Milford Empress sidecar, £12/12.—Tanfield, St. Peter's Rd., Margate. [X7602

ZENITH, 1912, 6h.p. model, bought in May, 1913, 2 lamps, spare cover and tubes, 26×3 Palmer tyre rear wheel, new Kempshall front, with Millford Corvette sidecar, exceptionally powerful combination, in excellent condition; £45.—The Morris Garages, Oxford. [X7564

ZENITH-GRADUA Combination, late 1914, countershaft model, kick starter, Swan sidecar, only done 1,376 miles, Cowey speedometer, Lucas K.O.R. lamp set, Lucas rear lamp, a.l Lucas horn, all accessories, excellent condition; £65.—Ross and Jarratt, Portland. [X7702

SEPTEMBER 30TH, 1915.

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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SOUTH AFRICA.—Central News Agency, Ltd. PARIS.—Smith's English Library, 248, Rue Rivoli.

Effects of the New Tariff.

IT is clear that the 33⅓ import duty on cars, motor cycles, and parts will have far-reaching effects in the motor world. Such a tariff was generally expected in the new Budget—it was called for from too many quarters for the appeals to be ignored by the Government—and the resultant effect will be to increase the cost of motor vehicles all round, though more particularly those manufactured abroad. Relieved to some extent of the competition of the American manufacturer, the British maker will, it is thought, help to adjust some of the differences in the present cost of raw materials to those existing prior to the war, besides which the magnetos and other parts commonly fitted are subject to the duty. Again, the new Budget proposals are reflecting their influence on the second-hand market. Lucky is the man who was possessed of a comparatively modern motor cycle purchased some months ago. Were it not for other considerations exercising a restraining effect, such as the appreciable increase in the Income Tax, and the increase of 4d. per gallon on petrol, existing motor vehicles would have been considerably enhanced in value; but the factors enumerated will tend to check any appreciable rise. Moreover, the summer has passed and we have arrived at a period of the year when motor vehicles change hands at lowest figures, but since the British output is slowly diminishing, due to the necessity for munitions, it is a moot point whether by the springtime motor cycles will not become more valuable even than now. Thus the present outlook would indicate that motoring generally is to be more expensive, and if there is a shining star in a black outlook, it is the comfort to motor cyclists to know that they own the most economical motor vehicle extant, not only in first cost, but also in running costs. We have heard it suggested that the increase in the price of petrol will damage motor cycling, but we do not share that view. Some devotees of the motor cycle will, no doubt, be lost to us, but their numbers will be more than counterbalanced by the conversion to sidecarring of many who may have been considering the purchase of a light car.

Economy at the moment is a word to conjure with, and consequently the motor cycle as a type should receive a far less severe set back than any other.

A Probable Result of the Duty.

TURNING from what we may term the ill-effects of the tariff, we may consider some of its more favourable aspects. One can plainly see that sooner or later the main effect of the Budget will be to induce American manufacturers to purchase as much material as they possibly can obtain in this country, which will be all for the general good. We refer to such parts as chains, tanks and fittings, mudguards, rims, and tyres, in which Great Britain possesses an almost limitless productive capacity. Already more than one American manufacturer has made a practice of using certain British parts, but it is clear that in order to avoid the tariff charges a great deal more reliance will be placed upon this country sooner or later to provide many component parts, their value gradually extending as the raw material market settles down.

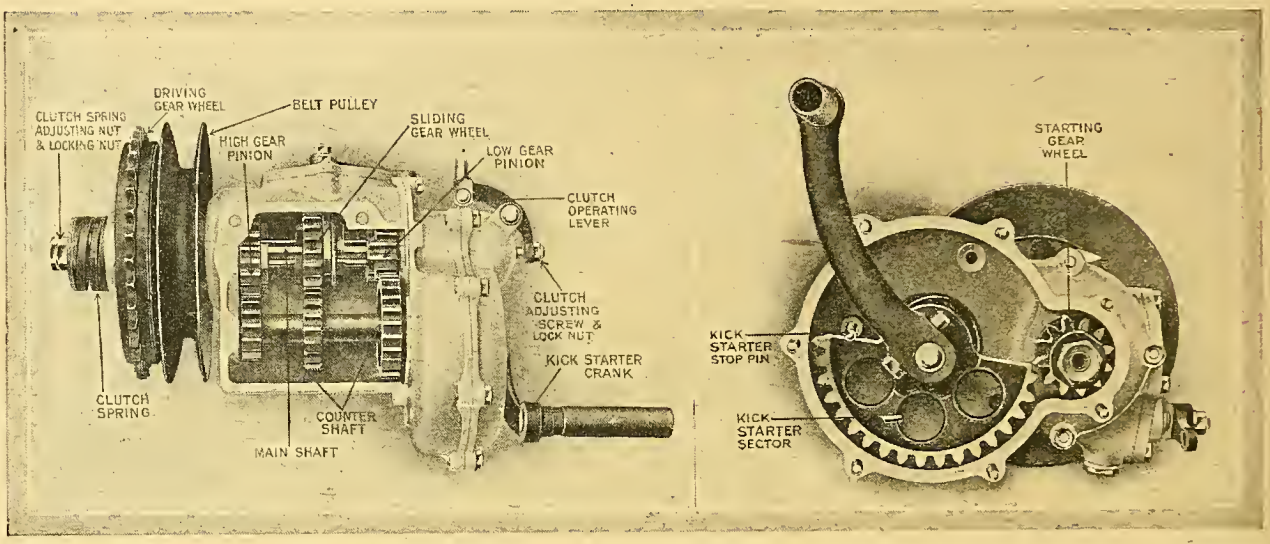
Speaking generally, the new duty has been received favourably. Even the most confirmed free trader agreed that something should be done without delay to protect the business of the British manufacturer who, by reason of concentrating all his energies on munitions, had to stand aside with his hands tied and see the astute Yankee snapping up all the business.

The taxes on motor vehicles are not affected by the Budget, so that present owners of foreign-made motors escape scot free except for the increased cost of petrol, and their vehicles, moreover, automatically become more valuable by reason of the tariff.

It may be added that the new tariff duties came into effect on Wednesday, the 29th inst.

An Index to the advertisements in this Issue will be found on the page facing the back cover.

The Ariel Countershaft Three-Speed Gear.



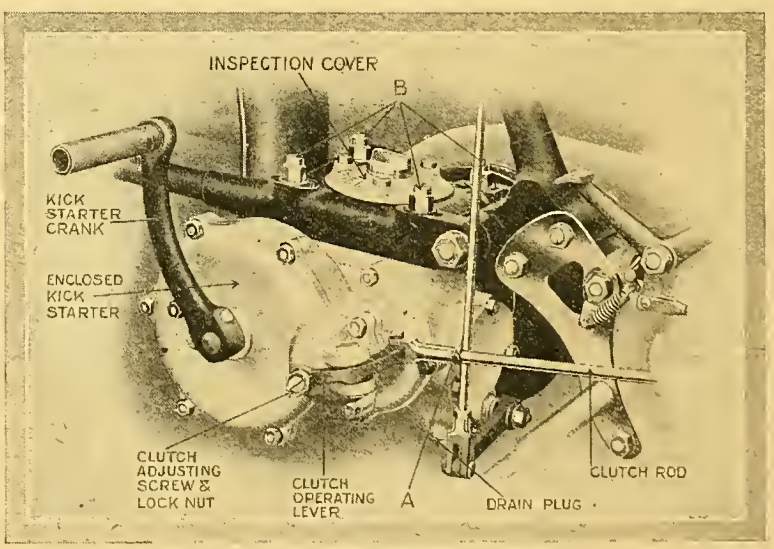
A VERY soundly constructed three-speed gear box used on more than one make of machine is the Ariel, which hails from the Ariel Works, Ltd., Birmingham. The illustrations clearly show the principle upon which it works. The high and low gear pinions are loosely mounted on the mainshaft, while the sliding gear wheel is free to slide but not to rotate upon this same shaft. The high gear pinion also carries an extension or sleeve upon which the driven pulley is mounted. The operation is as follows:

To obtain the high gear the sliding gear wheel is moved to the left, when the dogs on its face will engage similar dogs on the high gear pinion, locking the latter to the mainshaft, and bringing the direct drive into play; the layshaft will then revolve idly. The intermediate gear is in operation when the sliding gear wheel is in the position shown; the drive is now through the sliding gear to the layshaft and back to the high gear pinion and pulley. The low gear is obtained by sliding the gear wheel before mentioned to the right, and the drive is then through the low gear pinion, layshaft, and high gear pinion. There is, of course, a neutral position between each gear. The gears are in proportion of 5, 8¼, and 15⅓ to 1, but the whole series can be raised or lowered by the adoption of a different engine sprocket, those given being obtained by the use of a 15 tooth sprocket. Ubas steel forgings and the best materials only are used in the construction of the gears.

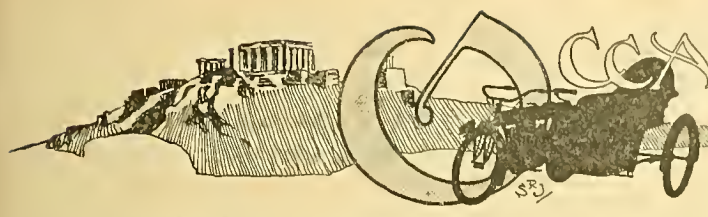
Free Engine Clutch.

The clutch is a special plate clutch with cork inserts, and is controlled by the right foot. No lubrication is necessary. In the event of wear the pressure of the spring can be increased by slightly tightening the nut shown on the left of the first picture. At the same time a slight adjustment should be made on the clutch operating lever, and a clearance of about $\frac{1}{16}$in. should be allowed. In cases where more adjustment is required than can be made by the small adjusting screw, a further means of adjustment is provided on the clutch rod when the lock nut A is loosened.

The gear box is carried below a special platform, which has elongated slots to enable the gear box to be moved backwards or forwards for chain adjustment purposes, and is held in position by four nuts B. A large cap is provided in the inspection cover for the admission of lubricant, but the box is sent out with sufficient for 1,000 miles running. It should be noticed that the first tooth of the kick starter is specially shaped to allow the cogs to mesh, no matter what the position of the smaller wheel may be.



Threequarter view of exterior of the Ariel gear box.



OCCASIONAL COMMENTS

BY 'IXION'

A Translucent Number Plate.

History repeats itself. *The Motor Cycle* for Sept. 23rd describes on page 312 a translucent number plate, incorporating a ruby rear light. In the first London-Edinburgh run (unless memory deceives me) Mr. Elyard Brown used an electric head lamp, fed by accumulators; and in the following year his firm (Vandervells) made a valise for the rear carrier, which contained, in addition to tools and kit, a couple of twenty ampère hour accumulators which supplied an electric head lamp, and also fed a smaller bulb illuminating a transparent number and a ruby disc in the tail plate of the valise. The notion was abandoned because the accumulators suffered from vibration and required charging at rather brief intervals.

Cobbles and Setts.

I quite agree that the Warrington-Preston route has been unduly maligned. Though I have not used it lately, I have traversed it dozens of times, and I never saw any reason to single out its surfaces for special denunciation. Its evil reputation rather depends, I fancy, on the fact that it is one of the few thirty-mile suburban sections which provincial riders strike when touring. Its surfaces have never been excellent, and it is always easy to miss one's routes over a section of this length where there are plenty of people about, as one misses a direction post when one is watching carts and pedestrians and cyclists with close suspicion. In reality its transit is very like such a jaunt as those on the loop routes round London, *e.g.*, Kingston to Windsor. The roads vary from fair to bad, turnings are frequent, traffic usually pretty heavy, and pedestrians numerous, especially at certain times in the day. But the provincial rider, when on tour, is unaccustomed to thirty-mile suburban strips. He strikes the Warrington to Preston strip oftener than its few rivals, and he detests it accordingly. Nevertheless, though setts are not enjoyable, they are far, far better than the virulent pot-holes occasionally encountered along the motor 'bus routes round London, a species of abomination now spreading to some Midland districts, as the motor 'bus is being applied to linking up deficiencies in the railway services.

Double Expanding Countershaft Pulley Gears.

I believe the earliest of all these gears was the Low, of which I formed the happiest impressions; and I confess it has always been a puzzle to me that the design has never been made a commercial success. I never found any reason in practice to justify the accusations of belt slip commonly urged against it. On the contrary, the contact area at low ratios was proportionately far larger than is obtained with the single variable pulley now in vogue, and the construction was simpler and probably cheaper. I have long expected some designer of high-powered sidecar or cycle car outfits to revive this transmission, with double belts and double pulleys, one on each side of the engine; and I see no reason why such a device should not be quite as satisfactory as chain transmissions. Admittedly, its best chance rests with the lower-powered outfits, as precision in gear ratios is of comparatively small account when one has heaps of engine power in reserve; but when a 3½ h.p. engine is set to drag a tremendous load, hill work is vastly improved when the correct ratio can be selected for every gradient. I hope it will be given a fresh show by some large maker.

Spring Frames and the Next Competition Season.

Supposing that the freak hill policy is maintained when competitions recommence, the users of spring frames will find that their machines enjoy enormous advantages on rough surfaces. I have tested a few spring frames lately, and I always find that tyre adhesion is vastly better when the rear half of the machine is sprung. I should put the improvement at nearly 50% in the case of a first class springing device, and everybody knows that tyre adhesion is the real crux on a freak hill, especially with three-wheelers. It counts for less on a two-wheeler, because there is always plenty of power available on solo mounts in such events, and the driver can afford to throttle down, but even the solo rider will score if his frame is sprung. He may be able to get tyre adhesion of a sort, be his frame rigid or sprung, but with a rigid frame quite half the entrants get unseated on a really bad hill, because the violent bouncings upset their steering, and they either fail to correct their swerves, or handle their controls so clumsily that the engine finally baulks—any spectator of a trial up such a mild hill as Amulree will remember that 60% of the entry usually fail from these two causes alone, both of which would be hugely modified by a good sprung frame. So I warn the trade that certain firms are busily going ahead with sprung frames, and that these firms will reap a colossal advertisement from the Six Days Trials when peace returns.

A Cycle Car Testimony.

One of our staff bears similar testimony from the cycle car standpoint. Not long ago he purchased a cycle car, the springing of which was unsatisfactory. After a time he added a pair of shock absorbers to the rear axle, and the improvement in the riding was the least of his pleasures. He found he could now climb many slopes on top gear which had formerly necessitated a change down. This was due, in part, to the fact that the increased comfort induced him to rush them at higher speeds. But it was further partly ascribable to the fact that his rear tyres now secured a constant and even grip, whereas before the absorbers were fitted his engine must have felt as if he were alternately accelerating, declutching, and braking, seeing that his tyres had never been in road contact for more than half a minute at a time. For this reason better tyre wear has also resulted.

The Mechanical Testing of Metals

AND THEIR INTERNAL STRUCTURE.

CONCLUDING INSTALMENT. By ARTHUR MARKS, F.I.C., A.R.C.S., A.R.S.M.

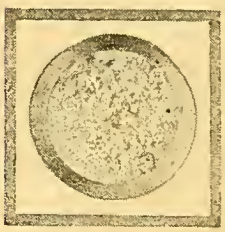
THE tests which we are now about to consider have been devised as a consequence of the fracture of normally strong steels when subjected to insignificant stresses. The fact that metals would fail when subjected to stresses below their elastic limit was known before 1849, when the question of the use of iron in railway construction was considered by a Royal Commission. Certain other tests will be dealt with as they group themselves with the question of structure. The series of dynamic bending tests are conveniently known under the general name of impact tests. Most motor works now insist upon various parts of the motor being subjected to one or other of these tests.

Shock Fracture.

It is often desirable to find the energy which is required to bring about fracture by the application of a single blow. The metal is fixed at one end whilst a pendulum weight is allowed to strike the piece in the course of its fall from a fixed height. A test of this nature is frequently applied to railway couplings, which are subjected to shock fracture when a heavily loaded train is started suddenly. The falling weight consists of a pendulum of about 30 cwts. which strikes an anvil consisting of a second pendulum of about 4 tons weight, to which one end of the coupling is bolted. The other end of the coupling is attached to a firm foundation. Thus, when the small pendulum is allowed to fall from a measured height, the energy of the blow can be calculated in foot-tons, and after the coupling has broken, the height to which the anvil is swung can be used to calculate the energy above that used to break the coupling. Thus a convenient comparison can be made between the slowly applied breaking load given by the tensile testing machine and the shock load which the impact machine exerts. The microscope shows that an entirely different fracture occurs in the two cases—the former we have discussed. In the case of a suddenly applied load, the fracture occurs at the cleavage planes of the crystals. These are planes closely related to the crystalline structure, and are planes along which there is a tendency for the crystal to split. This splitting along certain planes is often noticed when a blow is applied to a piece of coal or the common mineral calc-spar.

Repeated impact fracture.

0·6 per cent. carbon steel, 1in. blow. Broken after 6,600 blows.



Repeated impact fracture.

0·6 per cent. carbon-steel, 1½in. blow. Broken after 1,800 blows.

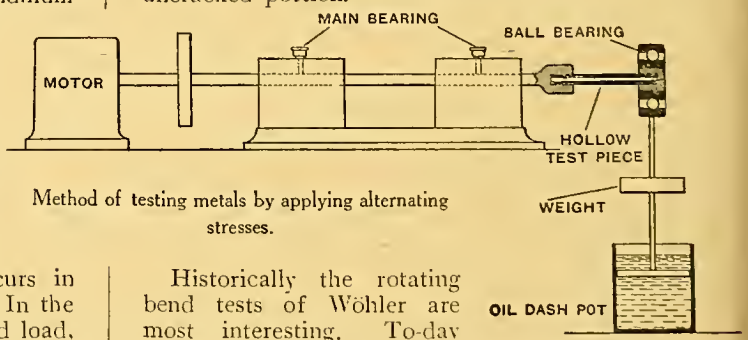
Repeated shock fracture tests are also applied to metals. Small blows of the order of four-inch-pounds are applied to the test piece of metal, supported at its two ends, and with a groove cut round it at the position where the hammer strikes. The specimen is turned over after each blow. Various devices on the principle of either the tilt hammer or drop hammer are used for the purpose of delivering a large number of small blows. For example, a machine might deliver at will fifty ½in. blows per minute, or 150 1in. blows per minute, or intermediate values. Comparisons of the resistance of various steels to these repeated impact tests, using the same size pieces for the tests, gave the following figures:

NUMBER OF BLOWS BEFORE FRACTURE (85 per Minute, ½in. Drop).

% C.	Carbon Steel.	% Ni.	Nickel Steel.	% Ni.	Nickel Chromium.	% Cr.
0.04	12,500	0.3	14,000	4.8	123,000	1.25
0.3	44,000	2.0	19,000	3.2	96,000	1.70
0.5	44,000	25.0	64,000	4.5	156,000	1.45

The advantage of using a 25% nickel steel for a valve which receives a large number of small blows whilst working is evident from the table, and the remarkable resistance of a nickel chromium steel is also shown. Each of these steels consists of Austenite, whereas the carbon steel shows ferrite and pearlite under the microscope. By hardening the higher carbon steels and annealing them, thereby producing a sorbitic structure, the resistance to repeated impact is raised.

The fracture takes place by gradual cracking of the metal. Small fissures start in the metal which gradually grow until the specimen breaks quickly across the uncracked portion.



Method of testing metals by applying alternating stresses.

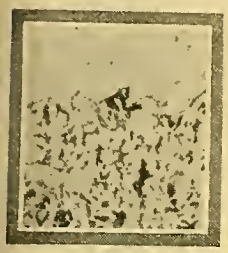
Historically the rotating bend tests of Wöhler are most interesting. To-day the Wöhler test is carried out in the machine sketched. The hollow test piece is rotated rapidly by the motor, whilst the free end is held down under a definite weight. The number of rotations required to break the test piece is counted, and by treating the various metals under the same conditions the relationship of their resistance to a bending stress can be obtained. Thus in the case of a carbon steel the quenched metal after annealing withstood 43,000,000 revolutions, whereas the softened metal only withstood 27,000,000 revolutions under the same load.

Alternating bend tests have been used on short lengths of metal in which the test piece of about 3in. length is gripped at one end and the other end bent

The Mechanical Testing of Metals.—

to and fro, either by means of a long lever by hand or by a piston actuated by means of an electric motor. Vibration tests in which a long rod of metal fixed at one end and vibrated at the other end by means of an electro-magnet have also been devised and are regularly employed.

The alternating bend tests are easily and rapidly carried out, and are, therefore, frequently used. Vibration tests are very important, since the reflected vibrations may encounter the next emanating vibration, with the result that considerable stresses are produced. Similarly, stresses greater than the metal will stand are frequently produced by the arresting of vibrations at some point in the metal causing cracks which ultimately result in fracture. Cases are known in which the excessive vibration in steering rods, due to rough roads, have resulted in fracture owing to this cause. Strengthening by increasing the cross section of the metal was at one time vainly practised on large connecting rods with the object of reducing the possibility of fracture. It was very soon found that this method of overcoming vibration effects was an aggravation of the evil, and the design of these motor parts now takes vibration effects into consideration.



Single blow fracture.
Micro - photograph showing fracture across ferrite and pearlite.

Photographs of fractures produced by various methods are shown in the accompanying figures. The process of fracture in all these cases is due to the development of small flaws in the metal. These are at first only microscopic, and, as the reader will have gathered, are most readily developed in the metallographic constituent ferrite, which is common to the softer steels. The formation of these flaws takes place by the gradual development of slip-bands in the crystal of the metal. A complete proof of this was given by Ewing and Humphrey, who obtained a series of photographs at 1,000 magnification of the same crystal of metal after it had been subjected to 1,000, 2,000, 10,000, and 40,000 reversals of a stress of 12.4 tons per square inch. The gradual increase in the microscopic bands parallel to one another was clearly shown in the successive photographs.

Tensile fracture.
Micro - photograph showing elongated crystals, and fracture across pearlite and ferrite.

In conclusion, we may note that (1) whatever type of repeated stress a metal is subjected to, *even though the stress is below the elastic limit*, the metal may break if the stress is repeated a sufficient number of times; and (2) the fracture of the metal occurs by the development of cracks through the crystals of the metal, and not by the *so-called crystallisation of the metal under the repeated stress*.

An Indian Two-stroke Lightweight.

HITHERTO America has not favoured the two-stroke lightweight, or, at any rate, no specimen has found its way to this country, but it was evident, with the knowledge and experience which American manufacturers have had in two-stroke engines applied particularly to marine work, that an American two-stroke motor cycle on up-to-date lines would not be long in signalling its arrival. Consequently, we were not really surprised when Mr. W. H. Wells, in outlining his 1916 programme to us last week, mentioned that an entirely new Indian two-stroke lightweight would shortly make its appearance. The Hendee Co. have during the past year bought and tested samples of the leading British lightweights, and have designed one which will be no less attractive in its class than the twin-cylinder machines which have made the Indian name famous. The new lightweight is a two-stroke engine of the three-port type, and is rated at 2½ h.p. It has a three-speed gear box and kick starter—a miniature replica of those fitted to the heavier models, which, by the way, are to be modified in design in 1916, having two sliding pinions instead of the one formerly used—and an enclosed chain drive.

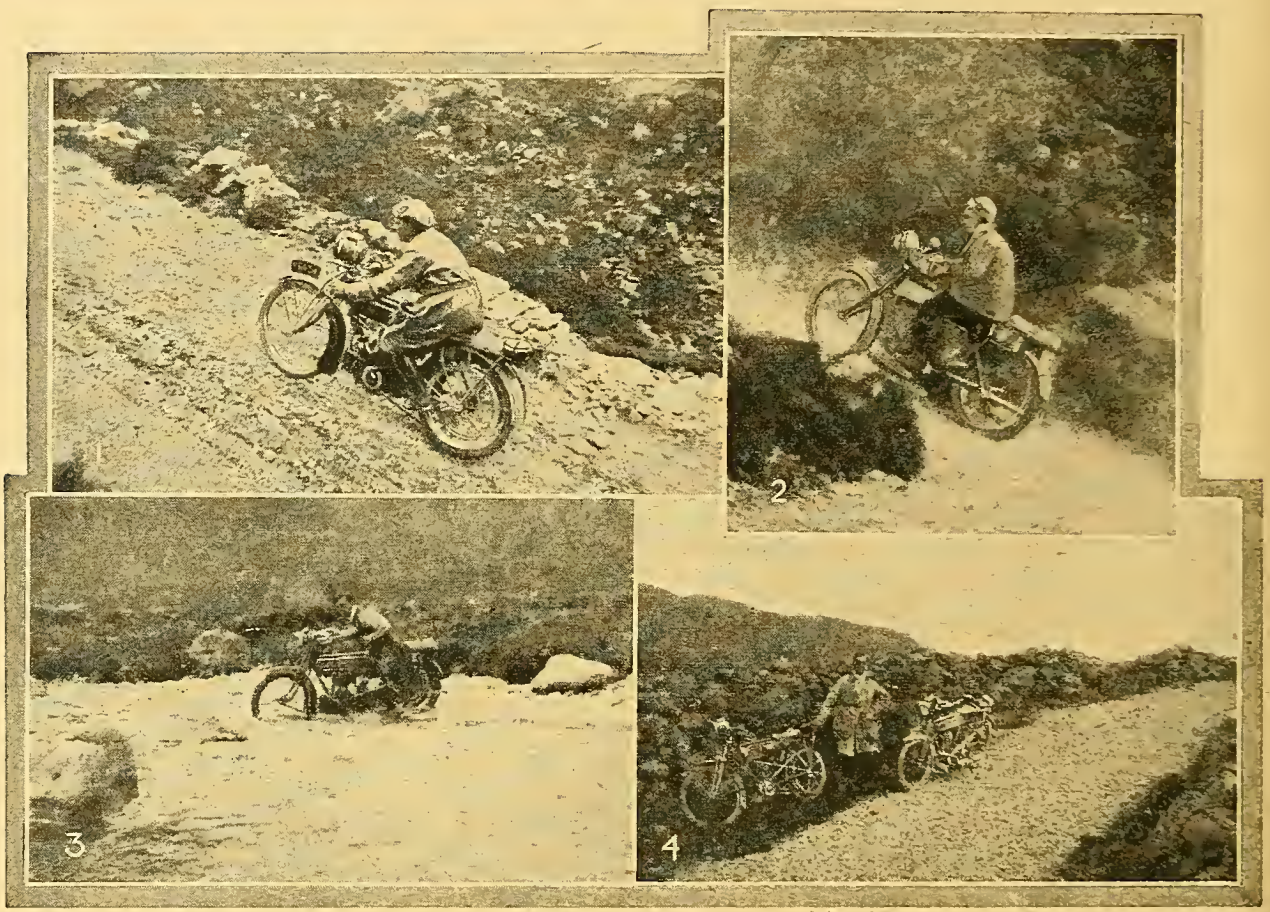
The control is by Bowden wire mechanism. The spring front fork is of exactly the same type as fitted to the earliest Indians imported in this country. In fact, the whole machine bears a strong resemblance to the original 1¾ h.p. Indian motor cycle of about 1907, except that the engine in the latest model is fitted vertically in the loop frame, in accordance with accepted practice. We have seen photographs of the forerunner of the type, but further amendments to conform to English ideas will be made before it will be exposed to the public gaze. It is a neat and workmanlike mount, and a feature of this new Indian, we were told, is its silence. The Hendee Co. have particularly mentioned that most of the examples they have tried are noisy, but the design they have adopted is noticeably quiet in running, thanks to its large capacity silencer and extension pipe.

MORE NORTON RECORDS.

D. R. O'Donovan has been record breaking again, and very successfully too. His mount was, of course, a Norton, and on this occasion (on September 22nd) he went for the Brooklands sidecar records, and succeeded in lowering both the existing times for classes G (500 c.c. limit), H (750 c.c. limit), and I (1,000 c.c. limit). The single-cylinder Norton has a bore and stroke of 79 × 100 mm. = 490 c.c., and O'Donovan's time for the five miles was 5m. 6⅕s., equalling a speed of 58.78 m.p.h. The records lowered are that made by J. Cocker with a 499 c.c. Triumph at a speed of 58.06 m.p.h., by E. B. Ware on a 744 c.c. Zenith at a speed of 58.10 m.p.h., and by A. V. Sumner on a 964 c.c. Zenith at a speed of 53.25 m.p.h.

The equipment of O'Donovan's Norton included Dunlop tyres, Lycett saddle, and C.A.V. magneto; Pratt's spirit and Speedwell oil were used.

Hill-climbing in Lakeland.



SCENES DURING THE HILL-CLIMBING EXPEDITION REFERRED TO BY MR. J. COHEN.

(1.) A 3½ h.p. Bradbury being ridden up Honister Pass, from the Buttermere side, by A. G. Robinson.
(2.) J. Cohen, riding a 4 h.p. Norton, on Stoneythwaite Rake.
(3.) Crossing the river Duddon, after surmounting Wrynose Pass, on a 4 h.p. Norton, with Sturmey-Archer countershaft gear.
(4.) At the summit of Wrynose Pass. 3½ h.p. Bradbury (left) and 4 h.p. Norton machines, which made the climb.

AFTER reading the interesting article describing the conquest of the Wrynose Pass from the eastward side by a lady driver of a 6 h.p. Enfield and sidecar, and the challenge with which the article concludes, I venture the opinion that the route is hardly practicable for competition purposes. There are numerous places where it would be highly dangerous, if not impossible, for one sidecar to attempt to pass another owing to the narrowness of the track. As often as not the latter passes either between two banks or between a boulder-strewn bank and a precipice protected by a mere apology for a wall.

On July 3rd of last year, when out testing the Sturmey-Archer countershaft gear, I succeeded in surmounting the Wrynose Pass mounted on a 3½ h.p. Rover with sidecar and passenger (seated in sidecar), the lowest gear being 12½ to 1. One stoppage only was required, and this was to remove one or two large boulders, which prevented progress on a part which has since been repaired (?). No attempt was made to lighten the machine, and full luggage for two was carried.

On June 29th of this year a friend (Mr. G. Robinson) and myself, mounted respectively on a 3½ h.p. Bradbury and a 4 h.p. Norton, both solo, easily negotiated the climb non-stop. We descended the far side to Duddon Bridge on to Ulpha, leaving the road to make a successful attack on Stoneythwaite Rake, which, in my humble opinion, is the worst hill for sheer continued gradient that I have yet encountered. Our gears were as follow:- Bradbury, 4½ top, 6½ middle, 9¼ bottom; Norton, 4½ top, 7⅓ middle, 12 bottom. The bottom gear on the Norton was never used on the Wrynose Pass, and only used up Stoneythwaite to permit the driving wheel to grip.

Mr. Abraham's remarks on road repairs are quite justified. The repairs on the Wrynose apparently consisted of some soft red mud and grass, with a few stones here and there to facilitate skidding.

J. COHEN.

A LAKE DISTRICT WARNING.

The ten-mile speed limit order in operation at Staveley is likely to be strictly enforced by the local police authorities at any time. The Automobile Association learns that traps are being worked in the villages of Windermere, Bowness, and Ambleside.

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

A Leaky Crank Case.

My engine is in pieces, because the crank case leaks badly. How can I best pack it up to prevent such leakage?—M.G.T.

As you do not say whereabouts in the crank case the leakage is, we can only tell you that if it occurs at the joint, fit a washer consisting of brown paper soaked in boiled linseed oil.

A Carburetter Blow-back.

I have a 2½ h.p. twin-cylinder machine which consumes (or wastes) an abnormal quantity of petrol, its average consumption being about 30 m.p.g. I have discovered that a puff of gas is blown out of the carburetter air intake at each stroke of the piston, and when the air intake is fully open this puff is so heavily laden with petrol that the moisture is visible on the bare hand. I do not think this happens at the exhaust stroke, as the puff is not hot. If this accounts for the waste, can you help me to remedy it. The carburetter is radically wrongly set.—W.J.C.

The blow-back through the air intake is probably due to weak inlet valve springs or wrong timing. Possibly you are using too large a jet. You should also see that your inlet valves have not too much opening. See "Motor Cycles and How to Manage Them."

Taxes.

I am interested in your answer to "T.R." in a recent issue. (1.) Is there any reduction in the £1 tax for registration in the last three months of the year? (2.) Is there anything further to be done to satisfy the law, whether in ordinary times or during the present war conditions? (3.) Should these things be done before taking delivery of a motor cycle?—W.R.D.

(1.) Yes, if the local taxation licence is taken out on or after October 1st half fees are charged. This, however, does not apply if the machine is purchased before that date. (2.) You have, of course, to take out a driving licence, and register the machine. (3.) The driving licence must certainly be procured before you take the machine out. As soon as these numbers are applied for, the County Council begin to make enquiries as to whether or not you have obtained a local taxation licence.

Breaking Spokes.

I am the possessor of a 4½ h.p. 1915 all-chain combination, and have had practically no trouble except from broken back wheel spokes; in all I have broken eight at different times. Each one of my motor cycling friends has a different reason for the breakages, *e.g.*, pot-holey roads, tension of spokes originally too great, strain at corners, "chugging" when going very slowly on high gear, etc. Can you suggest the correct reason? The spokes always break off at the hub on the chain side of the back wheel.—SCOTTY.

The suggestions of your friends are quite sound; every reason given may be the correct one. The spokes break because the stress upon them is greater than they are capable of standing, they may have been too large in the first place, or the spoke tension may have been uneven, thus throwing more strain on one spoke than another. We should advise a stouter gauge.

Petrol Consumption.

There are one or two points about my 2½ h.p. I should be much obliged if you would explain: (1.) The makers say 120 m.p.g. is a fair average. This machine, when I bought it new three months ago, had a 31 jet, and I got about 80 m.p.g. I changed it for a 28 jet, and am getting about 85 m.p.g. I should be quite satisfied if I got about 110. (2.) How often should the carbon deposit be removed from the cylinder? I have run it about 1,400 miles, and the engine soon begins to knock.—C.X.

(1.) Very few 2½ h.p. machines give the low consumption claimed. Not that these consumptions are impossible, but the fact remains that the ordinary driver does not worry very much, but drives according to his own inclination. If anyone tries to get an unusually low consumption, it is comparatively easy to do so at the risk of slight discomfort. For instance, you have to keep the speed down to about twenty miles an hour, advance the spark fully, drive on the throttle, and coast down every conceivable hill, giving so much air that the engine misfires when you attempt to slow down. Still, you should easily get 100 miles to the gallon with this machine, and you might try using a still smaller jet. (2.) You might decarbonise the engine every 1,500 or 2,000 miles.

What to do in a Thunderstorm.

(1.) Is it safe to ride on in a thunderstorm? I was caught in one a short time ago, when the lightning was very bad, but was informed that the tyres, being non-conductors, made it safer for me to be on the machine than when sheltering. Have you known any motor cyclist killed by lightning? (2.) What do you consider a reasonable mileage for a back tyre on a 3½ h.p. solo machine? (3.) Is a speedometer likely to be out of order when it makes a distinct squeak when I am pushing or going slowly, as if a needle were rubbing on the glass?—J.J.B.

(1.) As the tyres are non-conductors, we should say it would be much more dangerous to be on the machine than off it. The fact that the machine would be insulated from the ground, if the roads were dry, would render you far more liable to damage than if it were a conductor, and the current on its way to earth were not obstructed. On wet roads, on the other hand, the machine being a good conductor, there would be less chance of damage. It is very rare, however, that lightning strikes a moving object, and we have no record of any motor cyclist being struck while on his machine, or even near it. If you are out in a thunderstorm, and do not care to ride through it, it is best to leave the machine and stand well away from trees. (2.) About 3,000 miles. (3.) The squeak is probably due to some part of the speedometer being dry. Detach the cable and squirt some oil in. This will probably run down. A drop or two of oil each end would be advisable.

"The Motor Cycle" Photographs.

Duplicates of photographs appearing in "THE MOTOR CYCLE" will be supplied at the following rates: Unmounted prints, half-plate, 1/6 post free; mounted, 1/9 post free. This refers to photographs taken by "THE MOTOR CYCLE" operators.

Orders, which must be accompanied with remittance, should be addressed to the Photographic Department—Iliffe and Sons Limited 20, Tudor Street, London, E.C.

Hints on Changing Gear.

(1.) My machine is a 1912 Triumph, fitted with an N.S.U. speed gear. Is it advisable to lift exhaust when changing gear? I always do so, but have been told not to. (2.) The machine, after running a short distance, takes full air, with throttle very little open, say for a speed of 20 m.p.h. This looks like too large a jet—I have never seen it, so cannot say the size—but I am getting 100 miles to the gallon. The machine runs very well, but would it run slower on top gear with smaller jet, and do you advise fitting one? The slowest speed now is 9 or 10 m.p.h. (3.) Why is the smoke from my long fish-tail exhaust black, but it is hardly noticeable unless one looks closely, whilst smoke from most machines is grey and very noticeable? I have used two or three different makes of oil, but the smoke is always this dark, almost invisible, colour.—H.C.A.

(1.) It is advisable to lift the exhaust when changing gear. The gear is one which is rather slow to change, and consequently while changing from low to high, or *vice versâ*, the engine would be racing if its speed were not checked by some means. (2.) If you are getting 100 miles to the gallon, do not worry about the size of the jet. It appears to be perfectly satisfactory; the slow running is also good. (3.) Black smoke, on the other hand, certainly does point to too strong a mixture, caused by too large a jet, but if the valves are standing up well, and the machine is otherwise satisfactory, we think you might almost leave things as they are.

Two-stroke v. Four-stroke.

Is a two-stroke engine of 349 c.c. more powerful than a four-stroke twin of the same c.c.? My 2¾ h.p. Douglas is rather slow to start on low gear, also slow to pick up on a hill, especially if there is a hill after taking a corner, for which I have had to throttle down. The engine has done about 1,500 miles since last taken down. The plugs are often sooty although I do not appear to be giving too much oil, as the needle gauge is only turned about four marks, or less than half-way. My carburetter is an Amac, with No. 26 jet. The air I keep full open unless, of course, when starting, but I can drive for miles without touching the air lever.—L.W.

The two-stroke engine gives more power, especially at slow speeds, than a four-stroke engine of the same cylinder capacity. The engine in question is particularly good at accelerating, especially on the low gear up hill. The engine should be decarbonised, the valves ground in, and, if necessary, new valve springs should be fitted. If you look to these points we think that you will find the machine will be greatly improved in running. Also, it is possible that you may be using rather too high a gear. It would be advisable to fit an adjustable pulley. See that the tappet clearances, when the engine is warm, are about equal to the thickness of the paper on which this journal is printed. The carburetter seems to be properly adjusted.

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"G.H.S." (Dartford).—Whittle belt for use with 3½ h.p. Triumph

"E.B." (Yorks.).—Stelastic tyre on back wheel of a 6 h.p. twin with sidecar. Mileage and freedom from puncture.

"T.R.F." (London). — Four-cylinder Henderson. Comfort, reliability, and consumption.

"P.K.S." (Brooklands). — Velocette two-stroke. Reliability, economy, silence, hill-climbing, and slow running.

"S.J.W." (Portsmouth).—General efficiency and belt wear with Grado pulley on 6-7 h.p. twin.

RECOMMENDED ROUTES.

WALSALL TO CHEDDAR.—H.E.R.

Walsall, Wednesbury, Tutbury, Brierley Hill, Stourbridge, Kidderminster, Worcester, Tewkesbury, Gloucester, Bristol, Axbridge, Cheddar.

TENBURY TO LONDON.—D.W.

Tenbury, Witley, Droitwich, Alcester, Stratford-on-Avon, Banbury, Aynho, Bicester, Aylesbury, Tring, Berkhampsted, Watford, Edgware, London. Approximately 140 miles.

STRANRAER TO TIPPERARY.—M.J.K.

The distance from Stranraer to Larne by sea is twenty miles. Your best route from Larne to Tipperary would be: Larne, Carrickfergus, Belfast, Lisburn, Dromore, Banbridge, Newry, Dundalk, Ardee, Kells, Clonmellon, Mullingar, Ballymore, Athlone, Ferbane, Cloghan, Birr, Roscrea, Templemore, Thurles, Cashel, Tipperary. The distance is approximately 252 miles.

SHEFFIELD TO BLACKPOOL.—J.W.M.

Sheffield, Midhopestones, Penistone, Huddersfield, Elland, Hebden Bridge, Todmorden, Burnley, Accrington, Blackburn, Preston, Kirkham, Blackpool Approximately 92½ miles.

HALSTEAD TO NORTHAMPTON.—R.C.

Halstead, Haverhill, Cambridge, Caxton, Eltisley, St. Neots, Kimbolton, Higham Ferrers, Northampton. Approximately 83 miles.

CHOBHAM TO CLACTON-ON-SEA.—E.H.

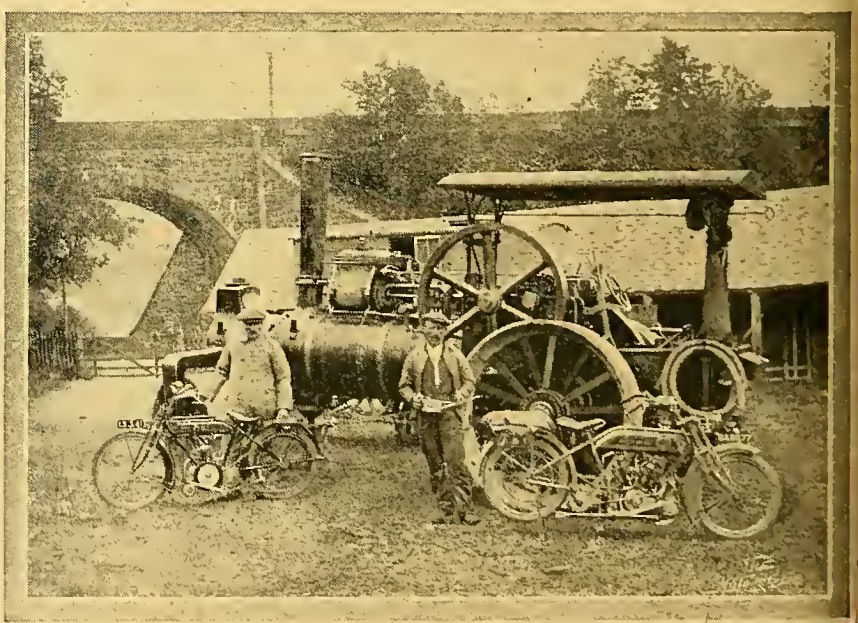
Chobham, Windsor, Slough, Uxbridge, Rickmansworth, Watford, St. Albans, Hatfield, Hertford, Bishop's Stortford, Dunmow, Braintree, Coggeshall, Colchester, Thorrington, Clacton-on-Sea. Approximately 116 miles.

YORK TO TAUNTON.—F.W.W.

York, Tadcaster, Aberford, Brotherton, Wentbridge, Doncaster, Worksop, Mansfield, Nottingham, Loughborough, Leicester, Wolvey, Coventry, Warwick, Wellesbourne, Halford, Moreton-in-the-Marsh, Stow-on-the-Wold, Cirencester, Malmesbury, Chippenham, Bath, Radstock, Wells, Glastonbury, Durston Taunton.

BLACKPOOL TO RAMSGATE.—T.C.

Blackpool, Kirkham, Preston, Wigan, Warrington, Tarporley, Whitchurch. Wellington, Bridgnorth, Kidderminster, Worcester, Cheltenham, Cirencester, Fairford, Faringdon, Wantage, Streatley, Reading, Riseley, Hook, Odiham, Farnham, Guildford, Shere, Dorking, Reigate. Redhill, Westerham, Leatherhead, Wrotham Heath, Maidstone, Lenham, Charing, Canterbury, Sturry, Ramsgate. Approximately 245 miles.



DRIVING CONTRASTS.

A twenty-one year old road roller, with its driver, on the left, and his 2½ h.p. Sun, which he rides during his leisure hours. Both the driver and his assistant (standing by the side of the Abingdon King Dick) have accompanied the engine since it was new. The latter is still going strong, but the driver prefers the two-stroke as a runabout!

TRAINING CYCLISTS FOR THE M.M.G.S.

How a Six Days' Course is Sufficient to Produce a Good Sidecar Driver. The Simplicity of the Motor Cycle Exemplified.

Ascending a grassy rise. Stopping and starting on this climb form one of the final tests.

WHEN recruiting for the Motor Machine Gun Service was in full swing, it was often found that a cyclist of good physique but lacking knowledge of the driving of a motor cycle could not be accepted. Being aware of this fact, Mr. W. H. Carson, on behalf of his firm, Bayliss, Thomas, and Co., makers of the Excelsior, offered his services in the training of novice recruits, which patriotic offer was communicated to Lieut.-Col. Bradley, Commanding Officer of the M.M.G.S., who readily assented to the proposal outlined by the Editor.

Since that time many raw recruits have found a way into the M.M.G.S. as motor cyclists, and are, moreover, possessed of some mechanical and theoretical knowledge in addition to driving experience.

Messrs. Bayliss, Thomas, and Co. entered into the scheme in a practical manner, placing qualified instructors, including Mr. W. H. Carson (the manager) and Mr. E. Milton, in charge of the work. They have provided a room at the works for lecture purposes, and other facilities to enable the recruits, not only to handle and drive the machines in an efficient and capable manner, but to understand thoroughly the mechanism and working.

It is interesting to follow the recruits from the time they commence their tuition until the inspection by the examining officer. After being accepted, the men are medically examined and attested at the local recruiting office, and from that day they at once receive pay and billeting allowance, and are, of course, subject to military orders and discipline. As such they are turned over to the Excelsior school, and, if their progress at the end of a week's training is satisfactory, they are certified efficient by the inspecting officer and sent to the M.M.G.S. training centre.

Theory and Practice.

Arriving at the school in batches of six, the majority of the men have never handled or driven a motor cycle before, and it is assumed they know absolutely nothing of the subject. The first day they attend lectures in a room well stocked with such books as "Motor Cycles and How to Manage Them," "Tracing Troubles," which they can take home and study in their spare time. On the walls are large sectional drawings of engines, gears, carburetters, and magnetos. Still more useful, perhaps, are the sectional working models, and the large number of parts dismantled which can be assembled to illustrate the particular topic under discussion. In addition to the parts of an Excelsior engine is a splendid sectional working model of a 3½ h.p. Triumph engine kindly loaned by the Triumph Co. The men are not rushed through the course, but the function and action of each and every particular part are described and explained. They are made to feel that their success as motor machine gunners and drivers depends on their individual attention to make the most of the opportunities offered. Questions and enquiries, however foolish they may seem, are encouraged. Very often a foolish question results in greater knowledge being imparted than if it had not been asked. It is found that a morning and afternoon lecture of two to two and a half hours each supply the necessary preliminary insight into the mysteries of a motor. The men are then conducted to the works, and an engine started on the bench to afford a demonstration of the explanatory work of the day.

Training Cyclists for the M.M.G.S.—

In the evening they attend another lecture, this time by Mr. Geoffrey Smith, editor of *The Motor Cycle*, whose subject is usually on possible sources of trouble and stoppages likely to be met with on the road, and the easiest method of tracing the cause.

On the second day the road test begins, and driving lessons are given in real earnest. They are taken to a common, where there is no danger to other road users, and not until the men are thoroughly proficient in handling and controlling a 5-6 h.p. motor cycle and sidecar are they allowed any road or traffic riding.

Teaching Recruits to Drive.

Excelsiors are used, chiefly 5-6 h.p. singles with three-speed countershaft and chain drive. After the men have thoroughly mastered these, they are allowed on a 5-6 h.p. Clyno and sidecar, which is the private property of one of the instructors. The first thing to be taught is how to start up the engine, and this is not always as easy as one would imagine. It must be remembered the men are raw novices, not motor cyclists. On one occasion, in a batch of six men, not one could start the engine during a period of 1½ hours, though every time the instructor demonstrated he did it first kick. It is just a matter of knack, but within two days each and all of these same men could accomplish it first time.

The actual machine first used is what is generally known in the works as the "'Bus." It consists of a 5-6 h.p. Excelsior, to which is attached a rather wide and extra strong chassis, on which a large box is mounted. Into this box five of the men are crammed, with an additional one on the carrier, with Mr. Milton, the instructor, driving. The chief reason the "'bus" is used is the fact that it is difficult to overturn owing to its weight and width; this naturally gives the men more confidence.

With the instructor in the box, the novice is shown how to engage the first speed. He is kept on the first speed entirely, to get the hang of the steering, being made constantly to stop and start the machine, using brakes, etc., on both up and down gradients. Then when confidence and proficiency are attained, the second speed is brought into use, and lastly the third or top. As the men get more used to the machines they have to run into ditches and are expected to drive out without assistance. They then perform circles and figure eights in the smallest of space, with and without passengers. Also to steer tortuous courses between obstructions which only allow for a margin of 6in. each side of the machine. This with and without passengers.

TRAINING CYCLISTS FOR THE ARMY MOTOR CYCLIST SECTIONS.

Performing circles and the figure "8" in and out of goal posts, and ascending short stiff rises, form part of the daily training.

The Country's Call.

No arm in the service has figured more prominently or with greater distinction than the Motor Cycle Dispatch Rider in this world struggle of the nations, and no motor has shown greater adaptability from peace to war conditions, and proved its great superiority under the unparalleled conditions prevailing, than the Trusty Triumph.

Triumph Cycle Co., Ltd., Coventry.
GLASGOW - - - - - - 14, WATERLOO STREET.

TRIUMPH

The DINE GEAR.

SUITABLE FOR ENGINES UP TO 8 H.P. TWIN.

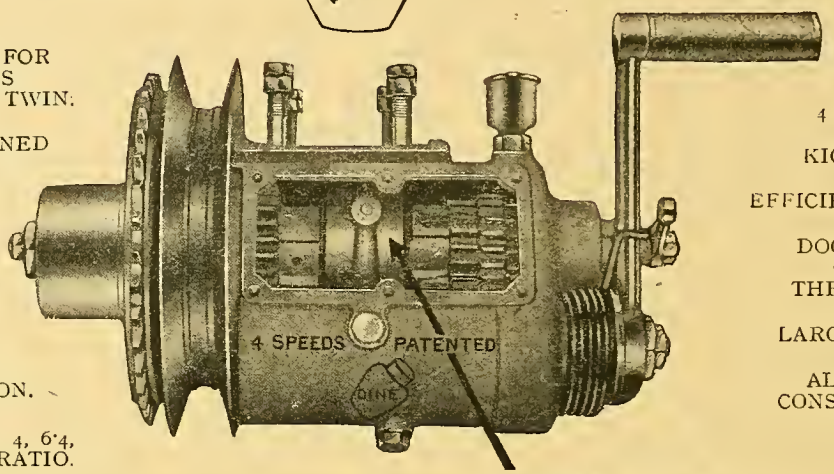
SELF-CONTAINED UNIT.

NEAT IN DESIGN.

ROBUST CONSTRUCTION

EASY IN MANIPULATION.

GEAR RATIO 4, 6·4, 9·2, 14·8, PRO RATIO.



4 SPEEDS.

KICK-START.

EFFICIENT CLUTCH.

DOG CLUTCH CHANGE THROUGHOUT.

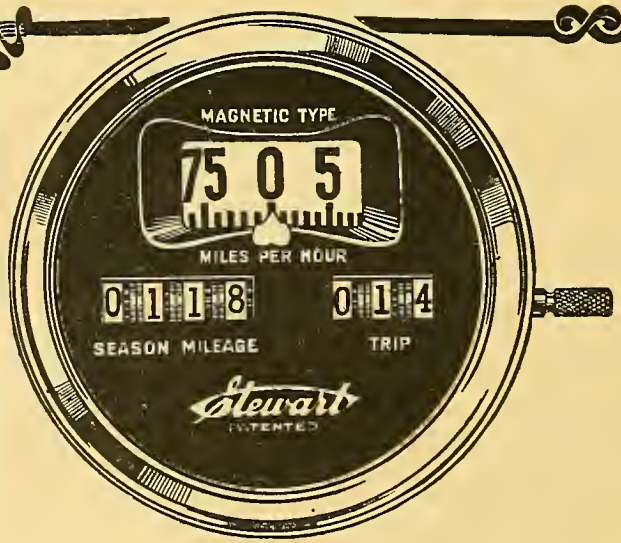
LARGE PULLEY.

ALL GEARS CONSTANTLY IN MESH.

THE ONLY SLIDING PART.

The IDEAL GEAR—MATERIALISED.

JARDINE, NOTTINGHAM.



TAKE IT AND TEST IT!

You can have this superb speedometer on trial for thirty days. All Stewart Speedometers may be had that way. The customer pays for the instrument, is allowed 30 days to determine whether it is as good as it is stated to be, and then, if not satisfied, he simply returns the speedometer and has the price refunded.

Model R (illustrated) registers from Zero to 75 miles, season mileage to 10,000 and repeating, and 100 mile trip register. Heavily nickelled finish, and nickel flexible shaft complete the most wonderful value in Motor Cycle Speedometers ever offered.

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The Cooper-Stewart Engineering Co., Ltd.
11, Broad Street, Bloomsbury, London, W.C.

MOTOR CYCLE SPEEDOMETER

50/-

Training Cyclists for the M.M.G.S.—

Then comes a surprise. One day they find a much nicer looking sidecar attached to the machine, which is an extremely light wicker model on a much narrower chassis. All are anxious to try the new mount, and they are at once set to cut the customary figure eights and circles. But almost before they have started the machine they find the sidecar over their head, much to their surprise and the amusement of their companions.

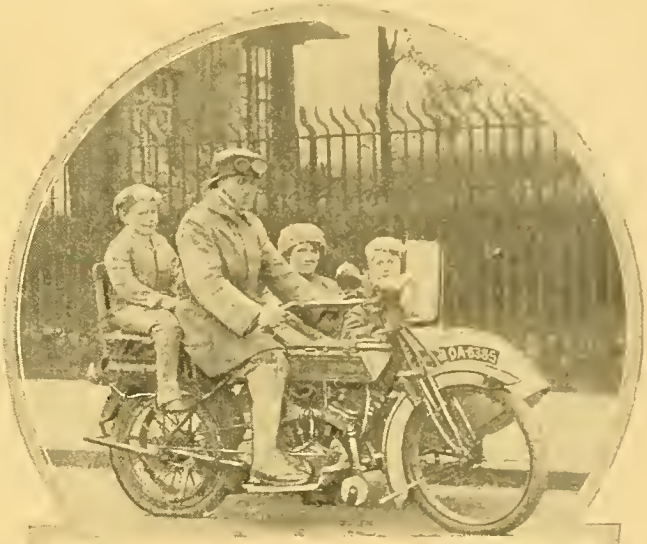
It must not be thought that this is done for amusement. It is really serious business, and the object is to make each man control the speed of the machine in such a manner as to be able to turn in the smallest space without bringing the sidecar wheel off the ground. This the light sidecar makes them do, no passenger being carried. Immediately the speed is too high up comes the sidecar. One day spent in this manner makes the men most careful, and before the day is over they can turn in either direction in about the length of the machine. In fact, many can do the left-hand turn, the sidecar wheel remaining stationary.

They are now considered ready for the road, and it is usually started by one or other driving out to the common. The instructor then takes two at a time on the road, the former being in such a position as to be able to control the machine if necessary. The machines naturally do not come off without a scratch; it is a common thing to have the footrests smashed and carried right away, mudguards crumpled up, and other minor injuries. On the common, also, minor accidents occur. On one occasion the driver could not pull up and went half through a hedge, with the result that his face and hands suffered.

The results are more than satisfactory. On the last day (six days only being given to each batch) the men are inspected and put through their trials, and in no case has one failed to pass the tests imposed. We have been moved on more than one occasion to express astonishment at the way the men went through their evolutions in view of their short training. During the training, stoppages were purposely caused in various manners, such as by secretly turning off the petrol, or loosening a wire, and the men had to locate and remedy the trouble. All sort of devices have been adopted to prevent the machine working, and on some occasions no less than three different things were done, any of which would prevent the machine running.

Taking the men all round who have passed through the Excelsior School, they appear to be above the ordinary average of intelligence, and are most anxious to get efficient. Of course, it is to be expected that one or two will be slower in grasping the mechanical points at once, but it is generally found they have caught up their companions by the end of the week.

They come from all parts of the British Empire—North, South, East, and West—all with one idea to serve their country. When imbued with such a spirit, it is our duty, and at the same time a pleasure, to do out utmost to assist them to attain their ideal.

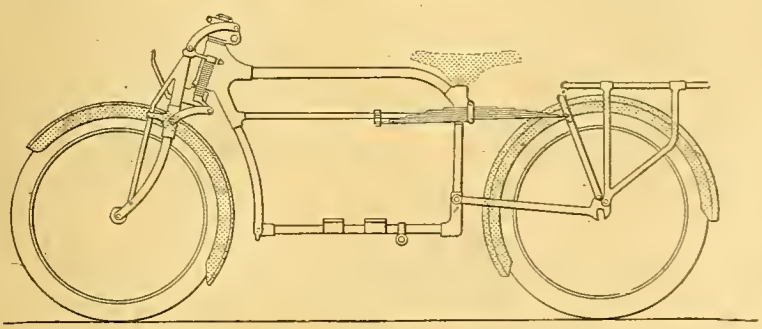


H. J. Aplin and family, of Birmingham, on tour. The machine is a 6 h.p. New Hudson, which has given every satisfaction.

A Douglas Spring Frame.

Cantilever System of Springing applied to Motor Cycles.

DOUGLAS BROS. are not the kind of firm to allow the grass to grow under their feet; consequently it is not surprising to note among the recent patents applying to motor cycles a design for a Douglas spring frame. We illustrate a system covered by the patent specification, which, it will be agreed, is extremely neat in appearance and promises to be extremely effective in its operation. It will be noticed that unsprung weight has been reduced to a minimum. Two cantilever springs are employed; these are attached to the main frame at their forward extremities, and again at their centres by a clip which is pivoted to the seat tube, while the rearmost point is attached to the back stays. The reason for these two attachments to the main frame is to prevent any lateral movement of the back wheel. The chain stays are pivoted to the main frame, and to these the carrier is secured, being again supported at the top.



The Douglas patent spring frame for motor cycles.

A 250 c.c. Power Unit Weighing 23 lb.

Details of a Remarkable High-speed Engine built by the A.B.C. Company for Government Work. "Road Rider's" Impressions.

FINDING myself in the Hersham district the other day, I called in at the A.B.C. works and spent a most interesting hour with Mr. Granville Bradshaw. I am afraid it will disappoint many enthusiasts to hear that the output of A.B.C. motor cycles, as with many other British makes, is almost entirely suspended. The research work in connection with the 1916 models is proceeding in odd moments, as a preparation for calmer days, and I saw the experimental engines and frames (now far advanced towards perfection) of the famous Model C, which is expected to do 90 m.p.h. on Brooklands, and weighs no more than 150 lb. all on.

A Really Lightweight Engine.

As I walked about the toolshops, I became increasingly conscious of an earsplitting uproar outside. "Oh, that is our new lightweight!" I went to investigate, and discovered a horizontally-opposed steel cylinder twin, 60 mm. × 44 mm., undergoing a six hours' test in the open air. With a fan brake attached it was running at over 4,000 r.p.m. and developing over 4 h.p. The entire power unit weighs no more than 23¼ lb., of which the magneto scales over 7 lb. and the automatic Claudel-Hobson carburetter very nearly 2½ lb. The absence of vibration is so extraordinary that if a finger is pressed on the magneto at high rates of r.p.m. it is difficult to determine by touch alone whether the engine is running or not. This 23 lb. outfit is employed for starting up huge engines on seaplanes, airships, and motor boats, and replaces far more cumbrous alternatives; in fact, the lightest engine starter yet applied to such purposes (an electric dynamo) weighs nearly four times as much. What a fascinating baby bicycle could be rigged up with this delicious little engine, the workmanship of which is absolutely superb!

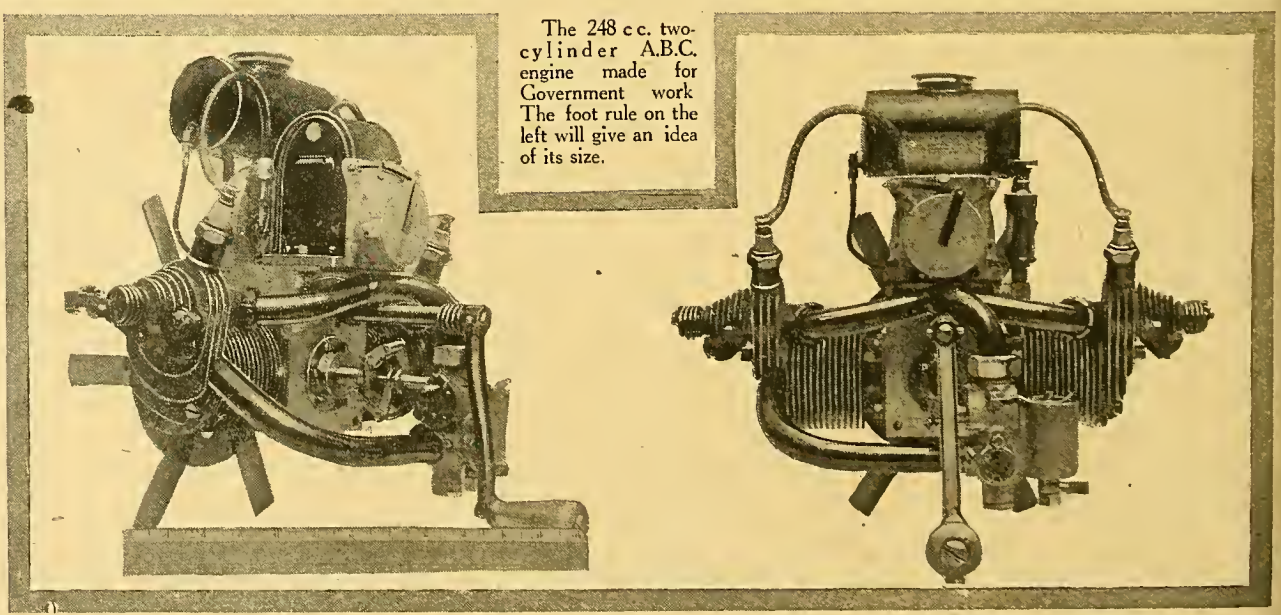
Apart from the experimental 1916 models, the only cycles coming through were a few spring-framed machines ordered by the Government for a district where rigid frames are officially considered impracticable. N.B.—The War Office considers spring frames unnecessary in France and Flanders.

In the engine department the two-throw crankshaft of a colossal aviation engine was one of the most interesting exhibits. Imagine seven connecting rods crowded together on each of two crank pins, the length of each pin being about 5in. Yet with roller bearings these dimensions are found quite practical.

Increasing Cooling Capacity.

The big lathe turns out a completely machined cylinder for the 3½ h.p. 500 c.c. engine in thirty-five minutes, the fins being machined and the bore drilled out at one operation. This time economy renders the steel cylinder cheaper than the ordinary iron castings. Mr. Bradshaw was very "cockahoop" over a wee discovery anent the treatment of the cylinder bore. The alteration from standard methods of finishing the bored surfaces results in the engine keeping 20% cooler, *e.g.*, with the big aviation engines the radiator surface can be reduced to that amount, with valuable economies in weight. On the air-cooled cycle cylinders the risk of overheating is correspondingly eliminated. A very neat mechanical oil pump will figure on all models when manufacture resumes its normal round.

I have seldom visited a factory where magnificent workmanship and a high degree of technical knowledge were so happily combined, and I venture to prophesy that the A.B.C. machines will achieve a formidable reputation alike on road and track when once motor cycling settles down to routine work again.



The 248 c.c. two-cylinder A.B.C. engine made for Government work The foot rule on the left will give an idea of its size.

A 250 c.c. Power Unit Weighing 23 lb.—

In the meantime, the works are keeping their hand well in with the 500 c.c. air-cooled pattern, which is in great demand with the services for running the dynamos of portable searchlights, in which duty it represents a great saving of weight as compared with all substitutes. Overheating is prevented by an enormous fan, some eighteen inches in diameter, which keeps the engine so cool that twelve hour tests at full revolutions result in no injury to the bearings, and in no diminution of power output. We may, therefore, expect the road models to be better than ever when peace returns, and we may dream of a very fascinating lightweight when the 23 lb. 250 c.c. vibrationless engine makes its *début* in a cycle frame. Its steadiness is evinced by the fact that it does its power tests clamped in a medium-sized parallel vice laid on the ground outside the running shed!

Some engineering details of the highly interesting 248 c.c. A.B.C. engine referred to in the foregoing notes are given hereunder:

Engine alone weighs	14 lb.
Magneto weighs	7 ,,
Carburetter weighs	2¼ ,,

Power developed: 2 h.p. at 2,000 r.p.m.
3 h.p. ,, 3,000 ,,
4 h.p. ,, 4,000 ,,

As an experiment, the engine has been run on full throttle without any load, and has attained the remarkable speed of 8,000 r.p.m. This is probably a world's record for a reciprocating engine.

The crankshaft is fitted with A.B.C. roller bearings, and weighs 15 oz., a complete connecting rod weighing 2 oz.

Mechanical lubrication is employed in the shape of a gear-driven oil pump, which is fixed to the crank case cover and runs at one-fifteenth engine speed.

RELIABILITY TRIAL IN WICKLOW.

AN afternoon reliability trial was held on Saturday last by the Dublin and District Motor Cycle Club over a course that embraced a good deal of the hill country of Co. Wicklow. The crucial part of the competition was the ascent of Ballymacroe Hill, a long and steep ascent that leads from the low lying country near the coast to the watershed of the Vartry. The lateness of the season and the large number of competitions that have been held recently in Ireland caused a falling off of interest in the concluding events, and Saturday's trial seemed hardly called for.

The route started from Donnybrook, and passed through Bray, Kilmacanogue, Newtownmountkennedy, Ashford, Ballymacroe, Roundwood, Calary, and Sugarloaf, joining the outward route at Kilmacanogue, and returning by Bray. Non-stop conditions had to be observed from the start to the first check at the summit of Ballymacroe Hill. With the exception of J. Cunningham (7-9 Indian), who was suffering from a slipping clutch, all the competitors made clean ascents of Ballymacroe, and at the check the only ones to lose marks were S. Allen (3½ James) and W. J. Henderson (7-9 Harley-Davidson sidecar). Henderson retired, as full marks were necessary to secure an award. At the Roundwood check Miss "Nomen" was 9 min. late, having taken a wrong turning after Ballymacroe.

The following completed the trial:

J. White (2½ Sun)
G. Hartigan (3¾ Scott)
S. Allen (3½ James)
J. Cunningham (4 Bradbury sc.)
Miss "Nomen" (10 A.C. light car)
J. Cunningham (7-9 Indian sc.)
R. Walshe (4 B.S.A. sc.)
J. Browne (3½ Rover)
D. Allen (2½ Sun)
G. Mayne (10 Calthorpe light car)

An Ingenious Spring Frame.

WE recently inspected an ingenious design for springing the rear frame of a motor bicycle produced by an enthusiastic motor cyclist, Mr. W. Mason, 58, Coleridge Avenue, Manor Park, Essex. Mr. Mason has protected the design, which strikes us as being ingenious and capable of further development. The sketch renders the working of the device self-explanatory. Fig. 1 shows the original design, which we think quite good, provided the bearing surfaces are of ample dimensions, and the spindles are supplied with grease cups so as to ensure the moving parts being adequately lubricated. The cost of manufacture would be slight, and we do not see why the device should not be successful. Fig. 2 shows another suggested form, in which the same principles are embodied, the chief improvement being that there are springs top and bottom at the forward end of the link, so that the device would be smooth working and the rebound would be absorbed, which is not the case with the single coil spring. The latter method also has the advantage that it does not in any way interfere with the space available for accommodating the tank. We also think the device could be made to work equally well with a leaf spring, which we consider would be a still further improvement. This spring frame is not yet on the market.

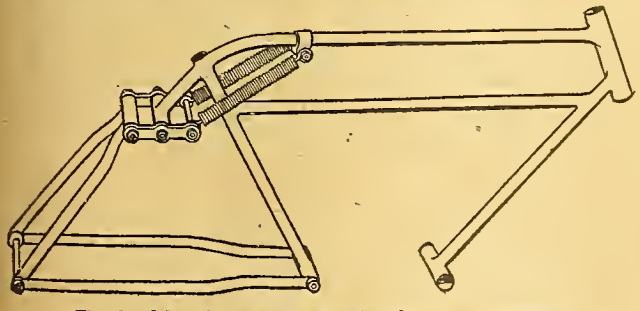


Fig. 1.—Mason's patent rear spring frame as at present designed.

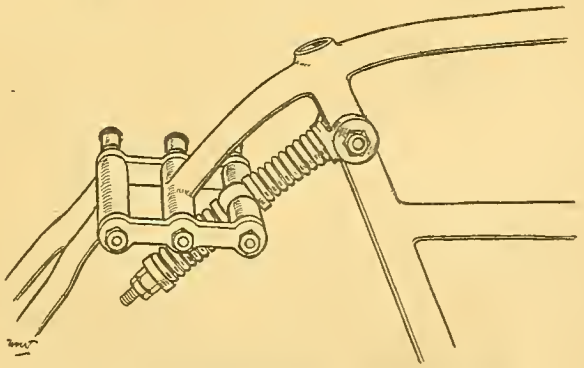


Fig. 2.—A suggested improvement. Note the grease cups

CURRENT HAT

TIMES TO LIGHT LAMPS.

Sept.	30	6.43 p.m.
Oct.	2	6.38 ,,
,,	4	6.33 ,,
,,	6	6.28 ,,

In London half an hour earlier.

The Latest Index Mark.

The county of the West Riding of Yorkshire has had assigned to it the identification letters WR, in addition to the letter C.

A Lancashire Police Trap.

Motor cyclists are warned that a trap is working at the present time between Belmont and Withnell on the Bolton-Blackburn road.

Contribution to War Fund from Hill-climb.

As a result of the Pen-y-Ball hill-climb, reported in the last issue of *The Motor Cycle*, the Liverpool Motor Club have handed over £15 15s. to the Holywell Wounded Soldiers' Fund.

Enfield Co.'s Balance Sheet.

The directors of the Enfield Cycle Co. have resolved to recommend the following dividends: On the A preference shares, 7%, less income tax, for the half year ended August 31st last; on the B preference and the ordinary shares 20%, free of income tax; and a distribution of one fully-paid ordinary share for every five existing shares, B preference and ordinary, held in the company, subject to the consent of the B preference shareholders and the Treasury as to the increase of capital necessary to carry out the scheme.

Important Regulation of the Postal Censor.

The attention of readers is called by our publishers to the following important regulation issued by the Postal Censor: "All newspapers and books intended for neutral countries must be despatched either from the publishing offices or from the office of a newsagent or of a bookseller, and must be enclosed in a wrapper bearing the name and address of such agent." Under this regulation copies of *The Motor Cycle* must not be posted to neutral countries by private persons, neither may addressed wrappers be supplied to newsagents or booksellers. Readers who wish to send copies of this journal abroad may, however, continue to do so by placing a subscription order for a period of three, six, or twelve months either with a newsagent or direct with the publishers. The rates are the same in either cases, *i.e.*, 15s. per annum (Canada, 10s. 10d.) and *pro rata* for shorter periods.

A Worthing Road Improvement.

Motorists who have had occasion to travel over the portion of the main Worthing Road over the bridge between Capel and Kingsfold, where road surface conditions have for the past few months been extremely unsatisfactory, will learn with pleasure that, as a result of efforts made by the Automobile Association, the responsible authorities have now promised to remedy matters.

A Year's American Motor Cycle Exports.

An idea of the growth of the American motor cycle exports is provided by the figures representing numbers of motor cycles exported from the States during each month from July, 1914, to June 30th last:

	Number. 1914-15.	1913-14.
July	501	273
August	186	238
September	117	211
October	507	204
November	83	89
December	146	379
January	525	390
February	724	908
March	578	878
April	1,274	1,165
May	1,392	1,079
June	2,133	596
Totals	8,166	6,410

The respective values were $1,494,176 and $1,234,194.

IN FIELD KIT OF THE M.M.G.S.

Battery Sergt.-Major Palmer, of the Motor Machine Gun Service, who, after serving for several months in France with the No. 5 Battery, is now back at the training centre as an instructor. Sergt.-Major Palmer had formerly seen service overseas in the Royal Navy, and was assistant cashier to *The Motor Cycle* prior to joining the M.M.G.S.

SPECIAL FEATURES.

TRAINING CYCLISTS FOR THE M.M.G.S. (Illustrated).

EFFECT OF THE NEW IMPORT DUTY.

THE ARMY AND NAVY HILL-CLIMB (Illustrated).

M.C.C. Secretary Promoted.

We have received a very cheery letter from Southcomb May, hon. sec. of the Motor Cycling Club, who joined the Motor Machine Gun Service some weeks ago. May has just received his second stripe, and speaks very highly of the Service and how much he is enjoying it. So far the new batteries have done little motor cycling, but the Scotts formerly used by a disbanded section are being pressed into the service of the M.M.G.S. for training purposes.

Average Prices.

We give below the average prices for the various second-hand models offered for sale in the last issne of *The Motor Cycle*. We quote those machines of which at least five weekly averages have appeared in the past two months, and where it is possible to obtain a sufficient number of each model we give the average for the past week:

Make.	Year.	H.P.	Last week's average.	Average for past 8 weeks.
A.J.S.	1914	6 3-sp. sidecar	£74	£75
,,	1913	6 3-sp. sidecar	£55	£57
,,	1914	2¾ 3-speed	—	£44
Bradbury	1914	6 3-sp. sidecar	—	£67
,,	1914	4 3-sp. sidecar	—	£47
B.S.A.	1914	4 3-sp. sidecar	£65	£59
,,	1915	4 3-sp. sidecar	—	£67
Calthorpe	1914	2 2-speed	£19	£19
Chater-Lea	1914	8 3-sp. sidecar	—	£59
Clyno	1914	6 3-sp. sidecar	£66	£69
,,	1913	6 3-sp. sidecar	—	£53
,,	1914	2¾ 2-speed	£31	£31
Douglas	1914	2¾ 2-sp. T.T.	£42	£42
,,	1914	2¾ 2-sp. kick start	£42	£44
Enfield	1914	6 3-sp. sidecar	£63	£64
,,	1914	3 2-speed	£38	£38
Humber	1913	3½ 3-sp. sidecar	—	£39
Indian	1914	7 2-sp. sidecar	£60	£60
,,	1914	7 T.T., free eng.	£46	£43
James	1914	4½ 3-sp. sidecar	—	£52
Lea & Francis	1914	3½ 2-speed	—	£47
New Hudson	1914	6 3-sp. sidecar	£65	£61
,,	1914	4 3-sp. sidecar	—	£52
O.K.	1914	2 2-speed	—	£24
P. & M.	1914	3½ 2-sp. sidecar	£57	£55
Premier	1914	3½ 3-sp. sidecar	£52	£49
Rex	1914	6 3-sp. sidecar	—	£57
,,	1913	6 3-sp. sidecar	—	£39
Rover	1914	3½ 3-sp. sidecar	£56	£57
,,	1914	3½ 3-speed	—	£45
,,	1913	3½ 3-sp. sidecar	—	£50
Royal Ruby	1914	3½ 2-speed	—	£44
Scott	1914	3½ 2-sp. sidecar	—	£53
,,	1913	3½ 2-sp. sidecar	—	£42
Sunbeam	1914	6 3-sp. sidecar	£82	£80
,,	1914	3½ 3-sp. sidecar	£63	£64
Triumph	1914	4 3-sp. sidecar	£55	£55
,,	1914	4 3-speed	£45	£44
,,	1913	3½ 3-sp. sidecar	£45	£45
Williamson	1914	8 2-sp. sidecar	£74	£74
Zenith	1914	6 Gradua sidecar	—	£64

New Hudson's Record Profits.

The New Hudson Cycle Co., Ltd., has made the largest profit for years past, the figures for 1914-15 being £27,834, compared with £3,614 for the previous year. A dividend of 20% is being paid.

Motor Spirit and the Budget.

Prices of petrol existing on Tuesday last were as follows:

No. 1, 2s. 1d. per gallon.
No. 2, 2s. per gallon.
Mex and Taxibus 1s. 11d. per gallon.

A Stolen Machine.

A James two-stroke, two-speed motor cycle was stolen recently from outside the Hippodrome, Derby. The registration number was R 2789, though the thief would no doubt change this without delay. The owner, Second Lieutenant L. S. Innes, 25, Wardwick, Derby, would be glad of information which would lead to the recovery of the machine.

The Petrol Tax.

Second-grade petrol is now 1s. 11d. to 2s. per gallon. It seems an appallingly high price to an Englishman, but it has cost as much for years in France, and in Italy it is half a crown a gallon in times of peace and prosperity. Petrol has been sold more cheaply in England than in any other country except America.

Side-by-side Valves on 1916 7 h.p. Indian.

The 1916 model Indians have just made their appearance in the States, but they differ from the 1916 models which will shortly be introduced to English motor cyclists. The details must for the time being remain a secret, but the opinion of the Indian tester who gave the new 7 h.p. side by side valve model an exhaustive test (covering 1,655½ miles in 3 days 9 hours 15 minutes) is interesting and amusing. He writes: "Take it from me that you have made a motor that is a world beater on all kinds of roads. I'll stack it against all creation to bring home the bacon anywhere, any time. It's a bear, a big, husky, lick-all-comers machine—that 1916 Indian. It hits me where I live."

Tariff Tattle.

The new import duty of 33⅓% on foreign-made cars, motor cycles and parts (including tyres and accessories) came into effect yesterday (Wednesday).

Motorists want to know why the petrol distributers saw fit to add another twopence to petrol, making fivepence a gallon increase.

"The Motor Cycle" opines that one good effect of the Budget will be to induce American manufacturers to send their machines over to this country minus mudguards, chains, tanks, rims, and tyres, and arrange for these to be fitted on arrival in this country. In this way the tariff would largely be avoided and the British accessory maker would benefit to a considerable extent.

Generally speaking, the new import duty has been favourably received by motorists. It was clear that something must be done to protect the important British industry, whose hands were tied, so to speak, manufacturing the all-important munitions. No Britisher objects to healthy competition in normal times.

Road Information.

We have received information that the road from Bury Hill, Arundel, and right along to Portsmouth is in a very bad condition, especially in Emsworth. Our informant returned through Petworth to Oxted and found the surface much better.

Is this the Latest?

The Bristol Motor Cycle Club held on Saturday last a "nutting" competition near Chipping Sodbury, the winner of which was the person who secured the greatest number of nuts in a given time. We are assured that it was a great success, being especially enjoyed by the many children brought in sidecars.

Postcards of Despatch Riders.

A series of pictorial postcards of despatch riders has been issued by Douglas Bros. They are exceedingly well produced, and many well-known Douglas riders are included. The Douglas Co. will be pleased to forward complete sets to any of our readers.

A Revenue Tax Rumour.

Before the new Budget was announced there were strong rumours in Midland motoring circles that the taxes on foreign-made cars and motor cycles were to be doubled, as well as a tariff placed on future imports. But the tax remains as before, so that owners of foreign motor vehicles may breathe a sigh of relief.

Too Bright Head Lights.

According to *The Evening Standard*, "several motor cyclists were fined at Willesden for having too brilliant head lights and too little at the rear—insufficient to illuminate the identification plate." Surely this is incorrect, as it is not obligatory for motor cyclists to illuminate the rear number plate, as inferred. We thought that everybody knew that motor cyclists might illuminate either the front or rear number plate, although now they must exhibit a red light to the rear.

The National War Funds.

At the week-end the principal relief funds stood as follow:

	£	s.	d.
National Relief Fund ...	5,498,342	0	0
The Times Fund ...	1,679,466	0	0
The Queen's Work for Women Fund	165,076	14	0
The Weekly Despatch Tobacco Fund... ...	84,209	0	0
France's Day collection	40,000	0	0
Belgian Relief Fund exceeds	930,887	0	0

High Speeds in America.

A 300 miles track race was held at Chicago on September 12th, and some big speeds were put up. Most of the American crack riders competed, and competition was very keen. The first three places were secured as follow:

	H.	M.	S.
Goudy (Excelsior)	3	29	51⅔
Carroll (Indian)	3	35	17
Weishaar (Harley-Davidson) ...	3	35	44

Goudy's average speed was 85.71 m.p.h., and it is claimed to be a world's record. He covered the 200 miles at a speed of 86.76 m.p.h. The time for the 100 miles was higher still, *i.e.*, 89.11 m.p.h., this being made by Otto Walker on a Harley-Davidson. Both these times are records. There were twenty-five starters.

Care Required at Llandudno.

Complaints have been made concerning the speed of motor cyclists and car drivers at Llandudno. The council discussed the matter a few days ago, when all forms of mechanical transit, including tramcars, came in for denouncement owing to their alleged excessive speed.

The Athletes' Volunteer Force.

The Athletes' Volunteer Force, now known as the 10th Essex Volunteer Battalion, is forming a motor cycle section. All those in the district who are interested should communicate with Mr. Mitchell, 57, Mortimer Road, East Ham, who will give any information.

The Effect of the Petrol Tax.

The increase in the cost of petrol owing to the recently imposed petrol tax has caused a number of our readers to enquire as to the running of their motor cycles on benzole. Unfortunately, as the whole of the output of this fuel has been taken by the Government, motorists have no alternative but to pay a price for petrol which our Continental neighbours have been paying for many years.

What made him Escape.

Sergeant Birley, of the Gloucestershires, was taken prisoner by the Germans at the battle of Ypres on October 29th, but has succeeded in making his escape from a German prison camp. He was congratulated by H.M. the King on his success, and told the King that the idea of escaping occurred to him when it came to his knowledge that his brother, a despatch rider in France, had been awarded the D.C.M. for his plucky action in delivering his despatch on foot, and under heavy fire, when his motor cycle had been smashed by a shell. He says, "On hearing that I thought, 'Well, if he can do that I am going to do something,' so I made up my mind to escape, and here I am."

The Motor Cyclist Munition Workers' Competition.

There seems to be no doubt that sufficient support will be forthcoming to warrant holding a competition for motor cyclist munition workers, as suggested by a correspondent in our last issue. Just what form the event will take is a moot point at present. Both the Auto Cycle Union and the Wolverhampton Motor Cycling Club have expressed their interest in the idea, and, whilst the A.C.U. suggest a reliability trial, the Midland body favour a hill-climb at Style Cop, and at a committee meeting on Monday evening when the matter came up for discussion went so far as to suggest Saturday, October 23rd, as the date of the event. At the moment there is difficulty in defining a munition worker. The official war badge would be the best guide, but might restrict entries unnecessarily. The Wolverhampton Club Committee is meeting again in a day or two to consider the matter further.

Other Midland club representatives have not passed over the suggestion in *The Motor Cycle*, and we personally favour the idea of all the Midland motor cycle clubs combining in organising this event, the proceeds to provide comforts for our motor cyclist colleagues on active service.

Army
Motor
Hill - cl
Sp

(See pag

(1) Sergeant Be
Capt. Huntbach
starting point
Sergt. Milner th
as he made fastest
classes

(2) A Triumph

(3) Corpl. Wr
winning the class fo
up to 600 c.c.

(4) 50 m.p.h. u
big sidecar class,
8 h.p. Zenith side
sidecar.

(5) H. Odhams
He was one of the
Navy competing.

and Navy Cyclists limbing at peed.

res 334 and 335.)

arker (8 h.p. Zenith) and (3½ h.p Premier) at the The former shared with ar performance of the day. time and was first in two

ider going well.

t (4 h.p. Triumph sidecar) r standard sidecar machines

hill. The winner of the Sergt. Barker, driving his car. Note design of the

(5 h.p. Indian) at speed. few representatives of the

2

5

HAPPY SEQUEL TO A MOVABLE LAMP FINE.

THE police in certain districts continue to take action against movable lamps, and, however good the defence, the motor cyclist seldom, if ever, gets off. A lady rider of a sidecar outfit, whose experience is reproduced below, was fined £5 for having a lamp that did not comply with the regulations, though the lamp was minus generator and connecting pipes, and was incapable of being used. The sequel, however, was quite a happy one, as the following letter from a lady motor cyclist shows:

"On August 20th I was driving my motor cycle and sidecar through Langley at 12.15 p.m., when I was stopped by the police for carrying a lamp which was capable of movement independently of the machine. I pointed out to the police that it was quite incapable of being used, as there was no generator, bracket, or connecting pipes, only the projector being present, and that it was a second-hand machine, and the lamp had never been intact since my purchase of it in May last. On September 8th I was fined £5 at Slough Police Court, and the lamp was confiscated.

"Having seen that Messrs. J. Lucas, Ltd., had presented the first man carrying a Lucas lamp, which the police had confiscated, with a new lamp, I applied to them as being the first woman to be so treated. The response was most generous, and Messrs. Lucas agreed that the same treatment should apply equally to men and women, and I have now received the lamp, which complies with the new regulations."—C. M. A. COOMBS, L.L.A.

THE WARD TWO-STROKE LIGHTWEIGHT.

ONE of the latest additions to the already long list of two-stroke lightweights is the Ward, which is manufactured by Messrs. William Ward and Sons, motor engineers, Wetherby. This machine, though low in price, is substantially built; it is fitted with a 2¾ h.p. engine, and a large exhaust pipe and silencer. The gas is supplied by a Senspray or Amac carburetter and ignited by an E.I.C. magneto of British manufacture. Druid girder forks are fitted, the wheels are 24in., and the tyres 2in. in section; these latter may be Clincher, Kempshall, or Avon. The lubrication is on the semi-automatic system, which the makers prefer to petroil, a Best and Lloyd drip feed pump being employed. The rear brake is applied to the belt rim by the left heel.

The machine is enamelled in black with gold lines, which gives an excellent appearance. A Lycett saddle is fitted, and a Lyco ¾in. belt. The riding position is low, being about 28in. from the ground, and the weight of the machine is 120 lb. The bottom bracket is so constructed that it can carry a gear box without alteration; for this an extra charge of six guineas is made. Two armoured toolbags are attached to the carrier, one on either side, and the handle-bars may be of touring or semi-T.T. pattern.

It is hoped shortly to turn out these machines in considerable quantities.

"THE MOTOR CYCLE" IN THE CAMEROONS.

IN a letter addressed to Mr. Alec Ross, Captain G. Sambidge, now in the Cameroons, says that he has not lost interest in motor cycle matters, and *The Motor Cycle*, which he receives regularly, is exceedingly welcome. Captain Sambidge will be remembered by both trade and private owners through his connection with the E.I.C. Company and as secretary of the Midland Light Car Club.

AN AEROPLANE FIGHT.

WE have had an interesting letter from M. A. J. Orde, who is the son of Mr. Julian Orde, secretary of the R.A.C. Orde was formerly an enthusiastic rider of a T.T. Rover motor bicycle, and is well known in the Midlands. He came over from Havana to serve his country, and received a commission in the A.S.C.,M.T. He found this work too dull, and succeeded in getting transferred to the R.F.C., where he has been acting as observer in an aeroplane during practically the whole summer. He writes: "I have had a lot of fun lately—two fights in the air. The first was not much, as when I had give the old Hun about twenty shots from machine gun he went home. The oth was more exciting, as two Huns attacke us at the same time, so I was kept bus The first one I shot, and he sudden disappeared, so I started on the othe which soon ran away. When I land I was told that I had brought the fir fellow down. The second fellow hit u as there were six shots, four quite clo to me, about a foot on either side, a I could hear them going by, but was excited that I really did not know th were so close to us. We are very bu now and working hard."

POSSIBILITY OF AN AUSTRALIA M.M.G.B.

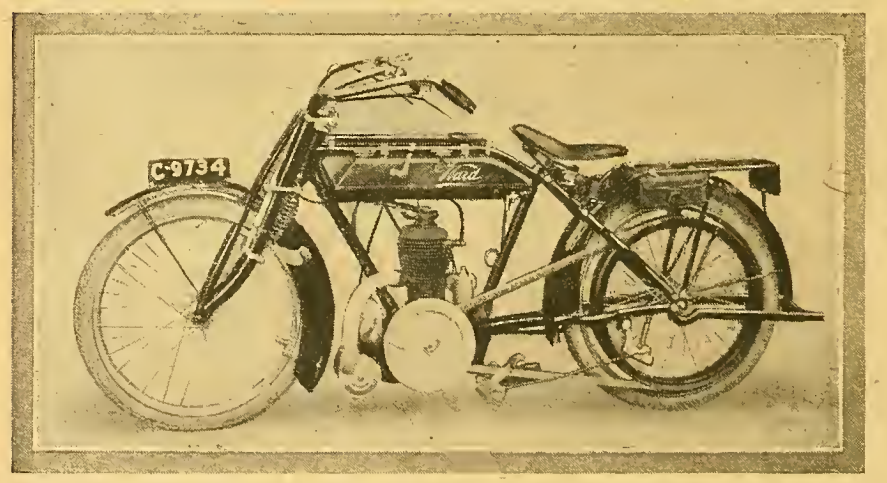
WE recently referred to the possibili of a Motor Machine Gun Batte being recruited in and arou Perth, Western Australia, and comi over to this country to take up duti with the Motor Machine Gun Servi This is the outcome of a letter receiv from Mr. J. W. Armstrong, of Per W.A., the secretary of the West A tralian Motor Cycle Club, to the Edit of this journal, who, in his capacity an inspecting officer of Army mo cyclists laid a plan before the commar ing officer of the M.M.G.S., and sancti is now forthcoming for the getti together of a contingent of motor cycli from the Antipodes, and, furthermo the C.O. has promised to do his b to keep the men together. In writi to us, Mr. Armstrong mentions that th are at least a thousand experienced mo cyclists in Australia, good riders and good positions, who prefer to join section of the Army of which they kn something. So far, he states, only twe riders have been sent from Australia despatch riders, and these men w mounted on 4¼ h.p. single-gea machines.

Already a considerable number of mo cyclists have left Australia—indeed, number are now serving in the ranks the M.M.G.S.—and others are think of doing the same, paying, of cour their own fares from Australia to Old Country.

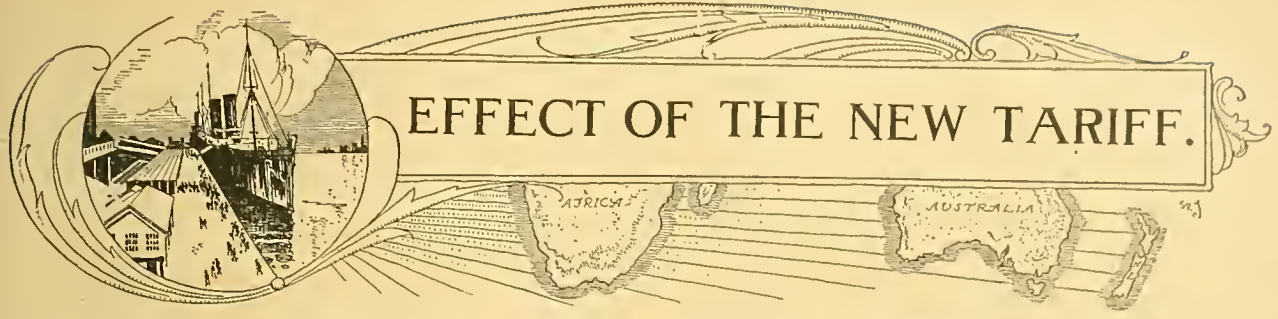
10TH (MID-SURREY) MOTOR CYCLE VOLUNTEERS.

THE A Company of the 1st Mo Cycle Battalion Volunteers linked up with the 10th (M Surrey) Volunteer Training Corps, county battalion established in Dorking district, and will now fo the motor cycle signal section of t corps. The men have at least months' hard work before them, wh will be spread over various eveni in the week and at week-ends. Spe road maps are to be prepared by motor cycle section, detailing exa what routes are best available transports and troops, and how m men could be billeted, if necessa in the surrounding villages betw Merstham and the coast.

The 10th (Mid-Surrey) Volunteer C is commanded by Mr. H. H. Gor Clark, and the adjutant and secret (who will welcome eligible recruits o the military age) is Mr. R. M. Aitk Rough Rew, Dorking.



The newest two-stroke—a 2¾ h.p. Ward made by a Yorkshire firm.



EFFECT OF THE NEW TARIFF.

How the Prices of Foreign-made Motor Cycles and Parts will be advanced by reason of the Import Duty of 33⅓ % ad valorem.

INTERVIEWS WITH LEADING IMPORTERS.

Pope.

MR. CHARLES SEEMAN, agent for the Pope, mentioned that he had not given the matter sufficient consideration to be able to declare his future policy; but he viewed the matter in a very patriotic spirit, and thought it right that people should pay for the pleasures they enjoy during war time. He could say, however, that the full duty would not be added to prices at present in force. His company, by being content with a smaller profit, would give the public the benefit.

Excelsior.

Mr. W. G. Harris, of Harris and Sons, agents for the Excelsior motor cycle, stated that he would have to add the full 33⅓% tax to the cost of his machines. He was, however, so far confident of their excellence that he felt the public would continue buying.

Harley-Davidson.

Mr. Victor Welsford, the general manager of Messrs. Harley-Davidson, said that the Harley-Davidson, despite the tariff, would still be in competition with English machines of equivalent value. We had to be thankful that the tax was also applied to cars, and he considered that this would, in a way, be a great benefit, as people would find cars too dear, and, consequently, would buy motor cycles, in view of the far greater economy of these vehicles. In spite of the tariff and the war, his firm had moved into what were probably the largest premises occupied by any motor cycle firm in the British Isles, and he thought that really the tariff would be an advantage rather than otherwise. At the present time they were busily engaged in getting the various agents' opinions, and he could not say anything definite about the prices at the moment. He considered that now was the English manufacturers' great opportunity.

American Magnetos.

Mr. H. J. Hinley (American Supplies Co., agents for the Splitdorf and Dixie magnetos, etc.) stated that he feared his firm would have to put the whole tariff on to the prices of the articles they sold. Before the war the prices for their magnetos had been lower than those of the Bosch people, and they had only been compelled to add 5% to cover war risks, increased freights, etc. He viewed the tariff in a very generous light, and did not think it would affect their sales in the slightest degree.

Motosacoche.

Mr. de Lissa (Motosacoche, Ltd.).—From a patriotic point of view, Mr. de Lissa was thoroughly in agreement with the tariff, and for a long time he had felt that it must come, though, naturally, his firm would feel the effect considerably. He would be reluctantly compelled, as far as he knew, to add the tariff to the existing price.

Henderson.

Mr. Robertson Brown, Robertson Motors, agents for Henderson and Harley-Davidson, stated that it was quite right that America should pay for the privilege of having the British trade. He considered that the public would still buy motor cycles, but help for the English agents must come from the manufacturers. Whatever increase of price had to be placed upon the Henderson, he thought it would be a small one; at the present moment, he had decided to make no advance at all. Sparking plugs might be slightly dearer in the future, but for the moment there would be no advance.

Thor.

Mr. Belford (Messrs. Watkins and Harding, the agents for the Thor) stated that his firm would have to increase their prices, but he hoped that it would not be necessary to put on the full tariff. He thought that the tax was quite right, and would give the English manufacturers a wonderful opportunity if they would only rise to the occasion.

Indian.

Mr. W. H. Wells, when interviewed with regard to the possible effect upon the price of Indian motor cycles in view of the new import duty of 33⅓%, told us that it would be the Hendee Co.'s policy to cut down the profits to the minimum and exercise the greatest economy all through the different departments. Though there was bound to be an increase in the price of Indian motor cycles, he did not think it would be to the full extent of the tariff. Mr. Wells reminded us that the Indian has never really been all-American, for the chains, tyres, saddles, and usually mudgnards and certain tank fittings have been made in this country. The Indian should, therefore, get a pull on this account. In view of contemplated changes in the 1916 models, the London manager of the Hendee Co. is confident that his machines will remain an attractive proposition even at the enhanced prices. As a matter of fact, the tariff came as a great surprise to the company, who had settled upon their 1916 programme, and, indeed, we were shown printed leaflets with the prices of the 1916 models all set out. These must, however, be revised.

An addition to the Indian range for 1916 is a 2½ h.p. two-stroke lightweight, which is referred to in more detail on another page of this issue.

Views of Accessory Factors.

Mr. Ernest Brown, Brown Bros., Ltd., was not prepared to discuss the matter at length, but said that a tax on similar goods to those that are manufactured in this country will be an interesting experiment, and may also teach us many things.

Goodrich Tyres.

Mr. E. R. Branston, the B.F. Goodrich Co., speaking as a private individual, thought that the tariff would not throw the business of his company out of the normal, nor affect their standing with other manufacturers. There was no intention of increasing prices at the present moment. He thought the tariff to be wholly unnecessary, but if the Government wants money it is not for the traders to criticise.

Jones Speedometers, etc.

Mr. F. E. Dickinson, Markt and Co., considered that the tariff must have some effect upon the buyer, but it was too early to make any definite statement at the present moment.

Stewart Speedometers.

Mr. H. Edis, the Cooper-Stewart Engineering Co., was very doubtful in his mind as to what was meant by "parts." In any case, the tariff would make no difference whatever to the price of their speedometers. Tariff, or no tariff, he intended to keep the prices uniform. He considered that the tariff was just, as money was needed, and there was no real reason why the American importers should not be hit.

The Army and Navy Open Hill-climb.

80 Entries. Comparatively Few Spectators. A Two-stroke Lightweight Wins Four Events on Formula.

At the starting-point of the Army and Navy hill-climb. Lieut. F. L. Bassett (2¾ h.p. Douglas) preparing to start in Class III., which he won.

PROBABLY the last meeting of the season to be held near the Metropolis was the Army and Navy open hill-climb organised by the Streatham and District Motor Cycle Club, and run off on Saturday afternoon on the north side of Newlands Hill leading to Newlands Corner. There were about eighty entries, and not very many spectators on the hill, as its name and position had not been announced, with the object of preventing competitors practising before the event. Saturday was a beautiful day, and the afternoon was warm and sunny.

Originally this event was announced as an Army *versus* Navy hill-climb, but fortunately abandoned, as, in view of the lack of entries from naval motor cyclists, such an event would have proved impossible.

An Easy Climb.

The competitors were marshalled at the foot of the hill in their numerical order, and here Mr. W. Cooper excelled in his duties as starter. The hill is quite an easy one, but eminently safe, as it is a county council road, and rises abruptly in its first section, where the steepest portion is 1 in 8, and then eases off to a consistent 1 in 15-20 until the finish. The course is a favourite run for the London motorist who enjoys an afternoon's spin from London, as it leads to Newlands Corner, one of the most famous Surrey beauty spots; consequently there is usually plenty of traffic, but last Saturday there was fortunately not a great deal, and on the whole, thanks chiefly to the comparatively small entry, the competition was fairly smartly run off. The first man, Sergt. Milner, was sent off at 2.10 p.m.

CLASS I. STANDARD TWO-STROKE MACHINES WITH ENGINE CAPACITY NOT EXCEEDING 270 C.C. (no machine was taken as weighing more than 125 lb. in this class).—This was a walk-over, as there was only one starter. Result:

	Bore and Stroke.	c.c.	Fig. of Merit.
Sergt. A. Milner (2 Levis)	60 × 70	198	579

CLASS II. STANDARD MACHINES UP TO 350 C.C. (no machine was taken as weighing more than 150 lb. to obtain results on formula).—Wood (A.J.S.) was stopped owing to traffic, but on his second attempt made a good performance. Second-Lieut. Dreydel and Lieut. Bassett came up in excellent form. Milner (Levis) again distinguished himself. Result:

	Bore and Stroke.	c.c.	Fig. of Merit.
1. Sergt. A. Milner (2 Levis)	60 × 70	198	624
2. Lieut. F. L. Bassett (2¾ Douglas) ..	60.5 × 60.5	349	415
3. C. P. Wood (2¾ A.J.S.)	74 × 76	327	348

CLASS III. STANDARD DOUGLAS MACHINES (no machines were taken as weighing more than 150 lb. to obtain results on formula).—Sergt. Barker was riding an overhead valve Douglas, which started off at a good healthy pace in a cloud of blue smoke, but, owing to a stuck ball valve in his oil pump, the lubricant ran through into the crank case, and he stopped with a fouled rear cylinder plug. Then the news came through that he had been disqualified, as the machine was not considered a standard mount. Despite the fact that his engine was missing fire, Lieut. Bassett made a good ascent. Result:

1. Lieut. F. L. Bassett (2¾ Douglas) ..	60.5 × 60.5	349		363
2. Lance-Corpl. Thompson (2¾ Douglas)	60.5 × 60.5	349		293
3. 2nd Lieut. Dreydel (2¾ Douglas) ...	60.5 × 60.5	349		270

CLASS IV. STANDARD MACHINES UP TO 600 C.C. (no machine was taken as weighing more than 200 lb. to obtain results on formula).—Milner again put up a fine performance, though his gallant little machine was pitted against others of nearly three times its cubical capacity. We were pleased to see that Capt. Huntbach's Premier with Philipson pulley, which behaved so well at the United Services meeting at Brooklands on the 4th inst., made a capital ascent. Wood (A.J.S.) again distinguished himself, while the running of Wright's 4 h.p. Triumph and Miller's Blackburne was much admired. Bassett (Douglas) broke a belt fastener half-way up the hill. Result:

1. Sergt. A. Milner (2 Levis)	60 × 70	198		490
2. C. P. Wood (2¾ A.J.S.)	74 × 76	327		450
3. Capt. Huntbach (3½ Premier)	83 × 85	460		409

CLASS V. STANDARD MACHINES UP TO 1,000 C.C. (no machine was taken as weighing more than 275 lb. to obtain results on formula).—In this class, as in the one preceding, the entries were good. Engelbach's Indian created a considerable amount of favourable comment owing to its fast and silent running. Lance-Corpl. Wardlaw (8 h.p. Zenith) was

The Army and Navy Open Hill-climb.—

travelling well, but, mistaking the finish, stopped long before he reached the end of the measured distance. Bassett (Douglas) again experienced belt trouble, and the victorious Milner again came out top. Charlesworth (5 h.p. Zenith) came up in fine form. Result :

	Bore and Stroke.	c.c.	Fig. of Merit.
1. Sergt. A. Milner (2 Levis)	60 × 70	198	570
2. C. P. Wood (2¼ A.J.S.)	74 × 76	327	463
3. R. Charlesworth (5 Zenith)	76 × 82	744	410

CLASS VI. STANDARD INDIAN MACHINES ONLY (no machine was taken as weighing more than 275 lb. to obtain results on formula).—This was the second of the "one-design classes," and, like its predecessor, was not well supported, which is a pity, as the manufacturers interested gave handsome cups as prizes, and such events are to be encouraged on account of their sporting nature. Result :

1. P. W. Engelbach (7 Indian)	82.5 × 93	998	269
2. C. P. O. Kingston (5 Indian)	70 × 89	684	—
3. H. Odhams (5 Indian)	70 × 89	684	244

CLASS VII. STANDARD SIDECAR MACHINES UP TO 600 C.C.—Thompson's 4 h.p. Douglas sc. was travelling well, but he spoilt his climb by that oft-committed fault of changing up too early. In this event there were only three starters. Result :

1. Corpl. Wright (4 Triumph sc.)	85 × 97	550	366
2. Private Miller (3½ Blackburne sc.) ..	85 × 88	499	339
3. Lce.-Corpl. Thompson (4 Douglas sc.)	74.5 × 68	594	290

CLASS VIII. STANDARD SIDECAR MACHINES UP TO 1,000 C.C. —Thompson, profiting by his experience, kept in his lower gear, and made a much better climb, while Sergt. Barker (8 h.p. Zenith sc.) went up the hill at a surprising speed. Charlesworth (5 h.p. Zenith sc.) had trouble with his petrol feed, as his engine stopped several times on the way up, apparently owing to the petrol tap shaking off. Result :

1. Sergt. Barker (8 Zenith sc.)	90 × 77.5	996	318
2. Lce.-Corpl. Thompson (4 Douglas sc.)	74.5 × 68	594	312
3. Lce.-Corpl. Wardlaw (8 Zenith sc.) ..	90 × 77.5	996	197

CLASS IX., for STANDARD CYCLE CARS UP TO 1,100 C.C., was abandoned, as there was only one entrant, who transferred to the next class.

CLASS X. ANY TYPE OF MACHINE (motor cycle, sidecar, or cycle car).—This, the final event, was run off on time, and the three best men of previous classes signally distinguished themselves, Barker's ascent being especially spectacular. Result :

1. Sergt. Barker (8 Zenith sc.)	90 × 77.5	996	*33⅘s.
2. Lance-Corpl. Wardlaw (8 Zenith sc.)	90 × 77.5	996	34⅘s.
3. Capt. Huntbach (3½ Premier)	83 × 85	460	39⅗s.
3. P. W. Engelbach (7 Indian)	90 × 77.5	998	

*Fastest time of the day.

The competitors and spectators then adjourned to the Onslow Arms, West Clandon, where, after a long wait, the special awards were announced. These were as follow :

The cup presented by Messrs. Douglas Bros. to the winner of Class III. : Lieut. F. L. Bassett ; figure of merit, 363.

The cup presented by the Hendee Mfg. Co. to the winner of Class VI. : P. W. Engelbach ; figure of merit, 269.

The cup for the best performance on formula : Sergt. A. Milner (2 h.p. Levis) ; figure of merit, 624.

The cup presented by Mr. A. W. Torkington to the competitor making the fastest time of the day : Sergt. F. E. Barker (8 h.p. Zenith) ; time, 33⅘s.

Private Miller (Blackburne sidecar) keeps his left hand on one of the sidecar joints.

SIDE LIGHTS.

The Army and the Stage.

Private Millar, who was riding a Blackburne, is brother of Miss Gertie Millar, the well-known actress.

A D.R. Competitor.

We were very glad to meet Frank Begby, the old Enfield rider, who, on Saturday, was mounted on a Zenith. He was invalided home from the Front (where he had been since the very beginning of the war) suffering from shock. At Cassel, some distance from the firing line, a 17in. shell exploded quite close to him as he was riding, blowing him right over a brick wall. It is hardly to be wondered at that this unpleasant experience resulted in an attack of neurasthenia.

The Douglas Prize Winner.

Lieut. Bassett, who is one of the leading lights of the Streatham and District M.C.C., went out to the Front as a D.R. in October, and landed at Ostend. He had an exciting time during the fighting in this part of Belgium, and later received a commission in the Royal West Kents.

Milner and his Levis.

Sergt. A. Milner is the back bone of the mechanical section of a well-known D.R. training centre. After winning the formula cup, he gave an exhibition of trick riding. Racing the engine, he would suddenly engage the low gear, with the result that the machine would rear like a horse. He told us that his present clutch was too fierce, otherwise the machine would rear and travel quite sixty yards with the front wheel in the air. The little engine is certainly a marvel for its size. We tried the Levis on a short run and found it a wonderfully efficient little mount.

Mechanical Details.

A look round the competing vehicles did not reveal a great deal of interest. However, we noticed a double terminal Lodge plug on C. P. Wood's A.J.S. One terminal was connected to the magneto, while the other was coupled up to an ordinary plug fixed into the exhaust valve cap.

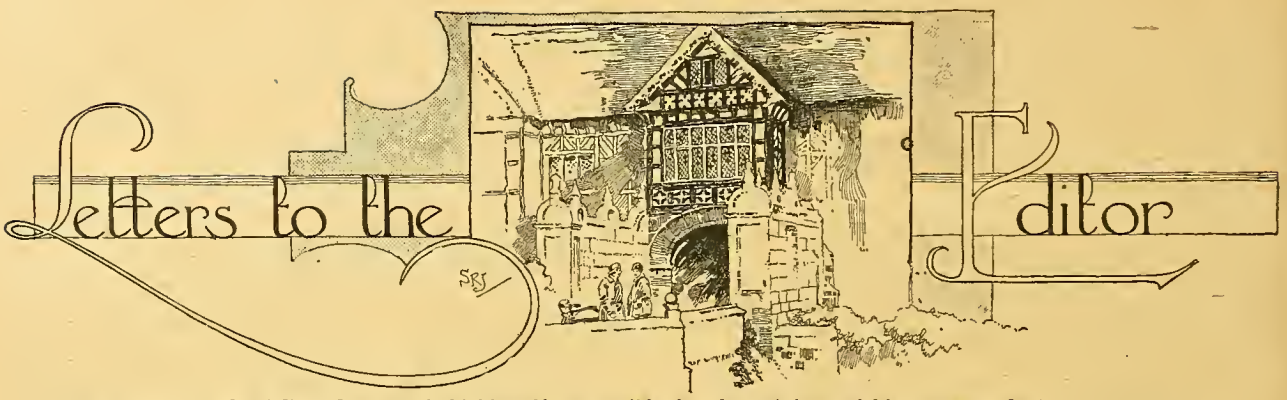
On the J.A.P. engine on Johnson's Morgan we noticed valve caps fitted with radiating fins arranged *en étoile*.

How we got There.

We reached the scene of the hill-climb on a twin-cylinder Pope. Though provided with a solo gear it ran well, and climbed all hills on the Portsmouth Road on top speed. From the sidecar seat it was interesting to watch the working of the back wheel springing device, which appeared to be doing its duty well.

A Good Story.

Mr. A. V. Ebblewhite, who with his colleague, Mr. F. T. Bidlake, was timekeeping at Newlands Hill, told us an excellent yarn. In the courtyard of a certain inn on the East Coast a young officer, who arrived on a twin, was telling his troubles to some friends, and proceeding to locate the source of mischief the while. "There! I told you so," he exclaimed, as he took out the back plug, "I knew it was the plug all the time. Fancy putting a four-point plug in a two-cylinder. Of course, it's only suitable for a four. What on earth is the good of four sparks on a two-cylinder? It is extraordinary the tricks these beastly garage people will play if you don't superintend the work yourself."



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Information Wanted from Dutch Motor Cyclists.

Sir,—In reference to the illustration in your issue of the 9th September of two Dutch cyclists who have fitted the Auto-wheel to a bicycle in the place of the back wheel, I would be glad to know how they have made the connections.

E. T. BOYD.

The Pen-y-ball Hill-climb.

Sir,—I notice in your excellent account of the Liverpool Motor Club's hill-climb at Pen-y-ball on the 18th inst. that you mention my 8 h.p. Matchless-Jap as mysteriously drying up, and I should like to offer an explanation, as it does not seem fair to the makers or myself.

After the hill-climb I looked over the machine carefully, and found some unsportsmanlike person had tampered with my Amac carburetter, putting several thicknesses of paper between the float and split pin on valve stem, consequently reducing petrol supply and starving engine. It is quite evident this was done by someone with a good experience of motor cycles. Surely this practice would put the damper on many wishing to enter for competitions.

H. I. HUGHES.

A Competition for Munition Workers.

Sir,—It is with pleasure I notice in the last issue of *The Motor Cycle* that you advocate a competition for munition workers; this I presume to be in the nature of a hill-climb.

Your suggestion that an event should take place in the Midlands is decidedly appropriate, having in view the great number of motor cyclists engaged on Government work in the district. With a view to arranging an open hill-climb on the lines suggested by you, I purpose bringing this matter up at the next committee meeting of the Wolverhampton M.C.C., to be held 27th September, and will lose no time in acquainting you of the decision arrived at.

In the event of this competition taking place, I would suggest that the nett profits be allocated to an approved war charity fund to be named by yourselves or decided in committee. You are doubtless aware that the Wolverhampton M.C.C. handed £25 over to the Red Cross funds as the result of their recent hill-climb held at Style Cop.

A. H. MEE,
Vice-president, Wolverhampton M.C.C.

[Any decision arrived at by the Wolverhampton M.C.C. will be found in the centre pages of this issue.—Ed.]

Sir,—I have just read "E.T.E.'s" letter regarding a competition for munition workers, and I think the idea is an excellent one. The munition worker's life is a hard one, and he lacks the excitement and variety which the men in the Navy and Army experience. A Saturday afternoon competition would relieve the dull monotony of life in the "shops." I would suggest that some competition should be arranged within an easy distance of Tyneside, where a large number of munition workers are to be found, who are also keen motor cyclists.

T.A.C.

[Other motor cyclists engaged on munition work have expressed to us their willingness to support a competition.—Ed.]

Sir,—I have no doubt my committee would be pleased to consider the promotion of an open competition this autumn on the lines suggested by your contributor "E.T.E.," that is, that all competitors be on war service. But before doing so it would be necessary for me to receive some indication of the support such a competition would be likely to receive, and I would, therefore, ask all those munition workers and naval and military motor cyclists who are prepared to enter to write to me.

The competition might advantageously take the form of a reliability trial in the Midlands, for all classes of machines, with entry fees as low as is possible under the circumstances.

T. W. LOUGHBOROUGH, Secretary, Auto Cycle Union.

Mind and Machine.

Sir,—Mr. Vulliamy has omitted to point out that the transfusion of psychic force implied in the motion of an engine is transmitted through dynamic affinity to the inherent and essential sub-consciousness of the sensory attributes. Consequently the automatic influence of this transfusion reacts at once on the sensitive nervous system of the human being, and is conveyed to the cerebellum by capillary attraction, being partly reciprocal and partly suggestive.

This is liable to cause pitting of the exhaust valve.

E.P.B.

A Two-stroke in Australia.

Sir,—I see a lot of letters in your valuable paper, *The Motor Cycle*, of riders giving their experiences, so I thought mine might be interesting to some of your readers, and here are just a few. I am the proud possessor of a Connaught two-stroke which is ideal for these roads out here. I purchased it a little over a month ago, and to date I have covered nearly 700 miles without any mishaps except a sooted sparking plug and a choked jet. I have not had it to pieces yet, so I cannot say how the inside of the engine has fared, but I have always lubricated it with half as much again as the directions say, as I think it is easier to decarbonise than rebush the bearings. The machine is running and pulling better now than when it was new, and the compression is just perfect. I always average a good 120 m.p.g. without any special settings of the carburetter; it is just the same now as it was delivered to me, with a 24 jet.

I went for a short spin a few days ago for about thirty miles. It included one of the worst roads about here, as it runs around the foot of a line of hills, and the water runs across the road every yard or so in gutters about three or four inches deep. I think this sort of road tests the machine more than all the mudplugging we ever get. We in this particular district very rarely do any mudplugging, as the mud sticks like glue when it is wet so that it is impossible to get along at all. The roads are terribly twisty, and we think ourselves "going some" if we can attain to a maximum of 20 to 25 m.p.h., and it is a bit risky at that pace because it would only take a moment and we might be in trouble.

Since the war we are having trouble in obtaining new machines and spare parts. The spare part business is always a bit of a mystery to the outside buyer, as he cannot get what he wants except at an outrageous price. I might add the usual disclaimer.

G.W.A.

Gilgandra, New South Wales

A Lancashire Road Puzzle.

Sir,—I am much indebted to you for your letter of the 20th inst., in which you were good enough to draw attention to an article entitled "A Lancashire Road Puzzle" in *The Motor Cycle* of September 16th. We certainly will, as soon as possible, have a special inspection made of both roads between Warrington and Preston and carry out whatever revisions may be found necessary in the signposting.

J. W. ORDE, Secretary R.A.C.

Motor Volunteers.

Sir,—The Southern Home Division of the National Motor Volunteers, although only two months old, consists of over forty car owners and at least six motor cycles. Every day our members are doing work for the War Office, for which they are paid Army rates. The movement is quite voluntary, and excellent work is being done every other Sunday in taking out wounded soldiers. Our uniform is khaki, and we are affiliated to the Central Association.

I should be pleased to send all particulars to those interested.

GEORGE F. DOLAND.

Praise for a Good Machine.

Sir,—You may remember that I won the magnificent cup which you presented to me for gaining the biggest number of wins at the United Services meeting at Brooklands on September 4th, and that I rode a 3½ h.p. A.B.C. machine.

Since then I have received many enquiries about the A.B.C. machine; so many, in fact, that I find it difficult to reply to them all. Allow me, therefore, to make use of your columns.

The machine was a standard touring machine, which I bought in the ordinary way from Traders and Co., of Pilgrim Street, Newcastle, the Northern agents. I had already ridden it 5,000 miles, and until a few days before the race had not thought of entering. I rode down from Newcastle to Brooklands, a distance of 300 miles, in ten hours, raced on Brooklands, returned in the same time, and all this without one single involuntary stop of any kind.

I have owned the machine six months, and during that time have had no engine trouble of any sort or description.

The machine, as I rode it on Brooklands, was in no sense a special mount, and was equipped with a spring frame and four-speed gear. Lastly, I have no interest in the A.B.C. firm. I only wish I had!

H. GRAHAM-HODGSON (Corpl. R.E.).

Eliminating Weaknesses in Motor Cycles.

Sir,—I notice a letter, signed by A. B. Wade and F. G. Ball on "Eliminating Weaknesses."

In the use of any new arm, time is certainly required to ascertain the most useful men to put in charge. Now, however, we have had over twelve months' practical experience, and still the appointment of officers is in a somewhat inchoate condition. We find both at home and at the Front bodies of motor cyclists are in charge of officers and senior non-commissioned officers whose technical knowledge is, to say the least, deficient, while skilled men, trial managers of great works, competition riders (of the practical not spectacular variety), etc., are either full privates, lance-corporals, or at most mechanic sergeants.

Moreover, one large firm, to my certain knowledge, volunteered to send a member of the firm to the base in France to superintend large repairs and replacements, but the offer was declined with thanks. How a commission composed of theorists with political or social claims would benefit matters I, for one, fail to understand. In the other areas of the Services the men who know are appointed to superintend and organise. Why is this not the case in the motor service?

As a civilian who has been practically interested in the development of motor transport over difficult and dangerous surfaces for eleven years, I have been waiting to see various officers (who, to my knowledge, are experts in these matters) promoted to responsible positions; meanwhile the experts of the trade—whose firms miss their services daily more and more—are still employed in the routine work of despatch riding and handling a few transport waggons, work on which their attainments are absolutely wasted. Would it not be possible for a paper such as yours, and the other motor publications issued by your firm, to represent to the military authorities that now the military qualifications have been judged by practical experience a judicious selection for promotion of technically trained men should be made, and the whole supervision of motor cycles be placed under a general officer whose technical knowledge of the arm with which he has to work is beyond cavil.

At the present time the abuse of motor cycles by officers whose knowledge is confined to being able to ride as long as everything goes right would not be tolerated for one moment in the cavalry or artillery. To look after the animals used in the Army a special department was created—the Army Veterinary Service—where technical knowledge is the only passport.

Can you not bring about the instant formation of an Army Motor Department, where entrance can only be obtained by knowledge, and where high command can only be held by the man who knows more about his subject than any of his subordinates?

Had we such a department the crying scandals of the motor service would sink into insignificance, while the gross abuses (such as the use of thin water-cooled oil for high-speed, air-cooled engines travelling long distances on the low speed) would be remedied.

My thirty-five years' experience of cycles and twelve years of motor cycles must be my only excuse in addressing this letter to you, also the fact may be noted that during all these years I have had no financial interest in the industry. Further, I have no personal knowledge as to who are the officers at the head of the various motor organisations, but am only judging by the results obtained as I see them on the road, at the works, or as I hear from various persons who are or have been on service with motor cycles.

CHARLES S. PATTERSON, M.B.Univ.Edin., M.R.C.S.Eng.; Judge Spring Trials A.C.U., 1913 and 1914.

Overheating v. Red Hot.

Sir,—Seeing is believing, so when you see snakes you naturally suppose they are there. I do not think any man ever mistook a red hot engine for anything else. Of course, there is the possibility of a sailor taking it for a port light on the starboard side, or why not make red hot engines a standard fitment? They would do all right for rear lights. Just think of the time saved, to say nothing about the money and language. However, so much for piffle.

Many years ago I owned a 3½ h.p. Rex with coil ignition and m.o.v. engine, date uncertain, about 1907, powerful, fast, and a good climber. This I cannot say about some of the later models of various makes I have had. This engine would run at an ordinary temperature when used as a solo mount; but, as I carried my friend behind for many miles through hilly country, this engine got very warm, and if the journey continued it got "red hot"—cylinder head, exhaust valve cup, exhaust port, and about 8in. of the exhaust pipe. It ran more silkily, less noisily, and without any loss of power whatever. I used the machine for fifteen months, and this was a common occurrence. The man I sold it to used it for ten months, when he had the frame broken. It has since been repaired, and is still running—the same engine and the same rusty cylinder. The present owner has tried all the makes of cylinder black, just as I did four years ago, without success.

GEO. F. CAMPBELL.

Two-stroke Engines and New Pistons.

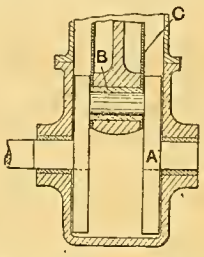
Sir,—I have noticed in *The Motor Cycle* several questions as to two-stroke engines after new pistons have been fitted. Well, exactly the same thing has happened to my engine as to others. Having fitted a new piston it has lost quite half of its power and konks out on hills badly. The compression is perfect, the timing is all right, and have tried advancing it; also the carburetter is right, and have tried altering the float and a smaller jet, but with no better results. The rings and piston are a good fit. I might say it four-strokes more than it used to do. You say 200 miles should run a new piston in. Well, mine has done over a hundred, and it has made very little difference, if any. I have had four mechanics on it, but it has stumped all of them. I should be much obliged if you could suggest anything.

T.M.B.N.

[The symptoms point to the piston being too tight a fit.—Ed.]

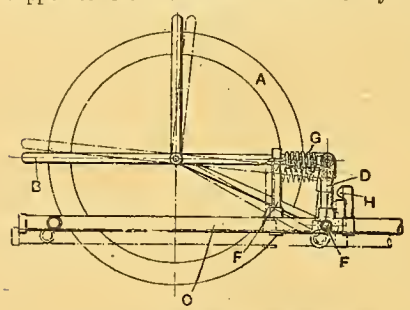
Two-stroke Engine Improvement.

In order to obtain a high ratio of compression in the crank case, the connecting rod is adapted to act as a pump. The crank A is of the disc type, and the connecting rod end B occupies the whole width between the discs. Attached to the big end is a strip of leather C, which serves to fill up the space between the crank discs. On rotation of the crankshaft, the big end and leather strip sweep the charge in the crank case before them, thus acting as a pump, and supplying the fresh charge to the transfer port at a high pressure.—A. M. Low, No. 19,605, 1914.



Sidecar Spring Wheel.

The axle is mounted in a frame B, supported from the main frame C by a

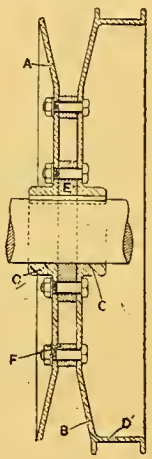


PATENTS by Eric W. Walford

lever D. This lever has a pivotal connection E to the frame. At F is a rigid pillar carrying one end of a spring G, the other end of which is attached to the pivoted wheel-carrying member D. The wheel A is therefore resiliently carried upon the frame. A buffer block H is arranged to check excessive movement.—T. H. Tessier, No. 301, 1915.

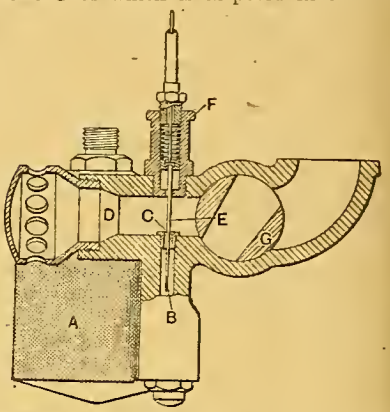
A Cycle Car Belt Pulley.

The pulley illustrated, which is the invention of Dr. A. M. Low, comprises flanges A and B, of simple shape, produced by casting, stamping, or forging. Each flange is formed with a boss portion C, whilst the flange B is shown extended at D to form a brake drum. The flanges are bolted together with intervening distance pieces E and F, and are secured upon their shaft by a key in the usual way.—No. 19,611, 1914.



Variable Jet Carburetter.

Simplicity is the keynote of the construction illustrated, the float chamber A supplying petrol to a passage B, the outlet C of which is disposed in the air



passage D through the carburetter. The outlet C is adjustable by means of a needle E of tapering section, and this is controlled by Bowden mechanism F connected up to any convenient point. At G is located the throttle barrel, which is rotatable either totally to cut off the passage through the carburetter, or to open it up progressively to the full bore of the passage C. The bore of the passage C in the illustration is rather small in comparison with the outlet orifice of the carburetter, which would result in the air passing the fuel outlet at a high velocity, even at low engine speeds.—C. Brown and Brown and Barlow, Ltd., No. 18,818, 1914.

American Excelsiors in Ireland.

Distribution of the American Excelsior motor cycles in Ireland is now in the hands of Thompson's Motor Car Co., of 19-20, Great Brunswick Street, Dublin.

Additional Works for making Avon Tyres.

Last week the Avon India Rubber Co., Ltd., who have big works at Melksham, entered into possession of the rubber works at Bradford-on-Avon formerly occupied by the Sirdar Rubber Co. The Avon Co.'s purchase comprises the freehold of the site, the buildings (known as Greenland Mills), and the manufacturing plant for the production of tyres, tubes, etc.

Pratt's Successes at Brooklands.

Eleven events figured in the last United Service motor cycle race meeting programme at Brooklands, all of which were won on Pratt's motor spirit. In fact, out of a possible thirty-two positions, riders on Pratt's spirit secured twenty-six places: ten securing second positions and six being placed third.

British Lamps at the San Francisco Exhibition.

Messrs. Worsnop and Co., the well-known lamp manufacturers, have been awarded a gold medal for their lamps and Alklum accumulators at the San Francisco Exposition. It is understood that this is the only firm in this particular line of business which has attained similar honours.

SPARKLETS

Zilla Belts.

A descriptive leaflet has been issued by the Zilla Patent Belt Co., Ltd., of 101, Great Western Street, Manchester. The Zilla belt; it may be remembered, contains, as its chief feature, a steel chain core and the leaflet explains the principle and advantages of such a construction.

A Motor Cycle Accessory Maker helps the Wounded.

Mr. C. W. Willmott, of Wilmott Bros., the well-known manufacturers of silencer extension pipes, whose works are situated in Norwich, is among those performing useful work in organising outings for wounded soldiers from the Norfolk War Hospital at Thorpe, near the above-named city. The country round Norwich is exceedingly pretty, and a particularly attractive route was chosen on the occasion of a recent outing. The party was entertained to tea by Mrs. Astley, of Plumstead Hall, and after tea a fishing competition was held, each competitor having two minutes, and numbers of fish were caught.

Belt Service in Australian Racing.

For two years running the Australian Grand Prix motor cycle race has been won on a machine using the Pedley belt. This year it was won by J. E. Mellor on a Matchless.

Owner Wanted for Sidecar Outfit.

Messrs. Brown Bros., of Great Eastern Street, E.C., inform us that they have had left with them by two members of the R.F.A., whose names and addresses they do not know, a motor cycle and sidecar. They will be glad to obtain the necessary information.

The Manufacture of Artificial Rubber.

In the course of a lecture to the Society of Arts on "cracked" spirits and other means of increasing fuel supplies for motors, Professor Vivian B. Lewes, F.I.C., F.C.S., made a startling statement concerning the production of rubber by synthetic processes. After detailing the results of a series of experiments he said: "There is very little doubt that some isoprone is formed, and as this is an excellent starting point for the synthesis of artificial rubber, we may some day see the cracking of oils providing tyres as well as fuel to the motor car." The speculation is a bold one, but chemistry is one perpetual marvel. Still, shareholders in rubber companies need not worry, and there is not the least likelihood that the construction of the new Dunlop factory at Birmingham will be in any way arrested by the threat of rubber becoming a by-product of petrol.

"I do not think it would be possible to obtain a more really satisfactory combination for real hard road work or serious touring than the Zenith-Millford of the kind in my possession. In 8,000 miles it has given practically no trouble whatever and is running as well to-day as when it was new."

C.S.L. in "The Motor Cycle and Cycle Trader," *Sept. 17th*, 1915.

The above extract summarises the writer's experience of an 8 h.p.

COUNTERSHAFT MODEL

ZENITH

WHEN selecting your mount for the coming heavier road and weather conditions, bear in mind this testimony to ZENITH worth.

Catalogue with pleasure on receipt of postcard.

ZENITH MOTORS, LTD., HAMPTON COURT, ENG.

Some dealers are charging more than

4/-

for the standard model

LODGE

PLUG.

This advertisement is your authority for asserting that there is

NO ADVANCE IN PRICE.

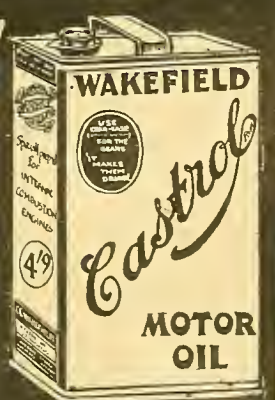
You should refuse to pay more than **4/-.**

Your dealer has no right whatever to extra war profits on Lodge Plugs.

We have kept our prices the same in spite of the war.

The LODGE SPARKING PLUG CO., LTD.,
BIRMINGHAM and RUGBY.

WAKEFIELD
CASTROL
MOTOR 'C' OIL



Best for Two Strokes

C.C. WAKEFIELD & Co.
WAKEFIELD HOUSE
CHEAPSIDE, E.C.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle" Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

DEFENCE OF THE REALM ACT

Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade Labour Exchange, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, 2d. will be charged for registration, and three stamped and addressed envelopes must be sent for forwarding replies. Only the number will appear in the advertisement. Replies should be addressed, "No. 000, c/o 'The Motor Cycle,' Coventry"; or if "London" is added to the address, then to the number given, c/o "The Motor Cycle," 20, Tudor Street, E.C.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

Halifax Motor Exchange

68, HORTON ST., HALIFAX.

'Phone—766. Telegrams—"Perfection."

THAT STRANGE DEVICE.

EXCELSIOR.

THE GOOD OLD X

7 h.p., Twin 84 × 89, mechanical and hand lubrication, kick starter, high-tension magneto, spring forks, 2-gallon petrol capacity, 3-speed countershaft gear, multiple-disc clutch with hand and foot control, handle-bar control, spring seat-pillar, 3in. non-skid tyre, finish Excelsior grey, every possible refinement incorporated.

AND THE PRICE £62. COMPARE IT.

Exchange liberally considered.
We are sole Yorkshire distributers. Yorkshire dealers supplied.

SOLO MACHINES.

1915 (new) **DIAMOND**, 2½ h.p., 2-stroke	£28 13
1915 2¾ h.p. 2-speed **CONNAUGHT** (new)	£39 18
1915 2½ h.p. 2-speed **WOLF-J.A.P.** (new)	£37 0
1915 2½ h.p. **ROYAL RUBY**, 2-speed	£36 10
1915 2½ h.p. 2-speed **ROYAL RUBY-J.A.P.** (new)	£39 10
1913 4½ h.p. 2-speed F.E. **LINCOLN-ELK**	£29 10
1912 3½ h.p. magneto **N.S.U.**	£23 10
1912 3½ h.p. 2-speed F.E. **BRADBURY**	£29 10
2¾ h.p. 2-speed **DOUGLAS**	£28 10
8 h.p. 3-speed **CHATER-LEA** and coach Sc.	£39 10
1909 3½ h.p. 2-speed **REX**	£16 10
3½ h.p. magneto **REX**, spring forks	£15 10
1910 3½ h.p. tourist **TRIUMPH**	£22 10
KERRY, 3 h.p., magneto, Saxon forks	£12 10
DOUGLAS, 2¾ h.p., 2-speed	£29 10
5½ h.p. magneto **REX**, spring forks	£18 10
M.M.C., 3 h.p., magneto	£11 10
F.N., magneto, 2½ h.p., 2-speed, shaft drive	£15 10
N.S.U., twin, 2-speed, spring forks	£18 10

RITZ LIGHT CAR.

The last word in light car values. 10 h.p. 4-cylinder, mechanical lubrication, electric horn and lighting, hood, screen, tools. Luxuriously sprung and a grand top gear climber. In stock for inspection and trial. **£120.**

Exchanges quoted.

SIDECAR COMBINATIONS.

1914 7-9h.p. twin **PREMIER**, chain drive, countershaft gear, coach Sidecar	£64 10
1914 6 h.p. **REX** Sidette, nearly new	£59 10
1914 (late) w.c. **WILLIAMSON** (new)	£99 5
1912 3½ h.p. 2-speed twin **PREMIER** and smart coach-built Sidecar	£34 10
1913 6 h.p. 2-speed F.E. **REX**, chain drive, smart coach Sidecar	£45 10
1912 3½ h.p. 2-speed **N.S.U.** and Sidecar	£27 10
1912 6 h.p. 2-speed **REX** and Sidecar	£34 10
1910 3½ h.p. 2-speed **REX** and Sidecar	£24 10
1910 5-6h.p. 2-speed **REX** and Sidecar	£27 10
1909 5-6h.p. 2-speed **REX** and Sidecar	£25 10
6 h.p. 3-speed **PEUGEOT**, fine condition	£26 10

MISCELLANEOUS.

Cycle Car Front and Rear Axles and Wheels with detachable rims	£3 10
New Upholstered Sidecar Bodies	14/6, 15/6
Triumph Pattern Horns	5/9, 6/9
Pair Lucas Side Lamps for light car	19/6
Second-hand Wicker Sidecar Body	4/9
New Mechanical Horns. Special prices	15/11
Shop-soiled Coach Gloria Sidecar	£14 10
Shop-soiled Coach Bramble Sidecar	£12 0
Brand New Rex Coach Sidecar	£12 10

MOTOR CYCLES FOR SALE.

Abingdon.

ABINGDON, 1913, 3½h.p., 2-speed, spare tube, belt; £28.—Hedley, 610, High Rd., Chiswick. [2859

A.J.S.

A.J.S., new 1915, 2¾h.p., 3-speed model, actually in stock.—Moss, Wem. [X8504

A.J.S., 1915, 4h.p. model, for immediate delivery.—The Morris Garages, Oxford. [X8507

A.J.S. 6h.p. Combination in stock for immediate delivery.—M. C. Johborn, Agent, Willenhall. [X8533

A.J.S., 6h.p., complete with sidecar, just delivered; £95.—Turpins, 22 and 29, Preston Rd., Brighton. [0716

A.J.S., 1913, 6h.p., Gloria cane spring wheel sidecar; £50.—Green, Union Infirmary, Crumpsall, Manchester. [3378

1913 A.J.S., 2¾h.p., lamp, horn, watch, mirror, tube, excellent condition; £30.—Harrison, Middlewich, Cheshire. [X8549

2¾h.p. 1914 A.J.S., 3-speed, decompressor, all accessories, spares, kick; 42 gns.—Owner, 2, Beresford Av., Hull. [X7935

A.J.S., 1914, 2¾h.p., 3 speeds, hand clutch, lamp, horn, splendid condition; £39.—21a, Hopton Rd., Streatham. (D) [3437

A J.S. 4h.p. Machine, also 6h.p. combination in stock for immediate delivery.—Doncaster Autocars and Cycles, Ltd., Doncaster. [0719

A.J.S., 5-6h.p., 1913, and sidecar, complete, overhauled, splendid condition; sacrifice first 50 gns.—26, Farnley Rd., S. Norwood. [3415

A.J.S., 1913½, 6h.p., 3-speed, Gloria, Cowey, excellent condition; £56, or exchange A.J.S., 2¾h.p.—Roberts, Siabod, Capel Curig. [X8562

A.J.S., 1913, 6h.p., and 1915 Montgomery coachbuilt sidecar, recently overhauled; 55 gns.—H. Hirst, 177, Morley St., Bradford, Yorks. [X8558

A.J.S., 6h.p., countershaft gears, chain drive, kick starter, perfect condition; £40, or exchange Douglas.—Sinclair, East Molesey. [X8569

A.J.S., 1913, 6h.p., 3-speed, perfect condition, just overhauled; 47 gns., very great bargain.—Julian, Broad St., Reading. 'Phone: 1024. [0728

A.J.S., prompt delivery of all models, 6h.p., 4h.p., and 2¾h.p.—P. J. Evans, Birmingham and District agent, 87-91, John Bright St. [3365

6h.p. A.J.S., late 1913, 3 speeds, best wicker sidecar, new tyres, lamp, horn, and accessories; £53.—Moorings, Nelson Drive, Leigh-on-Sea. [X8481

A.J.S., 1914, 2¾h.p., 2-speed, kick start, hand clutch, lamp and horn, splendid condition, quite equal to new; £45.—Retallick, Burney House, Roche, Cornwall. [X8275

A.J.S., 2¾h.p., 3-speed, cost £60 October, 1914, splendid condition, not done 2,500, lamp, mechanical horn, extra toolbag; £48, offers considered.—Box No. 9,312, *The Motor Cycle* Offices, Coventry. [X7930

A.J.S. 1913½ 5-6h.p. Coachbuilt Combination, just overhauled, splendid condition, 2 speeds, clutch, kick starter, 1914 Amac, all accessories, and very complete equipment of tools, suitable winter riding; £47.—15, Loftus Rd., Shepherd's Bush, W. [X8316

LEFT by a gentleman on sale.—1915 6h.p. A.J.S., detachable wheels, fitted with De Luxe sidecar, wind screen, speedometer, Lucas lamps and hooter, sidecar lamp, spare wheel and tyre, not a scratch on combination, fast; cost with all extras £125, price to clear £107.—Wauchope's, 9, Shoe Lane, London. [X8423

Alldays.

ALLON, 2-stroke; best deliveries these fine machines.—W. P. Edwards, Taunton. [X7463

ALLDAYS Allon, 1915, 2¾h.p., 2-speed, accessories; £50, or near offer.—74, Erlanger Rd., New Cross. [3366

1915½ Allon, 2-stroke, 2 speed, mileage 800, accessories, £34; light coachbuilt sidecar, new July, £8.—213, Hanworth Rd., Hounslow. [3260

ALLDAYS Matchless, September, 1914, 2¾h.p., 2-stroke, 2-speed, F.E., kick starter, splendid order; £24.—Moseley, Kirby Muxloe, Leicester. [X8447

ALLON 2-speed 2-stroke Models, £38/17; single speeds, £31/10; delivery from stock; cash or gradual payments.—Apply, Wauchopes, 9, Shoe Lane, London. [X8424

1915 Allon, 2-speed, with Stewart, P. and H. lamp set, 3-note horn, rear lamp, and sporting model sidecar, beautiful condition; £41.—A. Consalves, c/o Harvey, Hudson and Co., South Woodford. [X8297

ALLDAYS Allon Single and 2-speed in stock, £31/10 and £38/17 respectively; deferred payments speciality; keen price for large deposits.—Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green [3331

OUR SILENT REPRESENTATIVE

IN STOCK.

1915 **CLYNO** 6 h.p. Combination, with lamps, speedometer, hood and screen, spare wheel, etc., only done 500 miles **£85 0**
1915 3 h.p. T.T. **ENFIELD,** 2-speed ... **£52 10**
1915 3½ h.p. **ROVER,** countershaft Combination **£84 7**
1914 3½ h.p. **PREMIER,** 3-speed, Combination, like new **£55 0**
1914 3½ h.p. T.T. **SINGER,** lovely condition **£38 0**

TWO-STROKES.

1915 **ALLON,** 2-speed and clutch, only done 300 miles **£38 0**
1915 **SPARKBROOK,** 2-speed **£37 16**
1915 **JAMES,** 2-speed **£38 0**
1915 **IMPERIAL METRO,** 2-speed, sporting model **£38 10**
1915 **IMPERIAL METRO,** single speed, sporting model **£31 0**
1915 **IMPERIAL METRO,** lady's, 2-speed **£38 10**
1915 **ROYAL RUBY,** single speed, Villiers engine **£29 10**
1915 **IVY,** single-geared **£29 10**
1915 **HOBART,** 2-speed **£38 10**
1915 **IXION,** single-geared **£29 10**
1914 **DOUGLAS,** Model U, a beauty ... **£42 0**
1910 **DOUGLAS,** single geared, lamp, and horn **£16 10**
1912 2½ h.p. **A.J.S.,** 2-sp. clutch model, fine order **£30 0**
1913 3½ h.p. **SCOTT,** 2-sp. T.T., a beauty **£45 0**
1913 Free-engine **RUDGE,** speedometer, mechanical horn, lamp, fine condition **£35 0**
1912 4 h.p. **REX,** 2-speed, handle starting, with new wicker Sidecar **£35 0**
1911 3½ h.p. **PREMIER,** 3-sp., good order **£27 0**
1911 **TRIUMPH** **£25 0**

CARS IN STOCK.

1915 15-20 h.p. **BRISCOE,** 4-seater, electric starter, lights, etc. **£225**
12-16 h.p. **SUNBEAM,** delivered new January, 1913, finished in white enamel, beautiful 4-seater, complete **£330**
We have one No. 1 **FORD** Van in stock .. **£115**
1915 **MORGAN,** nearly new, complete ... **£85**

Exchanges entertained.

SIDECARS IN STOCK.

1914 **BRADBURY,** coach-built **£11 0**
CANOELET, sporting model, very light . **£10 10**
BURBURY, coach-built **£14 14**
BURBURY, coach-built **£12 12**
BURBURY, wicker torpedo, fronted model **£6 6**
Art Cane Sidecar, second-hand, good tyre, all complete **£3 10**

STEWART SPEEDOMETERS.—We can deliver these from stock, sent by return on receipt of **£2 10s.**

We carry a stock of accessories. Let us have your requirements. No order too small for us.

JUNIOR LONG HORNS, From stock. **25/-**

The North Wales Motor Exchange,

HOLT ST., WREXHAM.

Telephone: 283.

Telegrams: "Motor Exchange, Wrexham."

MOTOR CYCLES FOR SALE.

Douglas.

1914½ W 2¾h.p. Douglas, 2-speed, kick starting, clutch; £42; exchange featherweight and cash.—127, Stretford Rd., Manchester. [3531

DOUGLAS, 1915½, model W, kick starter, 3-speed, T.T. bars, 6 weeks old, absolutely as new; £52.—Rinkside, Penrhyn Rd., Surbiton. [3373

DOUGLAS, 1912, T.T., 2¾h.p., 2-speed, lamp, etc., perfect riding condition; splendid bargain, £30.—Lawton, 3, Castelnau Place, Barnes. [X8449

DOUGLAS, 1914, 2¾h.p., model U, tyres excellent, engine and bearings overhauled; £38.—Robinson's Garage, Green St., Cambridge. [0612

DOUGLAS, 1915, model W, 2¾h.p., 3-speed, kick start, fine condition, only run few miles, lamp, horn; £50.—Fielder, 19, Worple Rd., Wimbledon. [3406

1913 Model U Douglas, in absolute perfect condition, overhauled and tested by our Douglas expert; £37.—Colmore Depot, 31, Colmore Row, Birmingham. [X8299

DOUGLAS, 1911, 2¾h.p., 2-speed, excellent running order; £20; can be seen and tried by appointment.—Dr. Pedley, Hayesford, Hayes Lane, Bromley, Kent. [3324

DOUGLAS Late 1914 3½h.p. T.T., condition perfect, complete with lamps and tools; genuine bargain, £48.—16, Warrender Rd., Tufnell Park. [X8574

DOUGLAS, 2¾h.p., 1912 pattern, 2 speeds, drip feed, clutch model, good order; £30, or near offer.—Ridgway, Ruan High Lanes, Grampound Rd., Cornwall. [3513

DOUGLAS, 1914, clutch, 2-speed, free engine, speedometer, Klaxon, spare chain and belt; £43.—Paymaster Turner, H.M.S. Thames, c/o G.P.O., London. [3421

DOUGLAS, 1914, 2¾h.p., T.T. model, lamp set, horn, Watford speedometer, knee grip, excellent condition, private owner; £35.—The Morris Garages, Oxford. [X8510

DOUGLAS, 2¾h.p., 1914, 2-speed, Stewart speedometer, footboards, raised bars, lamp, generator, all complete, splendid order; £43.—Lambert, Station Rd., Strood. [3412

DOUGLAS, late 1913, 2¾h.p., and new sporting sidecar, spares, accessories, splendid running condition; nuff said; £48. No dealers.—Alexander, 25, Parsons Green, Fulham. [3316

DOUGLAS, 1910, just re-bored, in excellent condition, thoroughly overhauled, new back tyre; £18, bargain.—Mechanic, 23, St. Martin's Rd., Lower Edmonton, Middlesex. [3263

1914 2¾h.p. Douglas, 2-speed, condition as new, good tyres and belt, Lucas lamp set and horn, spare belt and chain; £44.—Goodbehere, Fern Bank, Plymouth Grove, Manchester [X8180

1914 Douglas Combination, just been thoroughly overhanled, as new in every detail, full range of accessories included; 58 gns.—Colmore Depot, 31, Colmore Row, Birmingham. [X8304

DOUGLAS, War Office model, special features, in stock, instant delivery; price £54/12; pamphlets on application.—T.A.; Bicycles. Tel.: 388.—Robinson's Garage, Green St., Cambridge. [6864

DOUGLAS, 1910, 2¾h.p., overhanled, new valve springs, back tyre, tubes, handle-bars re-plated, lamps, toolbag, etc., perfect condition; £16/10.—Mabb, 71, Manor Grove, Richmond, Surrey. [3512

DOUGLAS, 2¾h.p., 1912, 2-speed, clutch model, just been overhauled, new tyres, 2½in. Pedley back, accessories, all new condition; £30, near offer.—16, Shirley Park Rd., Addiscombe, Croydoo. [3379

1914 3½h.p. Douglas, with excellent coachbuilt sidecar, both practically new, luggage grid, electric light, complete, supply spare parts and tools; £70.—Bingley, Fermain, Sherborne, Dorset. [X8604

1915 2¾h.p. Model W Douglas, 3-speed clutch, kick starter, semi-T.T. handle-bars, lamps, horn, etc., only done few miles; £53, or offer.—Box 9,342, *The Motor Cycle* Offices, Coventry. [X8515

DOUGLAS, 1914 2¾h.p., 2-speed, clutch, kick-starter model, Cowey speedometer, Lucas King of the Road lamp set, horn, handle-bar mirror, splendid condition; £38 lowest.—The Morris Garages, Oxford. [X8509

1915½ Douglas, 3-speed model V, £45, as from works, or £50 with speedometer, horn, lamps, watch, spring links, chain case, Clair silencer, Xl'all saddle, etc.—Simms Wilson, 340, Woolwich Rd., Charlton, S.E. [X8442

DOUGLAS.—We can now deliver the famous Douglas from stock; an excellent selection to choose from, including the military all-black model. Call or write us; we can fill your requirements.—The Colmore Depot, 31, Renshaw St., Liverpool. [3569

1913 (Late) Douglas, 2¾h.p., Cowey speedometer, Lucas set, Avon back, Hutchinson front, sight drip feed, very fast, all tools and accessories, watch, plating perfect, guaranteed perfect running order; £30, or nearest offer.—Write Arnold, St. Helens, Beckenham, Kent. 'Phone: Gerrard 5360. [3555

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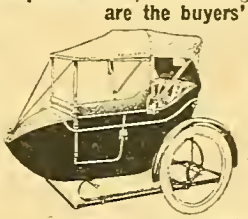

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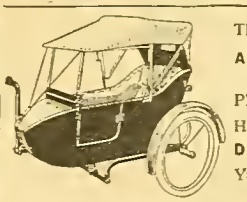

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£16—Royal Enfield Twin, 2¼h.p., perfect, appearance new.—Innes, Wardwick, Derby. [X8391

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ENFIELD, 1915, 3h.p., not done 50 miles, absolutely new; £41/10.—Stour Cycle Depot, Stourbridge. [X8506

ENFIELD, 6h.p., with sidecar, also trade sidecar, all perfect order; £45.—Batchelor, Clarence St., Kingston. [X8471

ENFIELD, 1914, 6h.p., 2 speeds, coach sidecar; a real bargain, £58.—Fenler, 36, Clarence St., Kingston. [X8472

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2¾h.p. Twin Enfield, accessories, good condition, new tyre and chain; £18.—Roberts, Devonport House, Upper Deal. [X8240

1913 2¾h.p. Enfield, 2-speed, handle start, speedometer; £27/10; perfect.—Jones, The Broadway, Muswell Hill. [2872

ENFIELD 6h.p. Combination, late 1914, lamps, speedometer, new condition; £65.—58, St. George's Rd., Peckham, S.E. [3552

1914 Royal Enfield Combination, speedometer, Lucae lamp, new tyres; £65, or nearest offer.—M., 20, Valnay St., Tooting. [3233

ENFIELD, 2¾h.p., 1914 model, free engine, and 2-speed, new condition, lamp, horn, etc.; £35.—Hopkins, New St., Ledbury. [3587

ENFIELD Combination, 6h.p., cane sidecar, all accessories, had very little use; trial; £48.—Gibson, 325, Chesterfield Rd., Sheffield. [3262

ENFIELD Combination, 1914 gears, wheels, piston, forks, new tyres; offers. Wanted, lightweight.—Riches, Wollaston, Stourbridge. [X8363

ENFIELD Combination, 1915½, perfect, every accessory, wind screen, hardly used; £78.—Hassall, 30, Fetter Lane, E.C. City 9368. [3414

ENFIELD 1913½ 6h.p. Combination, new Wolbrown wicker 2-seat, sidecar, perfect order; £58, complete.—Booth, Green Lane, Featherstone. [3396

1910 2¼h.p. Royal Enfield Lightweight; £12, or near offer, or exchange pedal cycle and cash.—T. Evans, 9, Ashbourne Grove, East Dulwich. [3315

ENFIELD 2¾h.p. Twin. 1912 model, 2-speed, chain drive, in perfect order; must sell; what cash offer.—C. Smith, 2, St. Ann's Well Rd., Nottingham. [X8543

ENFIELD Combination, just arrived, £84; liberal deferred payments; exchanges.—Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green. [3331

ROYAL Enfield, 1914, 2¾h.p., 2-speed, twin, kick start, chain drive, speedometer, and watch, excellent condition; £35.—15, Station Rd., Plumstead. [X8570

ENFIELD 6h.p. Combination, 1913, Jones speedometer, Lucas accessories, perfect condition; £46, or near offer.—Write, S., 31, Charrington St., Oakley Sq., N.W. [3247

ENFIELD, late 1912, and 1913 coachbuilt sidecar, not used during war, Jones speedometer, all in perfect condition; £45.—Webb, 35, Connaught Gardens, Highgate, N. [3253

1912 6h.p. Royal Enfield, with special wide coach-built sidecar to seat 2 children, very good order; £50; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0722

ENFIELD 1914 6h.p. Combination, in excellent order, lamps, speedometer, horn, spares, complete, not done 2,000 miles, guaranteed sound; £65.—Elce and Co., 15, Bishopsgate Av., E.C. [0599

ENFIELD 2-stroke, 2¼h.p., 2-speed, 1915 model, just arrived from works; immediate delivery; £39/18; we are Enfield specialists.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [3281

ENFIELD, 1914, 6h.p., passenger combination, coach body, Lucas lamp set, Lucas horn and rear light, tyres perfect, excellent condition throughout; £60.—The Morris Garages, Oxford. [X8511

ENFIELD 1913 6h.p. 2-speed Combination, hood, screen, 3 lamps, horns, speedometer, spares, tools, excellent condition, complete; 55 gns., cost over £100.—Ebbutt, 53, High St., Croydon. [3491

ENFIELD 1915 6h.p. Combination, coachbuilt sidecar, the finest combination made, all complete; £84; just arrived from works; immediate delivery.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [3280

ROYAL Enfield Combination, £84; 3h.p. twin, 50 gns.; 2¼h.p. 2-stroke, 38 gns; immediate delivery all models.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0571

ENFIELDS, all models actually in stock.—6h.p. combinations, 3h.p. 2-speed twins, T.T. and touring models, also 2¼h.p. 2-speed 2-stroke.—P. J. Evans, 87-91, John Bright St., Birmingham, controlling district agent. [3363

ENFIELD 1915 6h.p. Combination, fitted with 3 lamps, bulb and electric horns, speedometer, mirror, etc., complete with tools, new condition; 75 gns. Seen any time by appointment.—Woodhams, 7, Ewhurst Rd., Crofton Park, S.E. [3554

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New **Continental** Covers, 26×2, beaded edge **11/9**

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Excelsior.

EXCELSIOR, 2¾h.p., 2-stroke, 2-speed, guaranteed to take a sidecar; £44.—Midland Cycle Depot, 15, Hales St., Coventry. [X8394

AMERICAN Excelsior, 1915, 7-9h.p., 3-speed, lamp and horn; cost £56 two weeks ago; £54, or exchange.—4, Thornton St., Kempston, Bedford. [3229

EXCELSIOR (American), 7h.p., 3-speed, standard, £62; De Luxe, £71/10; Yorkshire dealers supplied.—Sole Yorkshire distributers, Halifax Motor Exchange, Horton St., Halifax. [0388

1913 Excelsior (Coventry) and Sidecar, 3½h.p., Philipson, F.E., Bosch mag., tyres nearly new, lamp, horn; bargain, £28.—A. E. Massey, 306, Berkhampstead Rd., Chesham, Bucks. [3451

A TWIN Excelsior 7h.p. Motor Cycle and sidecar, 2 speeds, free engine, clutch; £47 the lot, cost 85 gns. in March; owner going to the tropics; any trial.—420, Richmond Rd., East Twickenham. [3273

Fafnir.

FAFNIR 3½h.p. Combination, Mabon clutch, B. and B., spring forks, Whittle belt, P. and H. lamps, Palmer cords, and Dunlop, nearly new, room wanted; £20.—63, Park Hill, Clapham, S.W. [3449

Fairy.

2¼h.p. Opposed Twin Fairy, Bosch, good order, spares, spare engine, £14; 3½h.p. N.S.U., mag., good condition, 2-speed, £12.—Hurstwood, Camberley. [3511

F.N.

F.N., 5-6h.p., 2-speed, sidecar, excellent throughout; £28/10.—6, Stafford Rd., Sidcup. [X8338

F.N., 1915, 5h.p., 2-speed, perfect condition; £50, or offer.—F. Bannister, Chatham. [3398

F.N. (Late), 4½-5h.p., 4 cyls., mag., drip feed, low, dropped frame; sacrifice £22/10.—1, Ebner St., Wandsworth. [X8564

1912 F.N., 4-cyl., with sidecar, 2-speed gear and clutch, 3 combinations, ranging from £28 to £35.—Earl's, 5, Heath St., Hampstead. [X8499

F.N., 1914, 2-seater, 7h.p., heap accessories; £75; generous deferred terms.—Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green. [3332

F.N., 4-cyl., 1912, 2 speeds, in perfect order, and new condition sidecar, good tyres, weatherproof mag., new weatherproof Lodge plugs, horn, lamps, speedometer; price £35.—Earl's, 5, Heath St., Hampstead, N.W. [3483

Grandex.

1913 3h.p. Grandex-Precision, 3-speed, and accessories; £24.—Wood, c/o Harvey, Hudson and Co., South Woodford. [X8381

GRANDEX-PRECISION, 1914, 2h.p., 2-speed, overhauled, perfect; £20, or nearest.—Mawer, 4, Trinity Rd., Chelmsford. [3368

Harley-Davidson.

HARLEY-DAVIDSON 7-9h.p. Twin and 4h.p. In stock.—Turpins, 29, Preston Rd., Brighton. [0713

HARLEY-DAVIDSON Combinations in stock; exchanges.—Middleton, 27, Stroud Green Rd., N. [3106

HARLEY-DAVIDSON, 1914, coach sidecar, perfect condition; £50.—Seen Stag Motor Works, East Finchley, London, N. [3433

HARLEY-DAVIDSON Sidecar Combinations in stock for immediate delivery.—The Premier Motor Co., Aston Rd., Birmingham. [2800

HARLEY-DAVIDSON, 1915, 7-9h.p., 3-speed, new a month ago, guaranteed perfect; £60.—Macrae and Tolfree, 2, Castle Ter., Edinburgh. [3567

HARLEY-DAVIDSON, 11C. model, 4-6h.p., 2-speed, new last month, complete with lamp and horn; what offers?—Watson, Draper, Terrington St. Clement, Norfolk. [3234

HARLEY-DAVIDSON, models 11C. 11F, 11J, actually in stock; sidecars to suit.—Macrae and Tolfree, 2, Castle, Edinburgh. Telegrams: Straight. 'Phone: 6365. [3560

HARLEY-DAVIDSONS.—We are special agents for these splendid machines and sidecars. Deferred payments arranged.—Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green. [3343

HARLEY-DAVIDSON, electrically equipped, 1915 with Bramble sidecar, Pillion seat, speedometer lamp, horn, ridden 800 miles; £85; exchanges, deferred payments.—Lamb's, 151, High St., Walthamstow. [3331

HARLEY-DAVIDSON 1915 Models delivered from stock; 7-9h.p. 3-speed model 11F, 65 gns.; electric equipment, model 11J, 73 gns.; exchanges or extended terms arranged.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0495

HARLEY-DAVIDSON, model 11 J, 7-9h.p., 3-speed with electric dynamo lighting outfit and electric horn, fitted with special Gloria sidecar, the finest combination on the road; £97/15 complete; immediate delivery.—The Premier Motor Co., Aston Rd., Birmingham. [192

MOTOR CYCLES FOR SALE.

Matchless.

MATCHLESS, 1915½, detachable spring wheel sidecar, 7h.p. M.A.G. engine, combination, Lucas lamps, and horn, Watford speedometer, spare tubes, and other accessories; £85, no offers.—Paterson, 177, Loughborough Rd., Brixton. Between 2-5. [3243

1915 Matchless Combination, model 8B., spring wheel Matchless sidecar, fitted with hood, screen, lamp and generator, horn, spare valves, etc., not done 500 miles, perfect, as new; selling through no fault whatever; cost over £100, accept £90, no offers.—Day, Okehampton. [3231

Minerva

MINERVA, mag., Brown and Barlow, fast; £12. Seen Sunday.—Addicott, 71, Arica Rd., Brockley. [3573

MINERVA, 2¾h.p., coil ignition, spring forks, in running order; £9.—77, Chelmsford Rd., Walthamstow. [3251

MINERVA, 2¾h.p., mechanical valves, spring forks, Binks, new accumulator; £7.—4, Kingsley Rd., Wimbledon. [X8322

8h.p. Twin Minerva and sidecar, free engine, plating and tyres new, very good condition throughout; £25.—Barber, Oak Villa, Ernest Rd., Yiewsley, Middlesex. [3584

2½h.p. Minerva, Bosch, 1914 B. and B., Mabon clutch, h.b.c., low, 26×2¼, Douglas bars, spares, exceptional engine; £11.—Appleton, 56, Cathles Rd., Balham Hill. Seen after 7. [3355

Motosacoche

MOTOSACOCHE, 3½h.p., 1915, as new, little used; £44.—2, Suffolk Terrace, W. Thurrock, Essex. [3351

1912 Motosacoche, Singer 2h.p., Bosch mag., splendid condition, about 1,000 miles; £15.—Wood, Furnisher, Honiton. [X8547

New Hudson.

NEW Hudson 4h.p. Combination, everything in; £45.—Get particulars, Ames, Seedsman, Scarborough. [3395

NEW Hudson, 2-stroke, countershaft 2-speed, spare new tyre, speedometer, lamps, horn, watch, as new; £34.—Merriman, Highbury, Beech Tree Lane, Cannock, Staffs. [X8465

NEW Hudson, 2-stroke, from £36; all models from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0603

NEW Hudson Big 6h.p., 3-speed, combination C.B. sidecar, speedometer, lamps, and horn, spare cover; £60, near offer.—32, Fulham Palace Rd., Hammersmith. [3239

1914 New Hudson 6h.p. Combination de Luxe, 3-speed, chain and belt, lamps, speedometer, splendid condition; £55.—Ludford, 46a, Brooksby's Walk, Homerton, N.E. [X8473

4h.p. New Hudson, coachbuilt combination, hood, screen, speedometer, 3 lamps, horn, spare tyre, belt, and chain, condition good.—Offers to 93, Melville Rd., Walthamstow. [3349

6h.p. New Hudson Twin-cyl. Motor Cycle, fitted with 2-seated Bowser sidecar, chain-cum-belt transmission, includes all accessories; £57/10.—Wauchope's, 9, Shoe Lane, London. [X8431

NEW Hudson, 1914, 3½h.p., Armstrong 3-speed gear, clutch, kick starter, Albion wicker sidecar, perfect order, very little used; accept £45.—No. 9,340, *The Motor Cycle* Offices, Coventry. [X8400

NEW Hudson Big Six Combination, 1914½, 3-speed countershaft drive, splendid condition; £65; exchange high power all chain drive.—Motor, 121, Nottingham Rd., Loughborough. [3250

NEW Hudson, 3½h.p., countershaft 3-speed gear; £63; delivery from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0570

NEW Hudson 1915 Big Six, de luxe finish, all accessories, £75; also 3½-4h.p. 3-speed Canoelet combination, 50 gns.; special deferred payments for large deposits.—Lamb's, 151, High St., Walthamstow. [3336

NEW Hudson Big Six De Luxe Combination, £92/8; also De Luxe 2-speed model D. lightweight, £40; model C. 2-speed, £36; model E., £31; and A., £29/10; in stock.—Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green. [3344

1914 Big Six New Hudson, 3-speed, splendid condition, lamps, Lucas horn, Klaxon, Cowey, spare cover, Gloria £27 sidecar including hood and screen, the lot £57; also 1914 Swan sidecar, almost new, wind screen, spring cushion, luggage grid, £9/10.—Mason, Motor Agent, Wellingborough. [3472

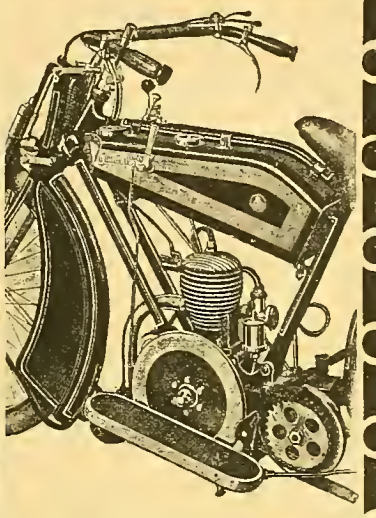
NEW Hudson, 1913, 4h.p., 3-speed, and clutch, countershaft drive, and coach sidecar, storm apron, and luggage grid, horn, rear lamp, pump, tools, spare tube, cover, valve complete, chain, etc., good tyres, well kept, and in perfect touring condition, run under 5 000 miles; any examination or trial.—A. Redshaw, 31, Nora St., Barrowford, Lancs. [X8469

New Imperial.

NEW Imperial-Jap, 1915, 2½h.p., 2 speeds; £29.—Campbell, Palace, Blackpool. [3236

NEW Imperial-Jap, 2-speed, lamps, nearly new; £27/10.—119, Park Lane, Clissold Park. [3547

The "IVY" TWO STROKE



Above illustration shows our new pattern frame that will from now be fitted to our "De Luxe" Model Two-Stroke machines only. It is our registered design No. 531848, and the principle is as follows:—Instead of the usual round down tube coming from the ball head, we bring two oval blades from a specially designed ball head down on each side of the exhaust pipe to the crank case. Each of these blades is double the strength of the ordinary round down tube, and is made of a specially toughened steel which will stand being twisted a number of times without breaking. This frame is no heavier than the ordinary diamond frame, and is

ABSOLUTELY UNBREAKABLE.

Other exclusive features of our "De Luxe" model are—

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NEW Imperial, 1913, 2½h.p., excellent condition, £17.—Macrae and Tollree, 2, Castle Ter., Edinburgh. [3565

1915½ Imperial-Jap, Lucas's accessories, everything like new; £32.—Pearce, 39, Portland St., Fareham. [3400

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NEW Imperials in stock, model 1 £37/18, model 2 (kick starter) £44/4.—Macrae and Tollree, 2, Castle Ter., Edinburgh. [3566

NEW Imperial Lightweights, 2 speeds, actually in stock; £36/15; exchanges considered.—City Motor Co., 125, London Rd., Manchester. [0718

1915 J.A.P., New Imperial J.A.P., 2-speed, actually in stock; price 35 gns.; exchanges; easy terms.—Julins, Broad St., Reading. 'Phone: 1024. [X6408

NEW Imperials, the reliable English motor cycles with the famous J.A.P. engines and countershaft gears; all the popular models in stock, from 35 gns.—The Colmore Depot, 31, Renshaw St., Liverpool. [3570

New Ryder.

1914½ New Ryder-Villiers, 2½h.p., 2-stroke, semi-T.T., Miller lamp, splendid condition; £22.—34, Plymouth Grove West, Manchester, S.E. [3441

Norton.

1915 T.T. Norton; £40, bargain; owner leaving England.—Andrew, 16, Forres Gardens, Golder's Green, N.W. [3294

3½h.p. Norton, T.T. roadster, 1913 (November), fast, reliable, in perfect order; any trial; £28, nearest.—Southville, Manor Rd., Walton-on-Thames, Surrey. [3228

COMBINATION, 1914½ Norton, 3½h.p., coachbuilt sidecar, 1915, Sturmey-Archer 3-speed, handle starter, 3 lamps, first-class condition, grand hill-climber, reliable; £45.—McGready, Rose Gardens, Hitchin. [X8557

NORTON 1915 Big Four, in stock, 3-speed countershaft gear, chain drive; £65/10, plus 5% increase; exchanges or extended terms arranged.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0551

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N.S.U., 3½h.p., 2 speeds, free engine, low frame; nearest £16.—95, King's Rd., Kingston-on-Thames. [3242

3½h.p. N.S.U., new mag., belt, and piston; £15; first cheque secures.—28, Manchester Rd., Walkden. [X8606

2¾h.p. N.S.U., excellent condition, not run over 400 miles; bargain, £18.—10, Amity Grove, Raynes Park, Wimbledon. [X8358

N.U.T.

N.U.T., 3½h.p. twin J.A.P. engine, overhead valves 3-speed gear, all accessories, late 1914, condition equal to new in all respects; price £55.—Gibbs, Whitemans Green, Cuckfield. [X8158

O.K.

O.K. Junior, Mark III., 2-speed, actually in stock.—Meeten, Motors, Dorking. [3403

1915 O.K. Junior, 2h.p.; price £33/1/6; actually in stock.—Julian, Broad St., Reading. 'Phone: 1024. [X3123

O.K. Junior, 1914, 2 speeds, in splendid condition, all accessories; £20.—Casselden, 6a, Russell St., King's Rd., Brighton. [3261

Omega.

OMEGA, 3h.p., 2-stroke, 2 speeds; 36 gns., catalogue.—W. P. Edwards, Taunton. [X7462

OMEGA, 1914, 3h.p., 2-stroke, good condition; £17.—Edward, Bungalow, Carnoustie. [X8398

OMEGA, 1915, 3h.p., 2-stroke, 2-speed, all accessories; cost £40 month ago, sacrifice £32, or nearest; owner joined R.N.A.S.—Elliott, 19, Shakespeare Rd., Hanwell, Middlesex. 'Phone: Paddington 4193. [3465

P. and M.

P. and M. 1913 Combination; £43.—Griffin, Prescot Rd., St. Helens. [3256

P. and M., 2 speeds, lamps, accessories, as new; £34.—54, Rathfern Rd., Catford. [3376

1911 (late) P. and M. and sidecar, perfect condition; £35.—Apply, 44, Cambridge St., Pimlico. [3578

1913 P. and M., 2 speeds, kick starter, complete lamps, etc.; £41.—Cross, Jeweller, Rotherham. [X8540

1914¾ Phelon-Moore Combination, fully equipped; sacrifice £58/10.—Abson, 49, Kirkgate, Wakefield. [X8445

3½h.p. P. and M., 1909, 2 speeds, free, lamp, horn, etc., overhauled by makers; £17.—23, Hartingdon St., Derby. [X8555

1913 Phelon and Moore, property of officer abroad, very good condition; £35; any trial.—128, Bartholomew St., Newbury. [X8434

MOTOR CYCLES FOR SALE.

P. and M.

1914 P. and M., 3½h.p., 2-speed, kick starter, Campion coachbuilt sidecar, lamps, good running order; £48.—Howard, 18, Cromer St., York. [X8517

P. and M., twin, 6h.p., 1914, 3 lamps, tools, Cowey, £20 cane sidecar, child's compartment at back, hood, wind screen, excellent condition, also shed for same; £80.—Vickerman, Sunny Bank, Rawdon, Leeds. [X8181

P. and M., 1913, 3½h.p., 2-speed gear, chain drive, with Gloria sidecar, speedometer, head lamps, first-class combination; £45.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [2584

Peugeot.

PEUGEOT, 4h.p., twin-cyl., spring forks, perfect running order; owner on active service; £12.—239, Caledonian Rd., King's Cross, N. [3358

7-9h.p. Peugeot, sidecar, spares, perfect, accessories, smart combination, Villiers F.E. clutch, tyres, tubes, as new; £30.—200, Church Rd., Willesden. [X8528

Phanomen.

PHANOMEN 5-6h.p. Twin, Lowen sidecar, mag., free engine, 2-speed, thorough condition spares; nearest offer £35.—R., 37, Windermere Rd., Muswell Hill, N. [3556

Precision.

PRECISION, 2¼h.p., 2-speed, free engine, 9 months old; £20, or near offer.—Williams, 6, Gwendolene Av., Upton Park, E. [3510

1913 Precision, 3¾h.p., special engine, 3-speed, clutch, all spares, excellent condition; seen by appointment; £35.—Partridge, Trellis House, Dorking. [3490

Premier.

PREMIER, 2½h.p., splendid condition; £19.—Leighton's, opposite Wood Green Station. [3386

PREMIER, 2¾h.p., nearly new, perfect condition; £20.—H. Brand, 33, Eleanor Rd., Woolwich. [X8296

PREMIER, 2½h.p., 1913, as new; reasonable offer not refused.—86, Russell Av., Wood Green. [3397

1913¾ Premier, 3½h.p., 2-speed countershaft, P. and H. set, horn, and tools; £37, or offer.—47, Cambridge Rd., E. [3485

2½h.p. Premier, 1914, 3-speed, kick start, accessories, little used; £27.—Stagsdene, Maybank Rd., South Woodford. [3391

3½h.p. Premier, 1915, 3-speed countershaft gear, run 300 miles; £52; would entertain twin Indian.—P. Collyer, Peppering, Arundel. [X8274

PREMIER, 1914¾, 3½h.p., 3-speed, countershaft, coachbuilt sidecar, lamps, horn, speedometer, spares; £60.—Oades, 12, Highview Rd., West Ealing. [3453

3½h.p. Premier, 1913, with Millford sidecar, 2-speed countershaft, excellent condition, accessories; what offers?—Dr. Stephen, Bassinghourne, near Royston, Herts. [X8333

Radmill.

3½h.p. Free Engine Radmill Precision, pedal start, condition in every detail as new; 30 gns.—Colmore Depot, 31, Colmore Row, Birmingham. [X8302

Regal.

REGAL-J.A.P., 1913¾, 2¾h.p. T.T. twin, very speedy, in very good condition, new tyre and tube on back, P. and H. lamp set among spares, low position; £23/15; owner enlisting.—Letters, A.L., 56, Wetherby St., Higher Openshaw, Manchester. Could be seen in London. [3240

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2¾h.p. Revere, 2-stroke (1915), not run 500 miles, also featherweight wicker sidecar (new), very smart, new Hutchinson tyre, lamp, horn, etc.; cost £40, sell £30.—A. Church, 30, Iddesleigh Rd., Bedford. [3305

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REX, latest new 2-speed twin and sidecar, £77/10; special cash discount and liberal exchange.—Motories, 68, Horton St., Halifax. [0707

3½h.p. Rex, 2-speed, handle starter, Bosch, Amac, Whittle, lamp, perfect order; £16; exchanges entertained.—Railway Garage, Staines. [3284

6h.p. Rex, 1913, late model, 2-speed gear, free engine, coachbuilt sidecar, perfect going order; any reasonable offer.—Stone, 158, Shaftesbury Av., London. [3507

REX, 6-8h.p., 2-speed, coachbuilt combination, brand new, just delivered; list price £77/10, accept £68 cash; part exchange lower power.—A. Holland, Earlsdon, Coventry. [X8613

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1915	**CALTHORPE-J.A.P.,** 2-speed	£36 15
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1911 Rex, 3½h.p., 2-speed, handle starter, Bosch, B. and B., new John Bull, lamp, horn, excellent appearance and condition; £21.—Manager, Theatre Royal, Chorley, Lancs. [X8460

Roc.

ROC, 4h.p., 2-speed, F.E., in splendid going order; £18/10.—J. Booth, King St., Market Rasen. [3298

Rover.

ROVER, 1913, clutch, unscratched, perfect condition; £29, bargain.—20, Derby Rd., W. Croydon. [3484

1914 (December) 3-speed Rover, as new, Lucas 3 gn. set; £45, or nearest.—Carter, Rosebank, The Mount, Shrewsbury. [X8544

3½h.p. Rover, 3-speed model, 1913, fast and powerful solo mount, or will take sidecar; £38.—Waucbope's, 9, Shoe Lane, London. [X8420

ROVER, 1912, 3½h.p., 3-speed, free engine, new coachbuilt sidecar, electric lights, Bosch mag.; £33.—R., 143, Warham St., Kennington. [3478

1913 Rover, 3 speeds, very good condition, engine overhauled March by makers; £35.—Northrop, Cranmere, Rockingham Rd., Kettering. [X8538

1915 Rover, 3-speed countershaft, and Mills-Fulford sidecar, in splendid condition; £65.—Box L1,463, *The Motor Cycle* Offices, 20, Tudor St., E.C. [3360

ROVER De Luxe Combination, June, 1913, mechanically perfect, appearance practically as new; £40.—38, Frederick St., Loughborough, Leicestershire. [X7938

ROVER and sidecar, 1914, 3½h.p., 3-speed, free engine, Dunlop tyres, 2 lamp sets, tool roll and spares, complete any trial; £48.—Judson, 98, Osborne Rd., Forest Gate. [3318

ROVER, late 1913, 3½h.p., 3-speed, free engine, Dunlop tyres, Lucas head light, Middleton coachbuilt sidecar, all in splendid condition; £44.—Channon, Ashford, Middlesex. [3380

1915 Demonstration Rover Combination, complete with Lucas lamps, horn, and Cowey speedometer, as new in every detail; £73.—Colmore Depot, 31, Colmore Row, Birmingham. [X8306

ROVER, 3½h.p., 1913, free engine, light torpedo sidecar, just overhauled and fitted 1915 piston, new clutch, all in first-class condition, good tyres; £37.—Picturedrome, Nantwich. [X7932

1915 3½h.p. Rover, 3-speed countershaft model, Lucas horn, rear light, Watford speedometer, spare belt, all tools; cost £68, not run 3 months, as new; sell £53.—Archdale, Harborne, Birmingham. [X8348

ROVER, 1914, T.T., Brampton variable gear, also standard pulley, Senspray and B. and B. variable jet carburetters, very fast, not done 2,000 miles; £35.—Apply, Box No. 9,332, *The Motor Cycle* Offices, Coventry. [X8320

ROVERS, prompt delivery all models.—3½h.p. sporting models with Philipson pulley, De Luxe coachbuilt combination, and 3-speed countershaft models.—P. J. Evans, controlling Birmingham and District agent, 87-91, John Bright St.. [3364

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ROYAL Ruby, new, 2-stroke; list price £29/10, our price £28/10.—Walbro Motor Co., Ely, Cambs. [X8384

ROYAL Ruby Models from stock; exchanges quoted.—Halifax Motor Exchange, Horton St., Halifax. [0706

ROYAL Ruby, 2½h.p., 2-stroke, like new, spares, take 2 anywhere; trial, any examination; bargain, £22.—Walters, 51, Avondale Rd., Eastbourne. [X8525

ROYAL Ruby, 1914, 2¼h.p., 2-speed, 2-stroke model, in excellent condition, tyres good, Miller lamp set, horn, etc.; £23.—The Morris Garages, Oxford. [X8513

Rudge.

1913 Rudge Multi and Sidecar, complete; £38.—Cross, Agent, Rotherham. [X8539

RUDGE, 1913, 2-speed, clutch, overhauled; open any trial; £35.—Meeten, Dorking. [3401

1912 Rudge, 3½h.p., free engine; £27 cash, or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0724

RUDGE Multi and cash, new condition, for Royal Enfield combination.—Yearncombe's Studios, Frome. [X8388

RUDGE, 3½h.p., 1913, clutch, splendid condition, very fast; £27.—Cooper, 28, Innage Rd., Shirley, Salop. [3293

RUDGE Multi Combination, 1914, excellent condition; 39 gns., no offers.—12, Newfoundland St., Bristol. [X8453

3½h.p. Rudge, 2-speed, new accessories, with sidecar; £37; seen and trial, 7 p.m.—104, Church St., Woking. [X8397

3½h.p. Rudge, new November, 1913, Sturmey-Archer 3-speed, 12 gn. coachbuilt sidecar; £46.—Smirk, Contractor, Ashton, Preston. [X8461

RUDGE Multi Sidecar Combination, 5-6h.p. model, speedometer, etc., perfect; £39/10; exchange Douglas.—47, Newland Av., Hull. [X7934

RUDGE Multi, 1914, 5-6h.p., fitted with Swan sidecar, lamps, horn, all new tyres, perfect order; £45.—Wallace, 36, Clarence St., Kingston. [X8470

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WOLF, 1915, 2½-3h.p., 2-stroke, run about 1,500 miles, aluminium footboards, powerful machine; £18/18.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [3503

WOLF, 2½h.p., 3-speed, handle or kick starter, new Palmer tyres and tubes, new Dunlop belt, U.H. mag., lamp, etc., new condition; £22.—29, Flaxman Rd., Camberwell, S.E. [3509

2½h.p. Wolf 1915 Models, delivery from stock; 2-stroke 2-speed models £32/11/9, single-speed models £25/6/3; cash or extended payments.—Wauchope's, 9, Shoe Lane, London. [X8426

Yale.

YALE Motor Cycle in stock, 8h.p., 2-speed, kick start; 60 gns.—Jones, The Broadway, Muswell Hill. Sole agent for N. London, trade and retail. 'Phone: Hornsey 2562. [7636

Zenith.

ZENITH, 1913, 3½h.p., Gradua, splendid order, accessories; £30.—44, Watling St., Gillingham. [3357

8h.p. Zenith, clutch, kick starter, 3,000 miles, new 1914; 43 gns.—W.G.C., 61, New Kent Rd., London. [X8266

ZENITH-GRADUA, 1912, 3½h.p., with are cane sidecar, and accessories; £29/10, cash only.—Lamb's, 151, High St., Walthamstow. [3339

ZENITH-GRADUA 1912 6h.p. J.A.P. Combination, absolutely perfect condition; £40, minimum.—23, Whittingstall Rd., Fulham. [3350

FAST 1914 T.T. 5h.p. Zenith-Gradua and Burberry cane sidecar, accessories, excellent condition; £43.—Plough, Whitecross, Hereford. [X8183

ZENITH-GRADUA, 3½h.p. J.A.P., Montgomery sidecar, accessories, excellent condition; £34, or offer.—65, Headstone Rd., Harrow. [3405

ZENITH, 6h.p., clutch, kick start, Canoelet sidecar, perfect condition; £40.—Seen Stag Motor Works, East Finchley, London, N. [3435

ZENITH-GRADUA, 3½h.p., 1913, with new £9/15 sidecar, all in perfect order; a bargain, £40.—Burnham Lodge, 39, Gordon Hill, Enfield. [3288

ZENITH, 8h.p., black, 1913-14, and cigar underslung sidecar, specially tuned for speed; £50; appointment made.—Bolton, 18, New Union St., E.C. [3482

ZENITH-GRADUA, 8h.p. J.A.P., 1913, Swan sidecar, tyres as new, in splendid condition, lamp, and Endrick decompressors; £49.—Wyatt, Royal Oak, St. Neots. [3295

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FOR Sale, Singer motor cycle, lady's, free engine, good running order.—Miss E. Mayle, 1, George St., St Albans. [X8367

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6h.p. Combination, coach, mag., clutch, new tyres, powerful; bargain, £20.—75, Hillmorton Rd., Rugby. [X7571

EAGLES.—N.S.U. 6½h.p. Twin, 1914, loop frame, rear springing, 2 speeds, kick starter, with 1915 coachbuilt sidecar, nearly new, any trial; £50.

EAGLES.—Sun-Villiers, 2½h.p., 1915, 2-stroke, new condition, all accessories; £25.

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EAGLES.—N.S.U., 3½h.p., 1913, model de luxe, 85×88, loop frame, rear springing, 2 speeds, with coachbuilt sidecar; £32/10.

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EAGLES.—Calthorpe Junior, 2h.p., late 1914 model, 2-speed gear; £17/10.

EAGLES.—Wall Auto-wheel, 1914, nearly new; £9.

EAGLES.—Any of the above can be had on approval, "The Motor Cycle" deposit system.—Eagles and Co., High St., Acton, W. Tel.: 556 Chiswick. [X8523

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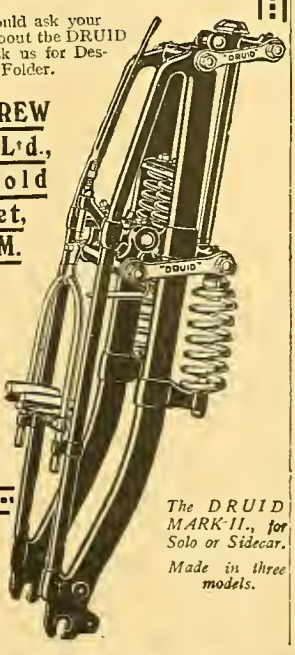

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1913 2¾h.p. Douglas, model R, 2-speed, clutch, kick start, £35; also 1913 Williamson water-cooled combination, £45.—Gill, 11, Westcroft Sq., Hammersmith. [3416

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HUMBER, 1913, 2-speed, free engine, handle starter, tyres and belt new, fully equipped, indistinguishable from new, £28; also 1913 2-speed Douglas, £25.—Bunn, 7, Bowrons Parade, Ealing Rd., Wembley. [3431

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M. and M.—Bat, 3½h.p., mag.; offers requested.

M. and M.—Calthorpe Junior, 2¼h.p., 2 speeds, 1914; £25.

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M. and M.—Two F.N.'s, late 1913, 2 speeds; £35 each.

M. and M.—Humber, 3½h.p., 2 speeds; £20.

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M. and M.—Rover Car, 6h.p., hood, screen, lamps; £40.

M. and M.—Rudge, 5-6h.p., late 1913, N.S.U. 2 speeds, coachbuilt sidecar, hood, screen, etc.; £40.

M. and M.—Rudge Multi, 1914, 5-6h.p.; £43.

M. and M.—Triumph, late 1914, and sporting sidecar, 3 speeds, as new; £45.

M. and M.—Zenith, 1914, 5h.p., sidecar, Palmers, lamps, etc.; £55.

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M. and M.—Win-Precision, 3½h.p., fine order; £24.

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CHATER-LEA Tricar Chassis, complete with tyres, less engine, splendid condition; offers.—Rich, Shifnal, Salop. [X8324

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1915 **CALTHORPE-J.A.P.,** 2½ h.p., 2-speed	£32	
1914 **DOUGLAS,** T.T., 2¾ h.p., 2-speed	£44	
1914 **DOUGLAS,** 2¾ h.p., 2-speed, footboards.	£43	
1914 **SCOTT** Combination, 3¾ h.p., twin, 2-str.	£48	
1914 **BRADBURY,** 6 h.p., twin, 3-speed, shop-soiled	£70	
1914 **RUDGE,** 5-6 h.p., shop-soiled	£45	
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1914 **LINCOLN-ELK,** 3¾ h.p., shop-soiled	£30	
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1914 **CLYNO,** 3-speed, and coach Sidecar	£58	
1913 **ZENITH,** 5-6 h.p., clutch, and Sidecar.	£49	
1913 **INDIAN,** 7-9 h.p., 2-speed	£35	
1913 **JAMES,** 4¼ h.p., clutch	£32	
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1915 **WHITING-GRANT**	£140
1915 **MACKENZIE** (new)	£185
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1914 **FORD,** 4-seater	£90
1914 **MORRIS-OXFORD**	£175

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SIDECARS, second-hand; two at £3, one at £4.—Leighton's, opposite Wood Green Station. [3388

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MONTGOMERY Coachbuilt Sidecar, grey, quick fittings and storm apron; £5.—40, Lower Rd., Erith. [X8493

INDIAN Light Sidecar, for 5h.p. model, in stock for immediate delivery.—The Morris Garages, Oxford. [X8512

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1915 Phœnix All-cane Torpedo Sidecar, 500 miles, indistinguishable from new; list £15, price £9 10; illustration sent.—Cluer, Redpits, Maidenhead. [X8559

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COACH Body, new, £3/10; wicker ditto, 10/-.—Wood, 49, Woodfield Rd., Ealing. [3445

SPORTS and Coachbuilt Metal Sidecar Bodies; cash and exchanges.—895, Fulham Rd., S.W. [3254

COACH Bodies, fit any chassis; 25/-, bargains.—Venus Sidecar Co., 746, Seven Sisters Rd., Tottenham. [3306

COACH Bodies made to suit any chassis; £3/10.—Bright and Hayles, 73, Church St., Camberwell Green. [3458

REPAIRS to any make of coach bodies; estimates free.—Bright and Hayles, 73, Church St., Camberwell. [3461

COACH Body, 36/, second-hand, splendid condition.—Bright and Hayles, 73, Church St., Camberwell Green. [3462

SMART 2-seater Napier Body, with dickey seat, leather hood, footboards, etc., as removed; bargain, £5.—79, Fernlea Rd., Matcham. [3326

TANDEM Coach Bodies, £5/10, made to suit any chassis.—Bright and Hayles, 73, Church St., Camberwell Green. 'Phone: Hop 50 [3459

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BEDELIA Cycle Car, complete; £22; exchange motor cycle.—Baker, Elm Cottage, Snoresbrook. [3245

MORGAN Grand Prix, 1915, extras (£20); 100 gns.; Douglas part.—96, Church St., Croydon. [3319

MORGAN, 1913 sporting, hood, screen, lamps, extra tyre, speedometer; £64.—54, Rathfern Rd., Catford. [3377

A.C. Sociable, 1912, good condition, 3 Lucas lamps, foot pump, jack, etc.; £31.—Barlow, 43, Dorn St., Leck, Walsall. [X6651

MORGAN Sporting, 1914, hood, screen, speedometer, lamps, generator, tools, tyres excellent; £72.—13, Brunswick Place, Leeds. [X8607

HUMBERETTE 1914 2-seat., 8-10h.p. mag., hood, screen; any trial; exchange motor cycle; 68 gns.—, Ebner St., Wandsworth. [X8567

A.C. Sociable, all accessories, perfect condition; expert examination, any trial; £45.—Wills, 70, Beacon Hill Rd., Newark-on-Trent. [X8554

MORGAN, 1914, Precision engine, hood, wind screen; any trial; good condition; £70.—Haynes, Croft, Darlington. [X8438

A.C. Sociable Cycle Car, 2 speeds, clutch, Bosch, smart turnout; £35; motor cycle considered exchange.—Speechley's, 45, Church Rd., Acton. [X8458

MORGAN Runabout de Luxe, 1913 model, just renovated at works, in first-class condition; £68; South Wales.—Box L1,452, *The Motor Cycle* Offices, 20, Tudor St., E.C. [3244

HUMBERETTE, a.c., 1914, speedometer, 5 lamps, nearly new tyres, 2 spares, splendid condition, uncratched, all accessories; £75, lowest; appointment.—1, Queensthorpe Rd., Sydenham, S.E. [3479

MORGAN, late 1914, Grand Prix, water-cooled, overhead valves, painted yellow, disc wheels, screen, lamp, condition as new; bargain, £97/10.—White, 121, Adelaide Rd., South Hampstead. [X8462

MORGAN 1913 Model de Luxe, lately spent £10 on overhauling, tyres new, hood, screen, speedometer, list of spares; accept best offer over 60 gns.; exchange combination in exchange.—Bentley, Butcher, Aberdare. [3424

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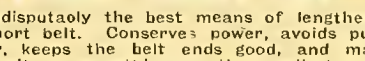

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D-ULTRA, 8h.p., water-cooled, 4 speeds and reverse, streamline body, brass lamps and fittings, painted Admiralty grey, very smart car; £100; appointment; run 150 miles.—421, Battersea Park Rd. [3585

SAXON 2-seater, mag., £125; also with electrical equipment, £145; Ritz 2-seater, £120, electrically equipped; deferred payments arranged.—Lamb's, 151 High St., Walthamstow. Depot 50, High Rd., Wood Green. [3346

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PAYMENTS by Instalments, any make of motor cycle or car. Details arranged to suit customer.—Colmore Depot, 49, John Bright St., Birmingham. [8105

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1915 Universal Engine, 6h.p., nearly finished, twin-cyl., a.c.; £4.—Jackson, Croseridge, Thankerton. [X8574

4h.p. Rax Engine, fitted with Fit All gear and Binks carburetter; £7.—59, Corporation Buildings, Morice Sq., Devonport. [X8532

B.S.A. 3½h.p. 1913 Engine, with Bosch waterproof mag., new, never used; £14.—A. Holland, Earlsdon, Coventry. [X8612

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PARKER and Rice.—Re-winding, re-magnetising, overhauling, etc.; repairs executed with expedition and noapproachable workmanship; low quotations.

IMPORTANT.—Parker and Rice give 12 months' written guarantee with each repair.

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MAGNETO Repairs and all spare parts.—The Runbaken Magneto Co., Ltd., Camp St. Works, Deansgate, Manchester. Tel.: 8266 City (3 lines). T.A.: Runmag, Manchester. [0715

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MAGNETO Repairs of every description, any make. We are late from the Bosch works and entirely British, and give same guarantee at half their prices in 24 hours. We hold a large stock of spare parts.—The Magneto Repairing and Winding Co., 158, Seymour St., Euston, London. 'Phone: Museum 1158. [3506

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NO. 3 Chain Belts, advertised price 2/6, usual price 3/-, until further notice.—91, Burnley Rd., Colne, Lancs. [X8330

BALATA-CHROME Belts, highly satisfactory all weathers; 3/4in. 9d., 7/8in. 10d., 1in. 1/-, 1 1/8in. 1/2 per foot, post free.—Pollin, Shepherdswell, Dover. [9494

1915 Clearance Belts.—Dunlop, 8ft.×1in. 10/-, 7ft. 6in.×1in. 9/6, 8ft.×7/8in. 9/-, 7ft. 6in.×7/8in. 8/6, 7ft. 6in.×3/4in. 7/6; approval against cash.—Albert L. Pitts, Redditch. [X8598

400 Perfectly New Rubber Motor Cycle Belts, all sizes, 8/6 each, fasteners free; satisfaction guaranteed; dozens of testimonials.—Dancer Motor, 69, Gower St., Lozells, Birmingham. [X6814

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LEGGATE'S, Edinburgh.—For great reductions in brand new clearance Clincher tyres. Manufactured in this city by the largest indiarubber manufacturers in the British Empire, and famous the world over for quality, resiliency, durability, and non-skidding properties.—See below for approval terms. Prompt despatch guaranteed.

LEGGATE'S, Edinburgh.—Clearance.—1915 new pattern Clincher Dreadnought, 6-ply fabric, extra heavy, rubber studded, beaded covers, 26×2¼ 31/-, list £2/7/3; 26×2½, to fit 2¼ rims, 31/6, list £7/7/3; 26×2½ 32/6, list £2/10/10.

LEGGATE'S, Edinburgh.—Clearance.—1915 new pattern Clincher de Luxe, heavy rubber studded, beaded covers: 26×2 21/-; 26×2¼, 21/-; 26×2⅜, to fit 2¼ rims, 23/6, list £2/1; 26×2½, 25/6, list £2/2/9.

LEGGATE'S, Edinburgh. — Clearance. — 1915 new "added" pattern (not recessed) Clincher de Luxe, 4-ply fabric, special heavy, rubber studded, beaded covers, 26×2½, for 2¼ rims, 27/6; special value.

LEGGATE'S, Edinburgh.—Standard 1915 Clincher Dreadnought, 3-ribbed, 650×65, for voiturette rims of heavy passenger outfits or cycle cars, 39/9.

LEGGATE'S, Edinburgh.—Clearance.—1915 Dunlop extra heavy rubber-studded beaded covers, 28×3, for Indians, 33/-, list 44/-; 28×2½, for Indians, 31/-, list 41/3.

LEGGATE'S, Edinburgh.—These goods are all perfect, and sent anywhere on 7 days' approval against remittance; cash refunded in full if goods not approved of

LEGGATE and Co., Motor Cycle Specialists, 15, Slateford Rd., Edinburgh. [X8443

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1915 6 h.p. **A.J.S.**, 3-speed .....
1915 4 h.p. **A.J.S.**, 3-speed .....
1915 2⅜h.p. **A.J.S.**, 3-speed .....
1915 **HARLEY-DAVIDSON**, 7 h.p., 3-sp.
1915 **ROVER**, 3-speed .....
1915 3½ h.p. T.T. **NORTON**, with hand-controlled Philipson pulley .....
1915 **NEW IMPERIAL-J.A.P.**, 2-speed .
1915 **LEVIS**, Popular model .....
1915 **TRIUMPH** Junior .....
1915 **O.K.** Junior .....
1915 **CALTHORPE-J.A.P.**, 2-speed ....
1915 5-6 h.p. **INDIAN**, 2-speed .....
1915 6 h.p. **ENFIELD** and Sidecar ....
1914 **DOUGLAS**, T.T. mod., lamp, horn, etc. .....
1914 **DOUGLAS**, clutch mod., accessories
1912 **SINGER**, 2½ h.p., T.T. .....
1914 7-9 h.p. **INDIAN** and Sidecar, 2-sp., perfect condition .....
1913 **A.J.S.**, 6 h.p., 3-speed .....
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1913 **RUDGE-MULTI** and Sidecar, lamp, horn; in good condition .....
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1915 **ROYAL RUBY**, 2-speed £27 10
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1913 **TRIUMPH**, 3-speed, and coach Sidecar £48 10
1913 **NORTON**, T.T. £28 0
1913 **ENFIELD**, 2¾ h.p., 2-speed gear £26 10
1913 **NEW HUDSON**, 2½ h.p., 3-speed £27 0
1914 **ARNO**, 3½ h.p., 3-speed, coach Sidecar. £48 10
1912 **HOBART**, 2½ h.p., 3-speed gear, lady's £22 10
1911 **TRIUMPH**, clutch, T.T. model £26 0
1913 **PRECISION**, 3¾ h.p., Philipson pulley. £28 0
1910 **DOUGLAS** £15 10
1912 **B.S.A.**, Grado gear £30 0

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TYRES.

ECONOMIC.—New Cross 1393.

ECONOMIC.—Clincher 24×2 heavy rubber-studded de luxe 19/6, tubes 6/-, complete tyre 24/6.

ECONOMIC.—Clincher rubber-studded de luxe, 26×2¼ 21/-, 26×2⅜×2¼ 23/3, 26×2½ 23/6.

ECONOMIC.—Clincher 650×65 heavy fluted cover 24/-, 700×80 oversize for 650×65 rims 32/6.

ECONOMIC.—Clincher Dreadnought ribbed, 26×2¼, 25/-; 26×2 Junior ribbed, 12/6; 650×65 3-ribbed Dreadnought, 32/6.

ECONOMIC.—Palmer 3-ribbed 700×80 covers, 50/-; Wood-Milne 700×80, 40/6; guaranteed 3,000 miles; all 1915 stock.

ECONOMIC.—Douglas riders, note. Special: 26×2¼ deepened tread anti-skid Kempshall for 26×2 rim 24/6.

ECONOMIC.—Kempshall clearance, non-skids 26×2¼ 35/-, 26×2⅜ 38/-, 26×2½ 40/-, 650×65 50/-, 28×3 55/-.

ECONOMIC.—Kempshall anti-skids, 26×2½ 26/6, 28×3 35/-, 28×3 tubes 9/-, butted 10/6.

ECONOMIC.—Dunlop heavy 650×65 3-ribbed clearance covers, 35/-; 26×2¼ 1913 lozenge, 19/6.

ECONOMIC.—Burnett: Special line of these splendid covers, 26×2¼, 26×2⅜, and 26×2½, 17/6 each.

ECONOMIC.—Continental Model de Course, 26×2¼× 2¼ oversize for 26×2¼ 25/-, listed 33/3, new and perfect.

ECONOMIC.—Continental Model de Course, 26×2¼ 20/-, 26×2½ 25/-, steel-studded combination 26× 2¼ 36/-.

ECONOMIC.—Continental heavy rubber-studded 24/6, 650×75 heavy Autobi oversize for 650×65 31/6.

ECONOMIC.—Continental basket pattern, 24×2 15/6, 26×2 16/9, 26×2¼ 19/6, 26×2⅜×2¼ 20/-.

ECONOMIC.—Tubes, 26×2 5/3, 26×2¼ 6/-, 26×2⅜ 6/6, 26×3 butted 7/6, 28×3 9/-.

ECONOMIC.—Re-treading with greatest despatch, 26×1¾, 7/-, 26×2 7/6, 26×2¼ 11/6, 26×2⅜ 12/-, 26×2½ 12/6, 28×2½ 13/6.

ECONOMIC.—Avon 1914 belting, 5/8in. 10d.; Continental, 3/4in. 11d., 7/8in. 1/-, 1in. 1/3, 1 1/8in. 1/4; fasteners free, all belts

ECONOMIC Tyre Co., 137, Lewisham High Rd., New Cross. Special clearance lines. Close 1 Thursday, 8.30 Saturday and other nights. [3523

BASTONE'S.—New clearance covers and tubes as below:

BASTONE'S Present to Purchasers of Goodyear, Continental, Peter Union, and Michelin clearance covers a 3/- repair outfit.

BASTONE'S.—Goodyear rubber-studded covers, 26×2⅜, for 2¼ rims, 23/-, list 40/6.

BASTONE'S.—Michelin covers, B.E., 26×2, 11/-, list 14/9.

BASTONE'S.—Michelin standard heavy covers, 26×2, 16/6, list 29/-; 26×2½ or 650×65, 19/6, list 36/6.

BASTONE'S.—Michelin Semelle steel-studded, 26×2, 22/6, list 37/6; 26×2½ or 650×65, 25/6, list 44/-.

BASTONE'S.—Britannic rubber-studded, 26×2¼, 15/6.

BASTONE'S.—Peter Union heavy covers, 26×2¼, 17/6, list 28/9; 26×2½, 18/6, list 31/6.

BASTONE'S.—Peter Union twin ribbed heavy covers, 24×2¼, 19/6, list 30/3; 26×2, 19/6, list 29/3; 26×2¼, 22/-, list 31/9; 26×2½, 25/-, list 34/3.

BASTONE'S.—Peter Union rubber-studded, heavy, 26×2¼, 26/-, list 36/-; 26×2½, 27/6, list 38/-.

BASTONE'S.—Continental combination 26×2¼ 36/- (list 50/-), 26×2½ 39/6 (list 54/6), 26×3 45/- (list 62/9).

BASTONE'S.—Hutchinson Passenger, 26×2½ 25/-.

BASTONE'S.—New 1915 Michelin covers, beaded, 26×1¾ 11/6, 26×2 14/9, 26×2¼ 16/-, 26×2½ 18/-, 28×2 16/6, 28×2¼ 17/-; also wired edge in stock.

BASTONE'S.—New 1915 Michelin Trident covers, beaded, 26×2 26/6, 26×2¼ 28/6, 26×2½ 31/-.

BASTONE'S.—New 1915 Michelin tubes, 26×1¾ 5/-, 26×2 6/9, 26×2¼ 7/9, 26×2½ 8/6, 28×2 8/9; butted, 26×2 8/6, 26×2¼ 9/6, 26×2½ 10/3, 28×2 10/6, 28×2¼ 11/3.

BASTONE'S.—Guaranteed red tubes, 26×2 4/6, 26×2¼ 4/9, 26×2½ 6/-, 26×3 7/3, 28×2½ 7/3.

BASTONE'S, 228, Pentonville Rd., King's Cross, London, N. [3214

REDUCED 1915 List Tyre, all makes.—T.A.: Tyres. —Graham, Vine St., Birmingham. [0658

A TYRE for your motor cycle at reduced price. Send for list.—Turner's Stores, 182, Railway Approach, Shepherd's Bush, London. [X8468

TWO 26×2½ Palmer Cords, 15/- each; heavy Dunlop, same size, 12/6; two T.T. Hutchinson, 26×2¼, 10/6 each.—Cross, 180, Liverpool Rd., Isliugton. [3417

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ESTABLISHED IN 1903
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UNITED STATES.—The International News Agency, New York. CANADA.—Toronto News Co., Ltd., Toronto; Montreal News Co., Ltd., Montreal; Winnipeg News Co., Winnipeg; British Columbia News Co., Vancouver; Gordon and Gotch, Ltd., 132, Bay St., Toronto.
AUSTRALIA.—Gordon and Gotch, Ltd., Melbourne Victoria, Sydney N.S.W., Brisbane (Queensland), Adelaide (S.A.), Perth (W.A.), and Launceston (Tasmania).
NEW ZEALAND.—Gordon and Gotch, Ltd., Wellington, Auckland, Christchurch, and Dunedin. INDIA.—A. H. Wheeler & Co., Bombay, Allahabad, and Calcutta.
SOUTH AFRICA.—Central News Agency, Ltd. PARIS.—Smith's English Library, 248, Rue Rivoli.

The Budget and Desirable Exemptions.

AT one period of the debate in Parliament last week on the import duties on cars, motor cycles, and accessories, there were indications that the tariff would be removed altogether. As it was, the Chancellor agreed to exempt motor vehicles, chassis, and parts used exclusively for trade purposes—though he did not give a definition—and further intimated that motor tyres should be exempt. The resolution increasing the duty on motor spirit by 3d. per gallon was agreed to. In passing, there was one point in the debate which should not escape the observant. The Chancellor remarked that "the only ground he could see for any opposition to the duties from the point of view of the fiscal controversy was the idea that they would lead to something more in the future. But duties of this kind *could not be continued after the war.*"

There is also another point: It is by no means certain that motor cycles used entirely for business purposes will escape the import duty—rather the reverse, unless our organisations controlling motor cycling lay a strong case before the Chancellor. After all, the growing use of the business motor cycle sidecarrier is directly attributable to the war, *e.g.*, to the wholesale commandeering of tradesmen's horses at the outbreak of hostilities. True the numbers concerned may not in any way compare with business cars and lorries which the Chancellor unquestionably had in mind, but, as the definition has not yet been framed, we sincerely hope that the claims of the smaller tradesmen using sidecarriers will not be overlooked. *The Motor Cycle* is doing its share in drawing the attention of the authorities to these matters, and it is to be hoped that the request may be viewed in a favourable light. Should no concessions be granted in respect of business sidecarriers, there is a fear that the future success of this type of vehicle will be jeopardised, as tradesmen may decide that a four-wheeler costing little more and capable of transporting heavier and more bulky packages is the more preferable of the two. Exemption from import duty would mitigate that possibility to some extent and help tradesmen to economise.

America turns to Lightweights.

SOME months ago we commented upon the fact that our American cousins were a long time giving attention to the lightweight motor bicycle movement, which has attained such a hold in this country. It would appear that our remarks were not altogether ill-timed, for at last month's Chicago Show several specimens of American lightweight motor cycles made their *début*.

Hitherto England alone of all countries manufacturing motor cycles—except Switzerland—has maintained faith in the future of the lightweight motor cycle, and though the lightweight of but six years ago could not compare with a modern mount, it was plain to those who made an intelligent study of the question that in the lightweight we had the motor cycle of the future. Six years have wrought many changes in motor cycle designs, and the developments in connection therewith have been enormous. Firstly, the standardisation of variable speed gears made the really successful lightweight possible, and, latterly, the advent of the two-stroke engine gave the movement an enormous fillip. These developments and improvements in lightweights have been almost entirely confined to this country, and consequently it is some source of gratification to note that manufacturers across the Atlantic, in a land where the opposite type, *i.e.*, the big twin, has always loomed large in the public purview, have at last had to sit up and take notice. The American seal of success has thus been placed upon our home manufacturers' efforts, and it may be taken for granted that the Yankee will make what good use he can of the spade work of the British manufacturer who has made the efficient and successful lightweight solo mount possible.

An index to the advertisements in this issue will be found on the page facing the back cover.

Ladies and the Motor Cycle

Sidecar Passengers.

WE often hear, or perhaps it would be more correct to say have heard in the past, criticisms of the lady driver, but, personally, I imagine a few words to the passenger would not be untimely. How greatly the driver appreciates a sporting passenger, one who willingly takes her share of the responsibilities in any way that is open to her, assumes a little intelligent interest in the unit that drives the outfit, one who doesn't mind helping with a puncture, and isn't horrified if her hands become grimy! We are all more or less familiar with the passenger who fancies she is out for a ride only and is quite helpless and looks injured if called upon to lend a hand. The ideal sidecarist is one who is capable of occasionally making a running start, when the road is on the decline, and whose ear tells her when to step into the sidecar before the exhaust is dropped. However, by the time the passenger has become trained to this extent, she generally decides that she will invest in a machine of her own so that she may do all the driving.

Carrier Riding.

Many are the casualties due to pillion riding reported in the newspapers, but, in spite of the proved folly, the practice seems to be as popular as ever. I have noticed girls who have grown accustomed to this dangerous method of riding appearing perfectly at home with feet dangling and no clutching the driver with their hands, a kind of "familiarity breeding contempt." A few days ago a typical "specimen" passed me doing well over thirty. Some horses emerging from a side road caused the driver to pull up hurriedly. As the brakes were applied the machine developed a wobble, which the driver only just managed to correct. All this time the fair flapper perched on his carrier balanced herself with ease, gazing round at me with a simple smile. Would her expression have been so normal had she not been so blissfully unconscious of the danger of her position?

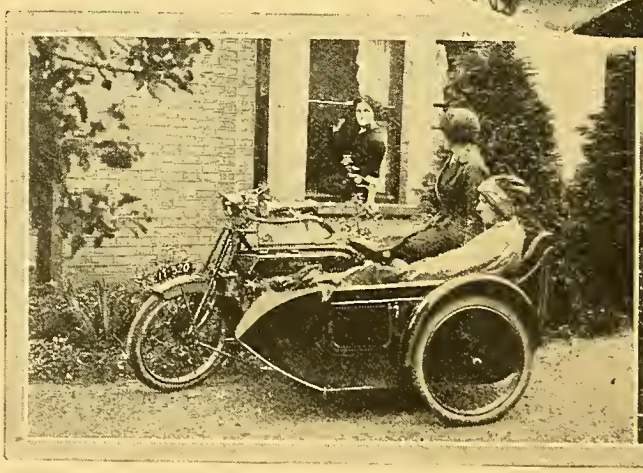
The Rear Light.

I was reading in the motor cycle press that copper tubing was the best thing to carry gas from the head light generator to the rear lamp and so save the tiny back generator. To go one better than this, as being more pliable and neat in appearance, use Bowden cable; this one can easily fit one's self. All that is needed is a few clips to keep the cable in place along the top tube. It is a saving of trouble to have the one generator supplying both front and rear lights.

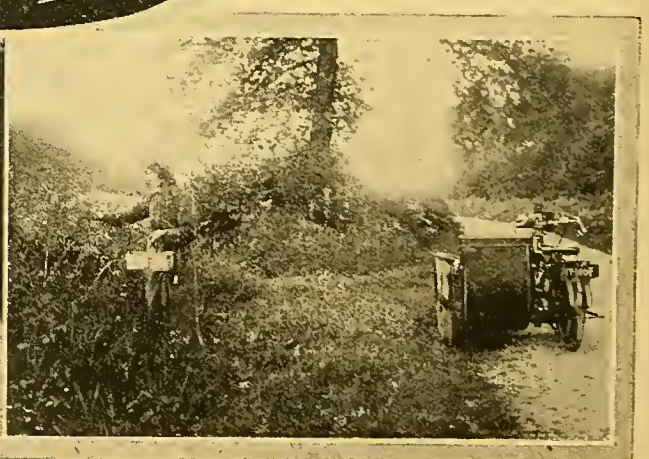
During the present time any woman anxious to find an occupation and having at present no outlet for her energies would probably release a man for the Forces and show her patriotism by taking a post as a driver of a trade car, if she only realised how simplified driving has become, and how rarely one gets into difficulties that are insuperable.

MAY WALKER.

A run to a friend's orchard.



The topic: Is it motor cycles or the abandoned import duties on hats, or both?



Blackberrying with a sidecar outfit

Four-stroking when Starting.

A Junior Triumph owner takes exception to my remark that some "babies" are apt to four-stroke for a few yards when starting off. I ought certainly to have excepted the "petroil" machines from this indictment. The main causes of four-stroking are rich mixture and over-oiling. If a drip-oiled machine is left standing for some time, the oil drains out of the bearings until an excessive amount has collected in the crank case, and consequently four-stroking may occur until the surplus is exhausted; a condition which is seldom present with the petroil system. I have tested this suggestion by draining the crank case of a drip-oiled pattern prior to a cold start; after this attention was paid to it, it ceased to four-stroke when starting.

Man and Machine.

I think we should recognise that perfect locomotion is only possible when a rider and his mount have established a kind of centaur-like sympathy; but, at the same time, we should distinguish between the sympathy which a rider can establish between himself and a sentient mount (*e.g.*, a horse) and between himself and a mechanical mount (*e.g.*, a motor car or cycle). The horse responds by comprehending its master's wishes and riding tricks; in other words, the sympathy is mutual where the mount is sentient. With a mechanical mount the word "sympathy" is hardly accurate, and the idea of "control" is more accurate. A really deft manipulator can get the most uncanny results out of a non-sentient instrument. Just as first class golf or billiard or cricket players can, in common parlance, almost make a mashie or a cue or a ball "talk," so a crack motor cyclist can perform miracles with his machine. But the process is entirely one-sided. It is, surely, all a matter of muscular dexterity and intellectual comprehension of possibilities on the part of the controller. I quite expect to be told by somebody that an Indian, a Triumph, and a Levis each has a different "aura," and that "aura" can be seen by the psychic expert, or even photographed with a suitable screen; but I shall remain frankly sceptical. The alleged relationship is a matter of personal dexterity.

Four-stroke Lightweights.

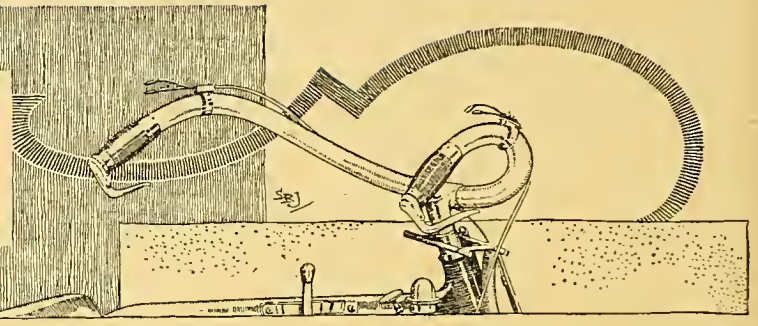
I was profoundly interested in "Road Rider's" description of the 23¼ lb. engine which he saw at the A.B.C. works. Readers may remember that this Lilliputian power unit was a horizontally-opposed twin-cylinder of 250 c.c. capacity, with steel cylinders and steel pistons, and mechanical lubrication, developing over 4 b.h.p. It has been developed purely in response to a demand for a small engine to act as starter to the huge engines of 200 h.p. and over, employed in so many branches of war service; but it is perfectly obvious that it is admirably adapted for fitting to a lightweight motor cycle. In fact, it might open the door for wee four-strokes to become very formidable rivals of the two-stroke in this sphere. The average baby two-stroke still scales nearer 150 lb. than 100 lb., and some of them exceed that figure; they are of the low efficiency type, and they are more prone to engine vibration than the little twin in question. There is no question but that the novelty of the two-stroke has temporarily arrested the development of miniature four-strokes, in which field there has been nothing to compete with the single-cylinder, and the average 200-250 c.c. four-stroke single has never had as much thought and labour lavished upon it as its bigger sisters have enjoyed. A new prospect is opened, viz., that after the war we may see the development of a new type of machine, roughly resembling a Douglas, but on cheaper and lighter lines. These machines will be of comparatively high efficiency, as contrasted with existing two-stroke types, and may eventually blossom into the genuine 100 lb. fast touring machines of which imaginative prophets have often dreamed.

Foot Ease.

I fancy this cross-heading is the registered slogan of a leading firm of boot manufacturers, and trust they will be lenient with me for borrowing it. The discomfort of cycle pedals when used as footrests is that, though they provide a varying range of sole-angles, they do not afford a sufficiently rigid support for the feet, and they are generally set so far back that the rider permanently assumes the posture of a man who is trying to decide whether an object in the road is a halfpenny or a washer. Both my present machines are fitted with footboards, and I find them uncomfortable; in one case one end of the boards is sprung; in the other both ends are rigid. They afford a varying range of leg angles, and a practically rigid foot support. I ascribe their discomfort to the fact that they offer no change of sole angle, and that there is nothing for the instep to catch on, so that the feet slide about on the boards. I have yet to discover anything so comfortable as a couple of pairs of rigid, unsprung footrests, which give a hold for the instep, a change of posture for the thighs, a rigid something to push against, and a change of sole-angle. Why machines *de luxe* nearly always have these most unluxurious boards is one of those things which no one can understand. I once had a machine—a Bat—with a pair of sprung rests and a pair of rigid rests; and as the sprung rests were interconnected with the sprung saddle pin, this combination is perhaps the best of all; but I did not get the full benefit of it till I added the extra pair of rigid rests, which did not figure in the Bat specification, but struck me as essential, in that occasional changes of position are most desirable. In the meantime I do not want any more footboards, though a pair of loose heel plates, to be screwed into the boards after purchase at the rider's discretion, would improve this system enormously.

Transmission Shock Absorbers.

A REVIEW OF CURRENT PRACTICE.



IT has been observed, and those who have ridden machines of early pattern will not dispute the statement, that the single-cylinder petrol engine imparts its power in a series of short, sharp jerks. This irregular motion is not, of course, so great in the properly balanced engines of to-day as it was in the engines of ten years ago, but, nevertheless, it is sufficiently pronounced at low speeds to upset the comfort of the rider unless the transmission be elastic enough to absorb the shock of the explosion strokes.

Not very many years ago it was quite generally believed that chain drives were unsuitable for motor cycle transmission, for the reason that a steel chain could not transmit the engine power to the back wheel without transmitting with it each individual impulse of the engine, which meant, of course, that the machine, instead of gliding forward as though driven by an electric motor, progressed in a series of bounds, each bound taking life out of the tyre, chains, and engine. It became obvious, therefore, that if the chain drive were to come to anything the power must be conveyed through some device that would absorb the sudden kick of the power stroke, and impart a smooth, steady torque to the rear wheel.

The efficiency of the various devices that have since been produced is amply proved by the sweet running of the present day chain-driven single, for every touring machine of this type is fitted with a transmission shock absorber of some kind. On this device largely depends the comfort of the rider, the machine's powers of acceleration and hill-climbing, the life of tyres, chains, and engine. Considering, then, that the transmission shock absorber is of such vital importance that it has brought about the complete success of the chain-driven "big single," it is somewhat surprising that many riders are not even aware that such a device is incorporated in the driving mechanism of their machines.

Various Devices Used.

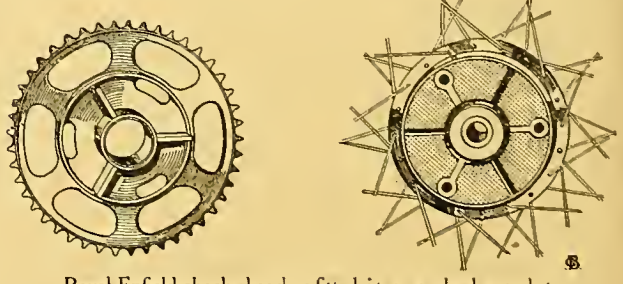
It is interesting to note the different lines on which manufacturers have worked with regard to transmission shock absorbers. The two most popular devices in use are probably the friction type, which permits a certain amount of slip to take place when sudden strains are thrown upon the chains, and the "cushion drive," which damps the impulse of the engine by means of yielding pads contained in one of the sprockets. The former is generally used in connection with single-cylinder machines, and the latter in connection with twins. In the case of the chain-cum-belt drive, the belt is sufficiently elastic to answer the purpose, and one or two machines depend solely on the clutch.

The transmission shock absorber has not reached its present stage of simplicity without experiment. Many elaborate schemes have failed in practice through their possessing the desired property of elasticity to too great an extent. Such devices were found to absorb the engine and road shock admirably, but, owing to their recoil, the machine now progressed in a series of elastic bounds, even less pleasant for the rider than the solitary snatch of the solid drive. Then in the case of the friction device difficulty was experienced in obtaining a construction which would keep its very fine adjustment with any degree of permanency, since the friction surfaces and locking arrangements were bound to become smothered in oil at intervals; in each case, therefore, it was necessary to compromise, to strike a delicate medium, and the present-day shock absorber, which seldom or never requires attention, called for more thought from the designer than we are apt to suppose.

Since the thrust really comes from the road, and not from the engine at all, the shock absorber should theoretically, be contained in the rear wheel hub, but in practice it is usually placed on the engine sprocket. Most manufacturers are agreed, however, that a device of large dimensions, contained either in the rear wheel sprocket or in the countershaft sprocket, is the right idea.

The Royal Enfield Cush-drive Hub.

The Royal Enfield device may be taken as an example of the cushion drive type of shock absorber. This is a device of large dimensions, contained in the rear



Royal Enfield shock absorber fitted in rear wheel sprocket.

sprocket. For convenience this sprocket may be described as consisting of two portions, the driving member, which carries the chain, and the driven member, which is solid with the road wheel.

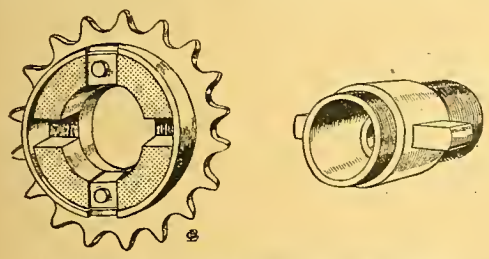
Transmission Shock Absorbers.—

The driving member, carrying the chain, is a circular flange, from the inner face of which protrude three metal vanes, set radially; and the driven member consists of a drum, of the same size, the interior of which is divided into three chambers by corresponding metal vanes. Each chamber contains two rubber pads, between which the vanes of the driving member fit when the two parts are engaged.

It will be seen, therefore, that the drive is transmitted from the vanes of the driving member, through the rubber pads, to the vanes of the driven member, and it can be readily realised that this complete insulation between the chains and the road wheel has a decidedly softening effect on the drive. With a well-balanced twin it is not so much a matter of absorbing "snag" from the engine as it is of smoothing out the little jerks transmitted from the road wheel. The Enfield machines are also provided with a friction sprocket on the engine-shaft, in which the two sprockets are carried between steel flanges capable of sliding but not of rotating upon the engine-shaft, and gripped by twelve small springs, as well as a slipping clutch.

Lea-Francis.

The Lea-Francis machines are fitted with a cushioning device. On the engine-shaft is mounted a boss, on either side of which is a rectangular protrusion or metal vane. The chain sprocket is loosely mounted on the boss, and through it extend two rivets, which carry square shoulder pieces. Thus the interior of the chain sprocket is divided into two compartments, and each compartment contains two rubber blocks, between



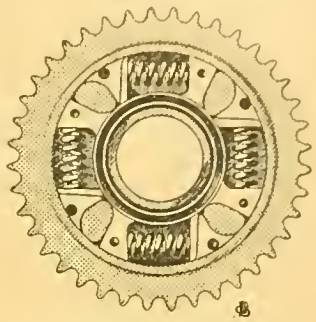
Transmission shock absorber fitted to engine-shaft of the Lea-Francis.

which fit the metal vanes on the boss of the engine-shaft. Whatever the motion of the engine, therefore, it is conveyed to the chains through the rubber blocks, while, similarly, any jar thrown on the chains by the road wheel is softened by the pads before reaching the engine bearings. The whole device is held firmly together by a large sized nut on the end of the boss.

With these small and perfectly balanced twin-cylinder machines, however, designed primarily for solo use, anything in the way of transmission shock absorbers may be regarded as a refinement rather than a necessity. Their function is not so much to absorb the impulse of the power stroke as to add to the life of the engine by softening down the drive.

Humber.

On the big twin-cylinder Humber machines the refinement is taken one step further, and here we find a luxurious machine fitted with a shock absorbing device which contains both rubber pads and steel springs. In most cases springs taking the direct load of the engine have proved unsatisfactory, since the constant tension and relaxation tend to destroy their temper; but the Humber device is sufficiently large to permit the use of springs of considerable strength. The mechanism is contained in the rear wheel sprocket, as in the case of the Enfield. In conjunction with the foregoing explanations, the accompanying illustration is self-explanatory. The beautiful workmanship embodied in this device, together also with ingenuity of design, goes to prove that the Humber Co., at any rate, do not under-estimate the importance of an effective transmission shock absorber.



Shock-absorbing device fitted to the rear wheel sprocket of Humber machines.

Sunbeam.

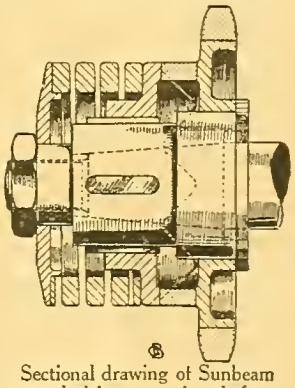
The Sunbeam machines are fitted with an original device worthy of a luxurious transmission system, and, though this arrangement has already been described in these pages, a brief outline as to its construction may not be out of place.

The Sunbeam device is neither a cushion shock absorber nor a friction drive, but to some extent it combines the merits of both. The sweet running of the 3½ h.p. Sunbeam machines is sufficient proof as to its working value.

The sprocket wheel runs loosely on a centre piece, which is keyed fast to the engine-shaft. On the side of the sprocket wheel is a series of angular projections. These projections engage with similar projections on the driving piece, which is free to slide endwise on the centre piece, but which is prevented from turning thereon by four keys.

The ratchets, or angular projections, on the two members are kept engaged by a strong coil spring, the tension of which can be adjusted by means of a nut on the end of the engine-shaft.

Since the sprocket is free on the shaft, and the member that engages it is keyed thereto, it will be seen that the tendency of the drive is to disengage the angular projections against the pressure of the spring, the keyed member sliding outwards on its four keyways, but never completely disengaging.



Sectional drawing of Sunbeam cush drive on engine shaft.

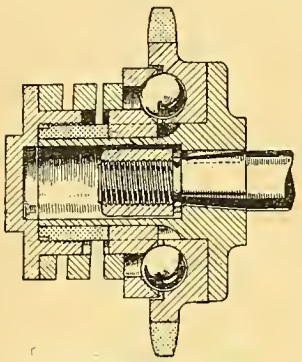
The device is set by the testers before the machine leaves the works, and if necessary seldom requires attention.

Rex.

The Rex device comes under the same category, but is very different in construction. The sprocket is

Transmission Shock Absorbers.—

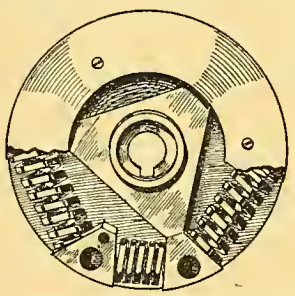
mounted on a boss keyed to the engine-shaft, and is free to revolve thereon. Next to the sprocket is mounted a sliding piece, from which the drive is conveyed to the sprocket by means of balls which fit half in the sprocket and half in the sliding piece. This piece, which is, of course, keyed to the boss, though free to move outwards, is held in position by a strong coil spring. When a shock takes place the balls ride outwards in one direction or the other, and in so doing they force the sliding piece outwards against the pressure of the spring.



Spring drive fitted to engine-shaft of Rex machines.

B.S.A.

The device used on the chain-driven model of the B.S.A. is attached to the engine-shaft. The sprocket contains six strong springs, through three of which any strain between the engine and the chains is passed. The springs are kept in position under all tensions by a retaining cap. It will be noticed that the springs are so arranged that the forward thrust of the engine is taken up by the three longer springs, the three shorter ones absorbing the lesser shocks which fall in the opposite direction.



B.S.A. spring drive fitted to engine-shaft of chain-driven models.

Friction Shock Absorbers.

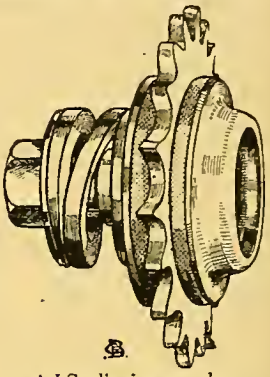
Coming now to the friction type of transmission shock absorbers, we find that these vary little in points of construction. As already stated, their object is to allow a certain amount of slip when any considerable shock falls upon the chains.

The slight slip that occurs at low speeds or with a heavy load eases the engine very considerably, and, when the device is properly set, the machine will ascend hills with ease which would cause it to labour were the adjustment too keen. It is only when slip is excessive that any loss of power occurs, and the proper adjustment is not difficult to obtain.

A.J.S.

The shock absorber used on the 2¾ h.p. A.J.S. machines is placed on the engine-shaft and consists of a steel boss carrying two fibre plates. Between these the sprocket is free to revolve, and pressure is maintained between them by means of springs, the tension of which can be adjusted as necessary.

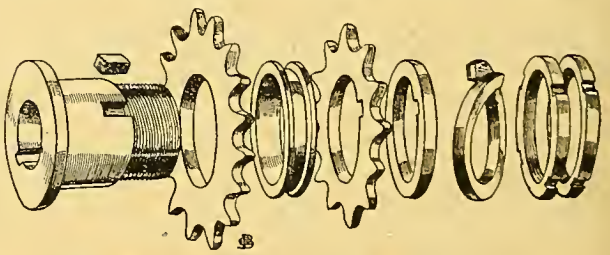
In the case of the twin-cylinder A.J.S. machines, which were sometimes ridden solo and sometimes with sidecar, it was found that the slipping device was not sufficiently necessary to warrant the trouble of setting it to the load when even a sidecar was attached, and, since 1912, these excellent machines have been fitted with solid transmission. The makers advise their riders to ease the clutch should any suggestion of snag be felt at low speeds.



A.J.S. slipping sprocket.

Phelon and Moore.

The Phelon and Moore device is very similar. It will be recalled that two sprockets are mounted on the engine-shaft. The low gear sprocket is keyed to the boss mounted on the engine-shaft, but the high gear sprocket is free to revolve thereon. The drive is maintained through a large spring washer placed between the high gear sprocket and the two lock nuts on the end of the boss, the high gear sprocket thus being firmly held between the washer and the low gear sprocket. By tightening up the lock nuts any amount of pressure can be brought to bear on the sides of this sprocket, which is thus prevented from revolving freely in the boss,



Component parts of P. and M. slipping sprocket.

while, by loosening the lock nuts, the tension of the spring washer is released till finally the sprocket would revolve quite freely.

In the case of the P. and M. machines a solid drive is permitted on low gear, for with the engine revolving at speed no suggestion of snag takes place.

Care and Adjustment of Shock Absorbers.

So far as practical use is concerned, the main points of difference between the friction types of shock absorbers and the other types here described lie in the fact that, while the former may require occasional adjustment and periodical lubrication, the latter are permanently fixed and need no attention whatever from the private owner. Cush drives, for instance, need not be interfered with, while devices on the lines of the Rex and the Sunbeam obtain sufficient lubricant from the engine bearing, and unless the drive is found to be harsh they are best left alone.

Friction shock absorbers, on the lines of the A.J.S. and P. and M., on the other hand, require a little attention if the transmission is to be kept in perfect order. They should be oiled periodically, and to obtain proper adjustment the machine should be jacked up on the stand and the lock nuts slackened off till, by gripping the tyre and jerking the engine against compression, slip begins to occur. Then give the lock nuts another quarter turn, and it will probably

Transmission Shock Absorbers.—

be found that no slip is perceptible when the engine is thrown over compression. This should give the proper adjustment, but a road test is usually desirable. If the adjustment is still too slack the engine will be felt to race at regular intervals on hills or when running on full throttle.

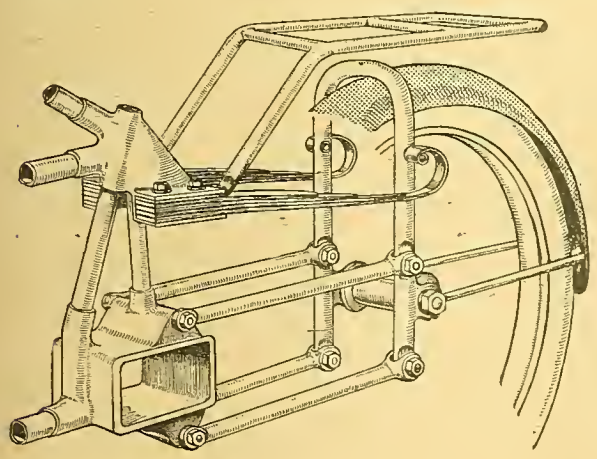
It is best to make this adjustment with the device thoroughly lubricated, otherwise an overdose of oil will cause it to slip.

Hard and fast rules cannot be laid down, and it is always the wisest plan to consult the makers if in doubt on any point concerning adjustment and lubrication. Do not, however, continue to ride your machine with the shock absorber wrongly adjusted. The engine and whole transmission system are bound to suffer. It is no uncommon thing to find machines fitted with adjustable shock absorbers being used with this device screwed up solid, while the owner comments upon the harshness of the chain drive! H.M.B

More Rear Springing Systems.

A Parallel Ruler Movement.

STILL another system of springing the rear portion of a motor cycle frame has been brought to our notice by Mr. E. F. de Burgh Greenwood, of 316, Chester Road, Lower Bebington, Cheshire. This system is illustrated in the accompanying drawing, and it will be seen that it works on the principle of a parallel rule, the two radius forks being so pivoted that the driving centre and driven centre are always nearly equidistant, thus avoiding binding of the transmission. Leaf springs are provided to govern the action of the vertical member, and these, together with the carrier, are anchored to brackets cast integral with the top lug and extended to a rear vertical member which carries the back wheel. Built into the countershaft of this machine is a machined casing, designed to accommodate the gear box. Integral with this casting are two housings for the bearings of the radius forks, and so arranged that one is above and the other below the driving centre in a vertical plane.



De Burgh Greenwood spring frame design.

The advantages claimed by the designer of this frame are:

(1.) Minimum unsprung weight.

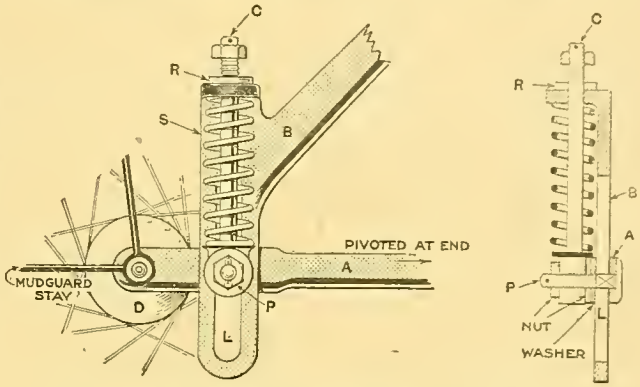
(2.) Even transmission running under ideal conditions, as oiltight chain cases may be fitted in a very simple manner.

(3.) Stability—preventing rolling.

(4.) Increased comfort for the driver, and decreased wear and tear of machine.

An Attempt at Simplicity.

A simple, though not very novel, method of rear springing has been sent to us by F.L. (Sheerness). The rear forks terminate in a specially formed lug containing a curved slot (this curve must be part



A. Chain stays carrying back wheel.
B. Rear forks, ending in specially shaped lug.
C. Bolt for recoil.
D. Back wheel hub.
L. Curved slot in which pin slides.
P. Sliding pin attached to A and carrying bolt C.
R. Rubber block to check rebound.
S. Spiral spring in compression.

of the circle of which the hinged chain stays form the radius, this stay being pivoted at the forward end). Through this slot passes a pin P which fits into a square in the chain stay A, flattened at this point for the purpose. A washer and nut are then placed over the pin and tightened sufficiently to allow of easy movement in the slot; the end of the bolt C is now put into position and secured with a nut and split pin. The chain stays carrying the pin and bolt are now free to rise and fall in the slot L against the pressure of the spring S, rubber blocks R being placed at the top of the lugs to check the rebound.

In the latest lighting order affecting the London district recently issued by the Home Office the sole paragraphs which are of interest to motorists are the following: The use of powerful lamps on motor and other vehicles is prohibited. (*a*) An hour after sunset all vehicles, including bicycles and handcarts, must display to the front a white light visible for a reasonable distance (if only one lamp is provided it must be placed on the off side); (*b*) to the rear a red light visible for a reasonable distance (if only one lamp is provided for this purpose it must be placed on the off side, and in such a position that the red light is visible from a central point immediately behind the vehicle).

THE 7 h.p. AMERICAN EXCELSIOR.

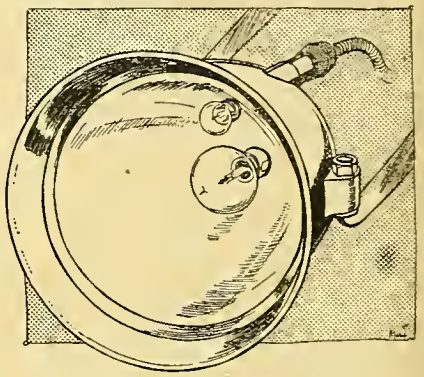
Three-speed Countershaft Gear. Double-controlled Clutch. Two Rear Brakes. Impressions after a Road Test of the Latest Model.

A YEAR or two ago English people were accustomed, and with a good deal of justifiable pride, to consider that the few makes of American motor cycles were a good deal behind the British in point of design and construction, and, with a few exceptions, that the Yankee machine was not worth serious consideration. A little later devotees to English machines began to notice that the American two-wheelers were being built on more scientific lines, the engines were more like English power units, frames were more logical, saddles more comfortable; in short, the Yankees were complimenting us by the adoption of our own ideas and inventions. Now the war has brought about the almost complete collapse of trade in freshly-designed motor cycles, and, more important still, of the total cessation of that all-important co-operation between the manufacturer and the man who brings out the latest ideas. The makers of the latest Excelsior are pronouncedly pro-English in designing their new model, for in quite few details does it show anything of the Yankee touch, excepting perhaps the twist-grip handle-bar controls, and it is evident from the closest inspection that the machine has been built with an idea to durability and good service, instead of the flash "one-year 'bus" that so often hails from the American factories. Hence the writer's conviction that this new type of American machine will sooner or later make a great impression upon private buyers in this country.

Comfort and Silence.

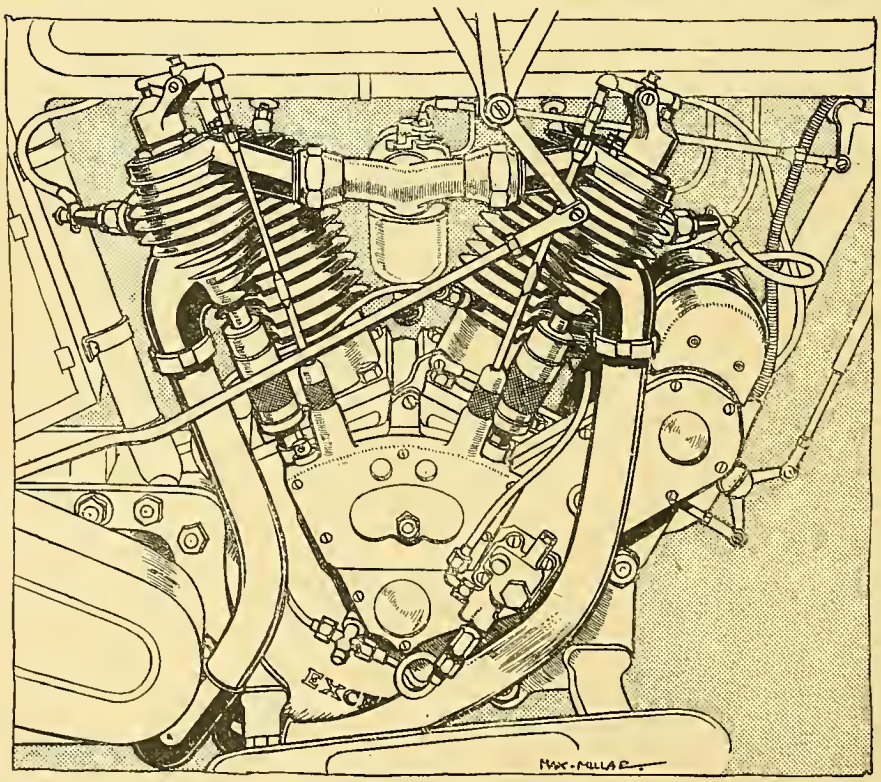
The first impression when riding an Excelsior (solo) is that it is a very comfortable machine to ride. That is to say, the eye is not taken from objects ahead to pot-holes immediately beneath, and one can take a road of the nobbliest sort at 30 m.p.h. without feeling it in one's spine or wrists. This is primarily due to the 3in. tyres, excellent spring forks and saddle, and it is further added to by the handle-bar grips, saddle, and footboards being in their correct position.

The next point is that the engine possesses as much flexibility as power, which further adds to comfort in driving, and it is remarkably silent in running at all speeds, a peculiarity and a virtue of many American engines, which may largely be due, in this case, to the enclosed valve springs. One of the features of this engine lies in the positive feed oil pump, which delivers oil *under high pressure* to the big end bearings as well as direct to the front cylinder, clutch, and gear box. The attention given by the designers of the Excelsior engine in this direction indicates that the Americans are tackling the problem of lubrication in a very thorough manner, and that all responsibility for the welfare of the engine is being taken off the motor cyclist's shoulders when riding. We noticed no sign of vibration with the engine unless travelling at well over 40 m.p.h., and then it so little obtruded itself that it excited no worry. The Schebler carburetter does its work well, and for ordinary conditions is a thoroughly satisfactory automatic carburetter, but we fancy that the fads of home riders would soon take effect in having an extra air attachment fitted



The Excelsior twin-bulb head light.

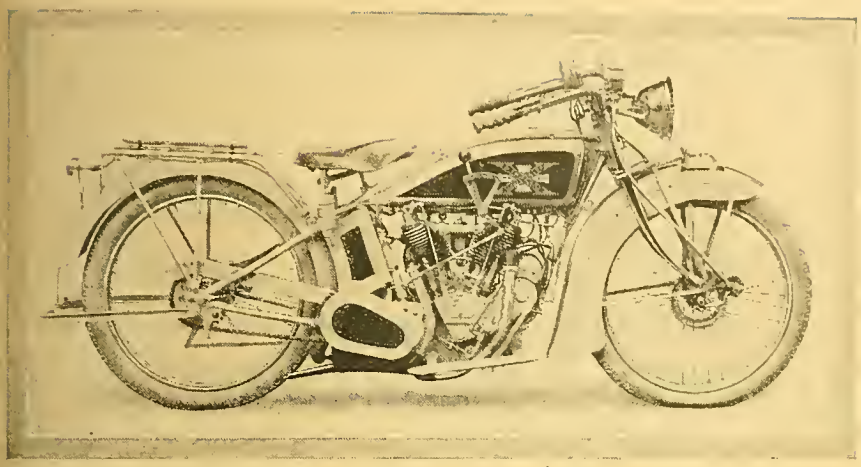
for operation from the handle-bar. This carburetter is remarkably easy to adjust with a view to economy in consumption owing to the variable jet arrangement. Needle valves are fitted to the petrol and oil feed systems, and the unions used on the pipes are equal to those fitted to English machines in point of size and strength.



The power unit of the 7 h.p. American Excelsior.

The Gear Box and Clutch Control.

The ratios of the Excelsior three-speed gear box seem a trifle on the high side for sidecar work in extremely hilly country, being 8⅞ to 1, 6¼ to 1, and 3⅜ to 1 top gear; but, on the other hand, the engine has a very large reserve of power. For abnormal conditions, however, a smaller countershaft sprocket should be obtainable in order to lower the transmission ratios all round. The multiple-disc clutch and gear box seem a sound piece of work on this machine, and, being mounted in a slotted cradle immediately at the rear of the engine, adjustment of the chain transmission is quite an easy matter. It should be noted here that the lubrication of both gear box and clutch is quite automatic, this work being carried out by the forced feed pump on the engine. The operation of the gears is through a substantial car type lever and quadrant on the right-hand side of the tank, in the right position for comfortable handling. The clutch is inter-controllable with the hand and foot, which reduces immensely the labour of dodging in and out of traffic, the control by hand being by the left twist grip, and with the left pedal for the foot. The arrangements of the controls and the comfortable position in which one sits on the machine make it more like driving a car than a cycle,



The 7 h.p. Excelsior, with complete electrical equipment.

particularly in regard to the absence of small control levers. Furthermore, the 3in. tyres fitted to the Excelsior, and the comparatively long wheelbase, make solo riding a pleasure, and, contrary to general impression, we noticed no roll with the large tyres, and the steering could often be taken for considerable distances with "hands off." The latest model has a very pronounced "drop" in the rear part of the frame, consequently the saddle is low, although the wheels are 28in. in diameter. A very excellent device, adding to the all-round comfortable riding of this machine, is adopted in spring-loading the saddle pillar in the frame, which, although an old "gadget" in England, does not seem to be as popular as it should be. Incidentally, the saddle is well padded, and its supporting springs are enclosed in little cases in much the same manner as with car shock absorbers. A feature which again shows that this machine is up to date in design is revealed in the "knock-out" axles, thus allowing both wheels to be quickly removed whilst on the road. The rear wheel hub is extraordinarily massive in size, the centres of the ball races being singularly wide, and the external contracting and internal expanding brakes at the rear again show evidence of the machine being designed for serious work.

The Electrical Outfit.

As with other American types of machines, electric lighting is regarded as more or less standard equipment with the Excelsior, and it is carried out in a very neat manner as regards the wiring and attachment of lamps and horn, etc. The accumulator is carried in a metal case beneath the saddle and is kept charged by a combined Splitdorf magneto and dynamo, which takes up a very small amount of space immediately in front of the engine, and is, at the same time, most accessible. The head light has two bulbs, for either town or country work, and the whole of the wiring is carried in flexible metal sheathing, held by neat little clips to the various parts of the machine. The charging of the accumulator by the mag-dynamo is entirely automatic, and it is only necessary to inspect occasionally the acid in the accumulator. Needless to say, one has only to use this form of illumination for a short period to appreciate its qualities of cleanliness and ease of handling. The tool equipment is carried in a metal case at the side of the accumulator; but we fancy that a pannier bag as an extra would be acceptable, there being plenty of room for it at the rear.

Finally, we should say that the machine, although fairly heavy, is most docile for traffic work, and the throttle can be slammed open without any stuttering of the engine or hesitation. The kick-starter is on the left-hand side of the machine, and the heel arm folds away when the machine is running. The Excelsior machines are produced in two models for this country, the standard three-speed, and the *modèle de luxe*, with the Splitdorf combination lighting and ignition system, lamps, electric horn, and speedometer. Both are chain-driven throughout. Our trial of the Excelsior was arranged by the sole concessionnaires, Messrs. Harris and Sons, 10-12, Great Chapel St., Oxford St., London, W.

Miss Minnie Tulley a professional rider of the American Excelsior, well known at Brooklands

CONDITION OF MAIN ROADS OF KENT.

(1.) WATLING STREET (London-Rochester-Canterbury-Dover).—*London-Chatham* always tram-ridden and crowded. The stretch from *Gravesend* to *Chatham* is in an appalling condition, and should be avoided at all costs by going *via* Singlewell and Cobham Woods (the original Roman road), which is narrow but of good surface and very pretty, and only two or three miles longer. *Chatham-Canterbury* mostly very pot-holey and bad. Boughton Street Hill has the surface quite broken up by war traffic, and the road is particularly bad from here to Canterbury. *Canterbury-Dover* quite good.

(2.) LONDON - WROTHAM - MAIDSTONE-ASHFORD-FOLKESTONE-DOVER.—This road from *London* to *Lenham* is for the most part very pot-holey, and much worse than last year, but there are no dangerously bad stretches, and it is quiet and free from traffic. *Lenham* to *Charing* is good. *Charing* to *Ashford* good. *Ashford-Folkestone* loose and bad in many places between Ashford and Blythe, and extremely bad—continuous motor 'bus "wave formation"—between Blythe and Folkestone. This latter stretch has been marked in the A.A. maps as a war-destroyed road to be avoided; as a matter of fact it was as bad last year, and it is due to motor 'bus activities. *Folkestone* to *Dover* very bad; spoilt in the last few weeks by R.N.A.S. traffic to the airship sheds on it. The best route from Dover to London is *via* Canterbury-Charing-Maidstone, and this should be adhered to even when going to Gravesend. Dover-Folkestone-Ashford should be avoided.

(3.) MAIDSTONE - SEVENOAKS - REDHILL-DORKING.—Condition very fair; better on the whole than other roads described.

Of smaller routes—*Dover-Sandwich* good for these times; *Dover-Deal* good for these times; *Sandwich-Ramsgate-Margate* pot-holey and getting worse; *Canterbury-Sandwich* good: *Canterbury-Ramsgate-Margate* fair.

To sum up, avoid, wherever possible, Gravesend-Chatham, Faversham-Canterbury, Blythe-Folkestone, Folkestone-Dover, Maidstone-Lenham.

NEW MODELS

· MANUFACTURERS' PROGRAMMES FOR 1916 ·

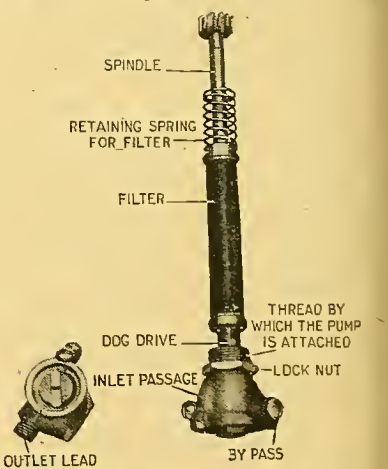
THE LATEST 4 h.p. DOUGLAS.

Improvements in the Lubrication System and Silencing Arrangements.

IN many factories experimental work has been completely dropped, alterations to existing models have been but few—1916 can hold forth little prospect of radical changes or, indeed, even alteration to minor details. Of course, there are exceptions to every rule, and anyone privileged to see the interior of Messrs. Douglas Bros.' experimental department would receive ocular proof that if many firms were content to rest on their laurels, amongst them could not be included the name of Douglas.

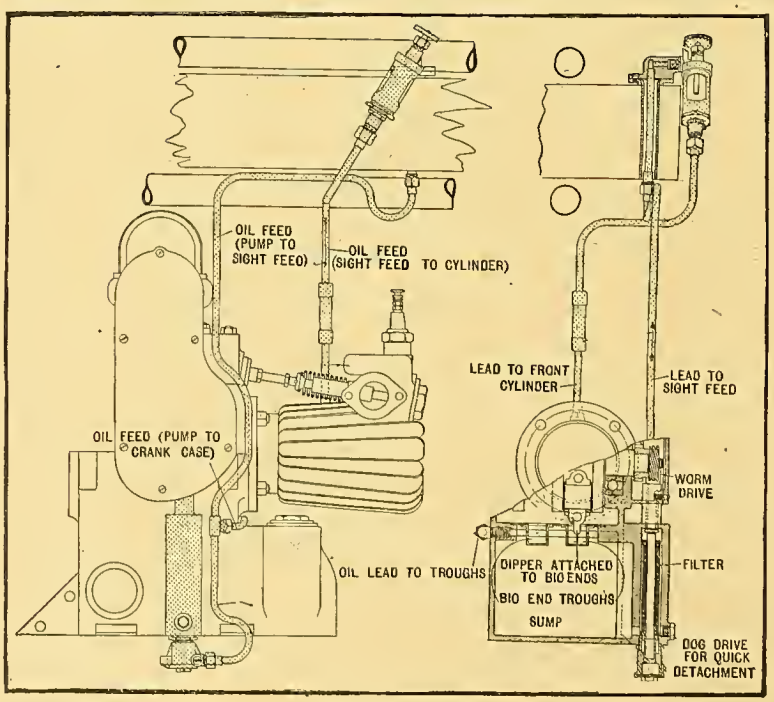
A critical eye would pause on the very latest production in sidecar outfits for the War Office. Here a sight feed lubricator on the tank would cause surprise to those who know the standard practice to be quite mechanical. In the new system, the Archimedean screw has been replaced by a rotary pump driven by a worm off the crankshaft. Three and a half pints of oil are carried, as previously, in the crank case sump, and, as will be clearly seen in the accompanying sketch, the oil passes by a duct through the gauze filter to the rotary pump, which is quickly detached by undoing the oil pipe union and unscrewing the pump base checknut and thread. From this pump the oil is conveyed by an outlet pipe to the junction union, where the oil is at liberty to take two paths. One lead distributes and maintains a constant level in two troughs, into which big end dippers of pre-determined area operate, thus securing by splash the exact amount of oil required by the rear cylinder. It will be seen from the following that no matter what the speed of the engine is the level in this trough is constant, the overflow returning to the sump while the pump delivers such a volume as to overflow the troughs at the lowest possible engine speed. Thus automatically the supply is governed to the back cylinder and other internal bearings.

The other pipe from the junction union leads to the tank, where the oil passes, still under pressure, to the sight feed. This latter is conveniently situated for adjustment from the saddle. Leaving the sight feed, the oil is conveyed direct to the front cylinder, the surplus returning to the sump, where a glass gauge enables the rider to ascertain the oil level at a glance. Circulating as it does through such a length of piping, the oil is effectively cooled during each operation, and, consequently, the sump remains at quite a normal temperature even after a non-stop run of a hundred miles (sufficient oil is carried in the sump for at least three hundred miles), and it is just this little point that has increased



The new rotary oil pump fitted to W.D. 4 h.p. Douglases.

the output of this already powerful engine by nearly 2 h.p. The 4 h.p. Douglas has, we are informed, already climbed Porlock, Lynton, and Beggar's Roost in its stride, and, in fact, a standard sidecar outfit averaged twenty-eight miles per hour from Bristol to the top of the last-mentioned hill, absolutely non-stop.

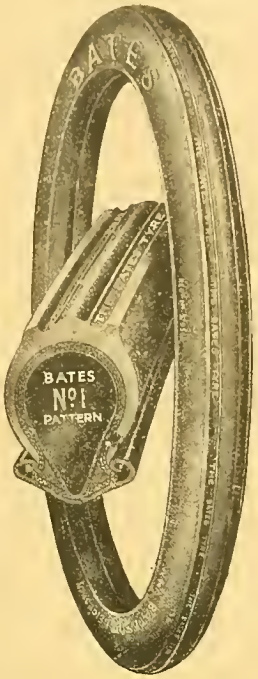


Lubrication system on the latest 4 h.p. Douglas supplied to the War Office.

Silence.

Like the oiling system, the silencer has been entirely redesigned. Long pipes 1¼in. diameter are now led from each cylinder to the rear of the machine, where they converge into a single pipe 1⅝in. diameter, which conveys the gases to a large barrel silencer running towards the rear, and a neat extension pipe completes the design, making an efficient and really silent silencer. Great attention has been bestowed upon the internal details of the engine; the valve mechanism has been further silenced and improved by the introduction of rollers in the tappets. The exhaust valve lifting mechanism is of a new type, and it is now possible to replace a Bowden control in a few minutes with only the aid of a small spanner. The pistons are

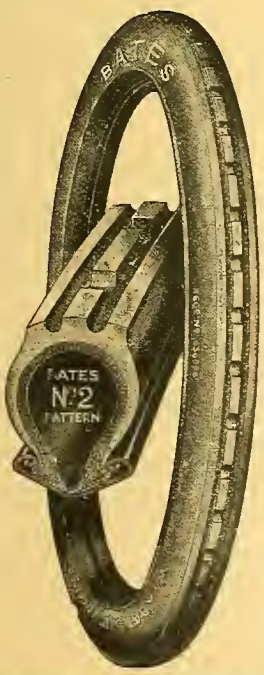
"The tyre of no regrets."



THIS happy phrase applies equally to the Bates No. 2 and the Bates Wyvern. Both, with the Bates No. 1, represent tyre economy in its true sense, inasmuch that, reckoning the cost per mile as real tyre value, Bates built are the cheapest on the market.

Decide upon Bates built—and kill tyre-trouble for good. Bates will give you more speed, more comfort, most mileage—at least expense.

Booklet and Prices on request.



Bates SUPER RUBBER. Tyres

W. & A. BATES, LIMITED,
St. Mary's Mills, - LEICESTER.
Depots: - - - London. Glasgow, and Newcastle.

Colonial Wholesale Stockholders:
Smith, Denham and Co., Hendersons Buildings, Von Brandis Street, Johannesburg, S.A. Childs, Parr, and Joseph, Nairobi, British East Africa. David F. Laing, 9, Weld Road, Kuala Lumpur, F.M.S. Cycle and Motor Supplies, Ltd., Farish Street, Wellington, N.Z. Cornell Ltd., 122, 124, Pirie Street, and 29, 31, and 33, Hyde Street, Adelaide, South Australia. A. G. Healing and Co., Ltd., 354-356, Post Office Place West, Melbourne, Australia. Bennett and Barkell, Castlereagh Street, Sydney, Australia.

REGISTERED TRADE-MARK.

NEW-HUDSON MOTOR CYCLES.

Enduring Satisfaction is only derived from the Motor Cycle which is produced in a factory where expert knowledge, thoroughness, and perfect organisation prevail.

Comfort, Convenience, and restful enjoyment of Motor Cycling depend upon the skill of the designer and the scientific selection of material no less than on the care of the builder.

The New-Hudson combines these qualities in a degree unequalled. Once you own a New-Hudson Motor Cycle, you will not be satisfied with any other.

The Name is a guarantee of that reliability for which New-Hudsons are famous both in peace and war.

A French despatch rider writes:

"My New-Hudson has proved reliable, efficient, and easy to manipulate riding over mountain passes and soaked roads. It is the only machine in this division which has withstood the heavy demands."

New Models and Catalogue for 1916 will be ready in January next, and we invite enquiries for next season's deliveries

THE NEW HUDSON CYCLE CO., LTD., Parade Mills, Birmingham.

London - - - - 43-45. Gray's Inn Road, Holborn.

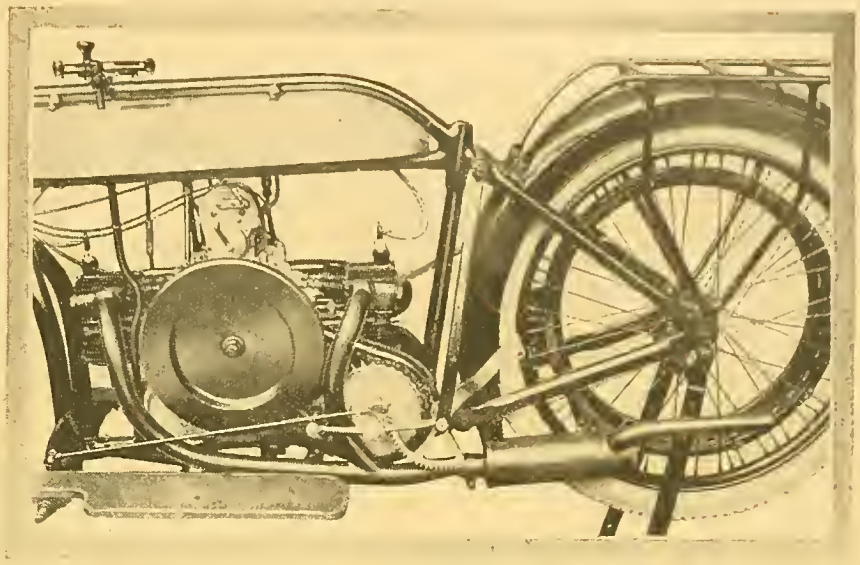
New Models.—

a fine piece of workmanship, and the matter of expansion adequately dealt with, cross webs having been inserted where necessary.

Inspection of the illustrations will show that a third point of suspension has been adopted for the engine in the form of an inverted V bracket from the magneto platform to the secondary parallel rail of the frame.

Very little alteration has been made in the frame, but the bearing area of the fork shackle spindles has been increased, while the shackles or links themselves have been strengthened. The rear brake actuates internally on the V portion of the belt rim, and embodies a compensating spring, thus giving an extremely sweet, but nevertheless positive action. It is coupled by the usual rod to a heel pedal on the rear of the right footboard.

The size of the hubs would convey to the observer in a practical way just how the trial of this great war showed its presence in minor matters. For instance, the hub of the 4 h.p. Douglas is a replica of the hub designed for the 2¾ h.p. Douglas to withstand the awful winter conditions in France.



Flywheel side of the new 4 h.p. Douglas engine, showing silencing arrangement and support for kick starter.

WHAT PREMIERS ARE DOING.

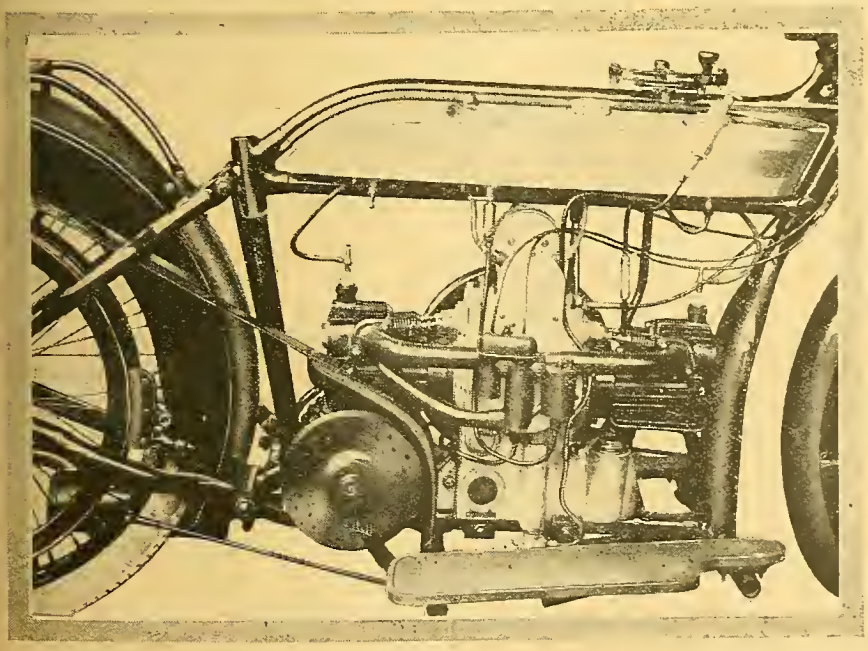
LIKE practically every other Coventry firm, Coventry Premier, Ltd., are busily engaged on munition work, and the selling of motor cycles to the general public is more or less at a standstill. However, it is interesting to know that, although they are in an unfavourable position as regards delivery of the big 7-9 h.p. and the two-cylinder two-stroke models, the makers expect to be in a position shortly to deliver a limited number of the 3½ h.p. single-cylinder machines.

TWO NEW CALTHORPES.

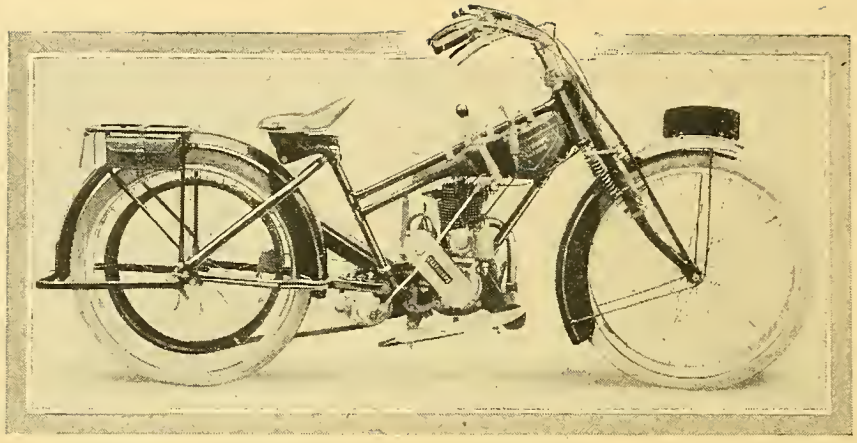
A Ladies' Two-stroke and a 4 h.p. Twin Sidecar with Enfield Two-speed Gear.

AS a result of the growing demand, the Calthorpe Motor Cycle Co. this year has brought out a machine which can be ridden by the fair sex without the necessity of wearing special divided skirts. The machine has a two-stroke engine, with a bore and stroke of 65 × 69 mm. (214 c.c.) In design it is similar to the man's two-stroke manufactured during the last year, and it now has a Senspray carburetter bolted to an inlet pipe on the right-hand side of the engine, and provided with a special shield which prevents the rider's skirts from obscuring the air intake. To the rear of the crank case there is an aluminium platform for the Ericson magneto at present used, although the type of magneto to be fitted to the machine in future is undecided as yet. The frame is peculiar, in that it has a sloping top tube from the head to the seat-pillar tube, while the tube under the tank runs parallel with the top tube for a short distance and then curves away to the down tube from the bottom of the head to the engine bracket, as may be seen in the illustration. Between these two tubes is a wedge-shaped tank, holding approximately one gallon of petrol, very wide in front, but tapering greatly towards the rear, and thus allowing plenty of room for the rider. On the right-hand side, and at the forward end of the tank, is the new Best and Lloyd lubricator, with sight feed glass plate at an angle of 45° and above the main pump. In the machine illustrated the ordinary type of Best and Lloyd is shown, but this will be replaced by the latter model as soon as possible. Formed in the tank is a large slot for the gear lever bracket, which latter is bolted to the top tube, the gear lever being a short nickel-plated piece with a very large knob, giving easy and certain grip. The two speeds in the gear box provide ratios of 6 to 1 and 11 to 1 respectively, the gears, which are always in mesh, being brought into operation by sliding dog clutches.

A combined device is used, the chain from engine to gear box being on the left-hand side and enclosed in a metal



Latest model 4 h.p. Douglas power unit. Note window in crank case sump, improved pattern brake, and conveniently situated pedal asked for by "Ixion."



A new Calthorpe lady's model. It has a 214 c.c. two-stroke engine and combined belt and chain drive.

casing, while the belt, on the left-hand side also, is enclosed for a short distance in a metal casing sufficiently to prevent the dress from becoming entangled or covered with mud during the run. It is probable that an Enfield gear will be used to replace the standard gear on this machine, and that the arrangement of gear control will follow that of the 4 h.p. machine described hereafter. Druid pattern front forks are used, and the tyres to be fitted will be 26in. × 2in. Moseley.

The rear brake is actuated by a pedal on the left-hand side of the machine, and consists of a fibre block mounted on a bracket which can slide along the chain stays, thus allowing the brake to be adjusted without altering the surface in contact with the belt rim.

In order to provide an easy adjustment for the belt, the chain stays are provided with the collar, screw, and locking nut device familiar to riders of ordinary cycles, and it may be here mentioned that the dressguard does not in any way make the belt inaccessible should it be desired to remove it from the machine for adjustment purposes. The position of the gear lever, Senspray carburetter, and ignition controls has been carefully studied, with the result that the machine seems to be in every way fit for a lady to ride. The weight of this model is stated to be approximately 145 lb.

The 4 h.p. Twin.

The second model introduced for next year is the 4 h.p. twin, primarily constructed for sidecar work, and fitted with a J.A.P. engine of 70×64½ mm. bore and stroke (496 c.c.). At first sight the machine is distinctive, owing to the fact that it has what may best be described as a "Zeppelin" tank, and although in the illustration the angles are shown lined out with gold leaf, it is proposed both to shorten the tank and to take one broad band of gold leaf around the outline, thus taking away the somewhat cumbrous appearance which the machine has at present. Like the smaller model, this engine is fitted with an Ericson magneto, although it is by no means certain that this magneto will be the standard. The new Best and Lloyd lubricator also will be fitted, instead of the older type drip feed seen in the illustration, and it will feed to the centre of the crank case, to the forward cylinder and to the gear, thus going one step towards a machine automatically lubricated from one point.

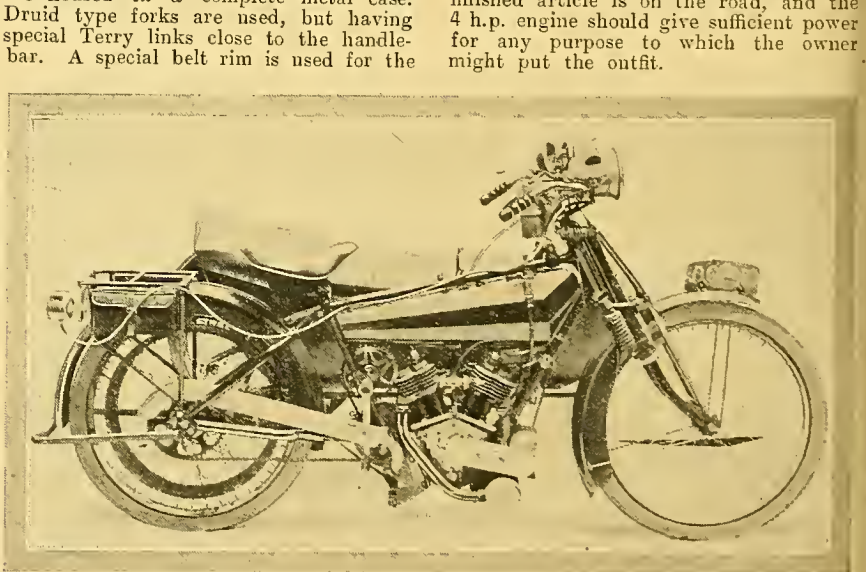
Chain drive is used in conjunction with the Enfield gear, giving ratios of 5½ and 10½ to 1, and having its control lever placed at an angle, thus being out of range of one's knee when driving the machine. There are two shock absorbing devices, the one on the engine sprocket consisting of metal surfaces held up against one another, and slipping only when any jerk comes upon the drive; the other the Enfield cush drive in the rear hub. Over the upper side of the chain is a long but narrow metal casing, and it is proposed to keep to this arrangement rather than the totally enclosed drive, for this reason, that it is far less difficult to obtain access to the chain for purposes of adjustment. The shorter chains on the engine side are housed in a complete metal case. Druid type forks are used, but having special Terry links close to the handlebar. A special belt rim is used for the rear brake, and in this model also the fulcrum point of the brake lever can be moved forward along the chain stay to compensate for any wear in the fibre block.

There is an Amac carburetter clipped to the usual J.A.P. inlet pipe, and in a position where it is accessible for cleaning or inspecting purposes. In the bottom bracket is the eccentric adjustment for the engine chain, which adjustment may be locked in any position by means of a segment and nut. The rear chain is adjusted by the ordinary bicycle type of adjustment already mentioned in connection with the lady's machine. On the seat-pillar tube is a lug holding the sprocket spindle for the starting handle, and bringing the latter therefore into a position where it would not be covered with mud or dust during a run.

For the rest there are a large and comfortable Xl-All saddle, 26×2¼in. Moseley tyres, and the standard carrier, having an acetylene rear lamp fixed to it on a special bracket and fed through a metal tube run along the tank to the generator at the front. At present there is a rubber tube, but the obviously better alternative is to be adopted.

The Sidecar.

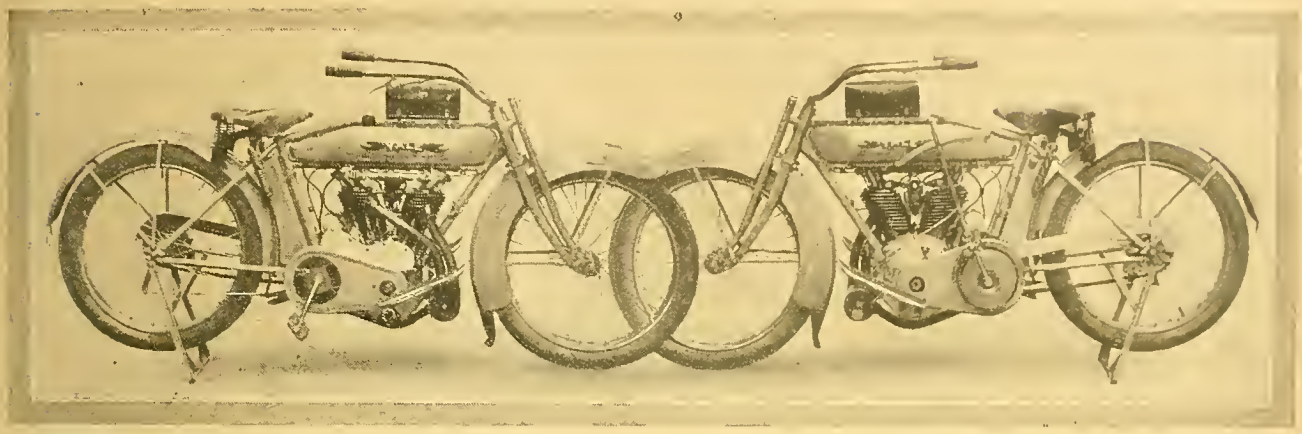
The sidecar shown in the illustration is merely for testing purposes, and the one which will be adopted finally is, we are informed, to be much better finished and upholstered. As the fitting of a side door is a source of weakness to the sidecar as a whole, this has been done away with, and instead there is an aluminium step bolted to the sidecar frame. Two quarter elliptic springs suspend the sidecar at the back, these springs being clipped below the axle, slightly reducing the height of the machine from the ground, while at the front end is a pair of swinging shackles, which will be provided with lubricators in the future. The machine is light, although its weight cannot be stated definitely until the finished article is on the road, and the 4 h.p. engine should give sufficient power for any purpose to which the owner might put the outfit.



Latest model 4 h.p. twin-cylinder Calthorpe passenger outfit. The gear lever, on the driver's left, is placed well away from his legs. The tank, which is of somewhat unusual design, will be shortened on later models.

THE 7-8 h.p. YALE.

The Latest American Arrival. Twin-cylinder Engine of 950 c.c. Two-speed Epicyclic Gear, and Chain Drive.

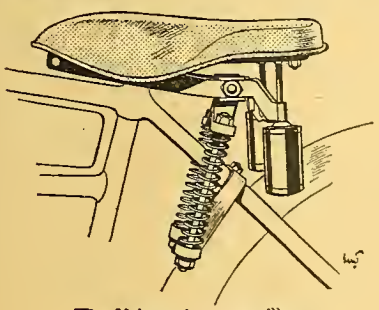


The American Yale, which is a big twin-cylinder chain-driven mount. The countershaft contains a two-speed epicyclic gear

AN American motor cycle which is not altogether unknown to our readers is the 7-8 h.p. Yale, now offered for sale in England. A striking feature of the 82.5 mm. × 89 mm. twin engine is the horizontal position of the radiating fins, which, as may be supposed, greatly facilitates cooling, as a direct draught of air is allowed to pass fore and aft through the fins. In the design the engine follows the usual American practice, being provided with the usual type of exhaust valve and overhead inlet valves. The rockers and valve stems are enclosed in a dustproof case, with the object of minimising wear.

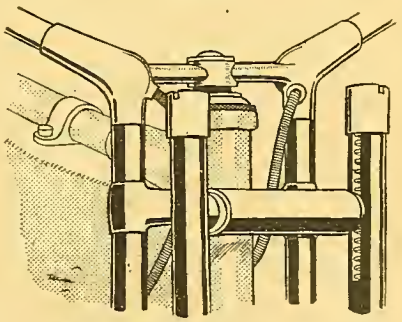
An Adequate System of Lubrication.

Lubrication is effected by means of a mechanical plunger pump of the positive type driven off the timing gear by means of a worm. The oil is taken from a tank behind the saddle pillar to the front cylinder and to the timing gear; a separate hand pump is provided so as to give the crank case the necessary amount of oil before starting for a run, in case there should be any shortage, while a window in the off side of the crank case clearly shows the level. The lubrication is further assisted by means of a self-contained oil reservoir for the crank pin bushes and a system of oil channels, thus ensuring perfect lubrication of all the bearing surfaces. The crank pin bushes are of a special alloy, and the bearings of ample size.



The Yale spring seat-pillar.

It will be noticed from the illustrations that the magneto is neatly carried behind the engine, and is consequently in a protected position. The engine is held into the frame by means of the usual bolts and lugs, but the cylinder heads are further stayed by means of clamps on the top tube. The frame follows more or less standard lines, the low saddle position being afforded by dropping the top tube at the rear. The tubes employed in its construction are heavily reinforced.



Yale spring forks, showing handle-bar fixing. Note how the control wires pass through the bars

The silencer arrangements are particularly well carried out, the two exhaust pipes entering the top thereof with an easy sweep, thus giving free exit for the gases. The silencer itself is merely an expansion chamber, while there is a long exit pipe carried away to the rear. The gas is supplied through a Schebler automatic carburetter.

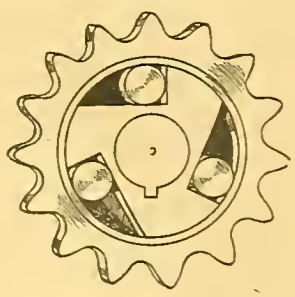
The spring forks are neat, and one of the accompanying sketches shows the method of construction. The handle-bars are connected to the fork stays and steering head by a drop forged crosshead anchored at three points, so that the bars cannot twist out of line with the front wheel when heavy strains are put upon them. It will be apparent that the coil springs are adequately protected from the ingress of mud and grit. The mudguarding is good, and it is interesting to note that the rear guard is hinged at its centre, thus allowing free access to the back tyre.

Novel Kick-starter Design.

A kick-starter is provided, which is operated by means of pedals, the free-wheel on the engine-shaft being of simple and efficient design. The accompanying sketch shows that it consists of rollers working in triangular spaces in the small chain wheel. When the pedals are brought into operation these rollers are forced towards the apex of the triangle; when pressure ceases to be applied the rollers drop back into the base of the triangle and the free-wheel is instantly freed. The chain on the starter is interchangeable with the short chain from engine to gear box.

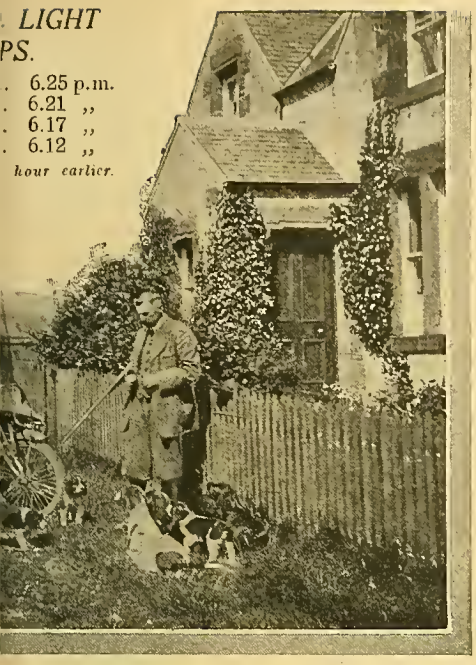
Rather a departure from standard practice is the provision of an epicyclic two-speed gear on the countershaft, which may be engaged either by means of a pedal or by the long lever shown in one of the illustrations.

The control of the magneto advance and the throttle are by means of the usual twist handles, but a separate lever is used for raising the exhaust valves. A good saddle, working on a hinged spring seat-pillar, is provided. The Yale is handled in this country by Mr. T. Baxter, 36, Great Eastern Street, E.C.



The free-wheel on the Yale kick-starter The position of the rollers shows that the kick-starter is out of action.

. LIGHT
PS.
. 6.25 p.m.
. 6.21 ,,
. 6.17 ,,
. 6.12 ,,
hour earlier.



Government Work means No Change for 1916.

The Phelon and Moore works are now under Government control, and the Union Jack proudly flies over the company's busy workshops. The P. and M. programme for 1916 can for this reason be summed up in the phrase "No Change"—a remark which applies to quite a number of leading motor cycle manufacturers.

The Munition Workers' Competition.

The suggested competition for motor cyclist munition workers is still engaging the attention of Midland motor cycle clubs. It would appear that the clubs are favourably inclined towards the idea suggested in our columns last week, viz., that the different Midland bodies should combine to organise such an event, the proceeds to go towards providing comforts for fellow club members on active service.

The Wolverhampton Motor Cycle Club has held a second committee meeting to consider the matter, and resolved to send out letters to the Auto Cycle Union and the other Midland motor cycle clubs, asking their opinion as to the form the trial should take. The Wolverhampton Club—which, by the way, was first in the field in connection with the suggestion—considers that the event should not be run off until November, but at the same time it is recognised that so late a date is not conducive to a big entry. Consequently the club is not disposed to risk an outlay of £35 to £40, which is necessary for the successful running of an important open event of this kind, without some guarantee of the support likely to be received.

Mr. Alec Ross, who took the chair last spring at a concert organised by the Birmingham motor cycle clubs, to provide funds for colleagues at the Front, is very keen on the suggested competition.

A reliability trial seems to be preferred to a hill-climb, as in the case of the latter a special type of machine is desirable. This would be a detriment in the case of munition workers. Perhaps a half-day reliability trial, including one or two sporting hills, would best fill the bill.

Vancouver to France.

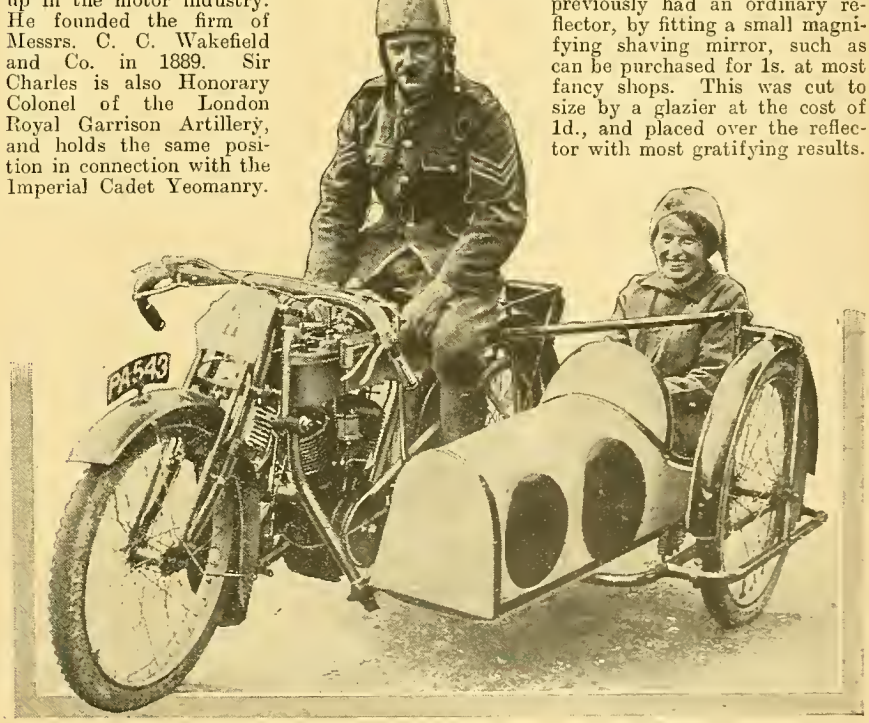
A photograph taken at Vancouver and reproduced in a recent issue showed a heavyweight man and a lightweight both mounted on the same motor cycle. The reproduction of this photograph has brought forth a request for a copy of the photograph from a Canadian sapper now serving in France with the 1st Canadian Division Signalling Company, who recognises in the group his two brothers and two friends. Thoughts of home brought by *The Motor Cycle*!

Mud-covered Despatch Riders.

We have not heard very much lately of despatch riders at the Front, but a British correspondent at the headquarters writes: "The roads, except those paved, acquire a deep coating of thin, glutinous mud. Everything becomes covered with it. Long files of marching men, their waterproof sheets pulled right over their heads, plodding steadily through the slush, chanting a chorus; the endless columns of heavy motor lorries; staff cars, pushing through the ruts at the side in their efforts to make way through the crush of traffic, become scarcely distinguishable from the road itself; motor (cycle) despatch riders, who suffer most of all, appear, machine and man, as one mass of grey splashes."

The Lord Mayor Elect.

Colonel and Alderman Sir Charles Wakefield, the new Lord Mayor elect of London, was born in Liverpool, and first attained distinction as a player of Association football, and as a runner. He has long been engaged in the oil trade, and his company, which manufactures Castrol, has done a great deal towards solving many lubrication problems which have cropped up in the motor industry. He founded the firm of Messrs. C. C. Wakefield and Co. in 1889. Sir Charles is also Honorary Colonel of the London Royal Garrison Artillery, and holds the same position in connection with the Imperial Cadet Yeomanry.



A novel sidecar attached to the 8 h.p. Zenith, ridden so successfully by Sergt. Barker at the Army and Navy hill-climb reported in our last issue. For speed and lightness it is doubtless just the thing It is known as the Middleton.

CURRENT CHAT

The National Relief Funds.

At the week-end the principal relief funds stood as follows:

	£	s.	d.
The Prince of Wales's Fund	5,530,270	0	0
The Queen's Work for Women Fund	165,457	14	6
Belgian Relief Fund ...	950,000	0	0
The Weekly Dispatch Tobacco Fund	85,049	0	0
The Times Fund for the Sick and Wounded ...	1,687,043	3	9

Special Features of this Issue.

Elsewhere in this week's issue will be found some new 1916 models fully described and illustrated. Four pages are devoted to this subject, each make being thoroughly dealt with. Attention is also drawn to the development of the lightweight machine in America. We deal with this matter in a leading article and also on pages 355 and 356.

A Substitute for a Mangin Lens.

A correspondent tells us that he has considerably improved the light giving powers of his head lamp, which previously had an ordinary reflector, by fitting a small magnifying shaving mirror, such as can be purchased for 1s. at most fancy shops. This was cut to size by a glazier at the cost of 1d., and placed over the reflector with most gratifying results.

CURRENT CHAT

The Latest

Zeppelin tanks are the latest thing in motor cycles for 1916.

From Two Continents.

On Monday morning our post bag contained a letter from North Persia, from a prospective buyer of a motor cycle. The letter made no reference whatever to the war, despite the fact that it emanated from such a troublous land. On the same day we had an enquiry from a reader in Northern Nigeria, and several letters from men serving in France.

Woolwich Club and the Proposed Munition Workers' Trial.

From a conversation with one or two of the members and officials of the Woolwich and Plumstead M.C.C.—composed principally of foremen and skilled munition workers at the Arsenal—a correspondent learned that there was little prospect of any members entering for the proposed trial. A Midland or Northern locale would be entirely out of the question. If possible a separate trial should be organised in the South of England.

A Motor Cycle Club for Rio de Janeiro.

As a natural result of the growing popularity of motor cycling in the capital of Brazil, the Rio Moto Club has been formed. It is the first club of its kind to be inangurated in Rio, and the following officers have been elected : President, Dr L. C. Leite; vice-president, Lieut. E. C. de Mello; treasurer, N. Marinho; secretary, E. Dutrain. Headquarters have been secured at Rua da Alfandega, N. 130. We wish the club and its members every success.

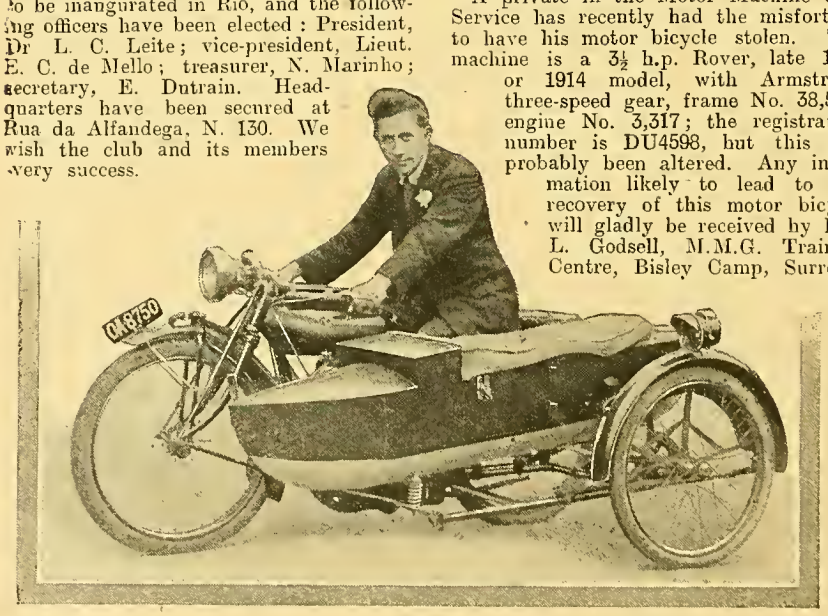
Average Prices.

We give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model, the average for the past week is quoted. If at least two machines were not advertised, the last occasion within the past month on which they were quoted is given :

Make.	Year.	H.P.	Average for last week.	Latest weekly average obtainable
A.J.S.	1914	6 3-sp. sidecar	—	—
„	1913	6 3-sp. sidecar	£54	—
„	1914	2¾ 3-speed	£44	—
Allon	1915	2¾ 2-sp. 2-stroke	£32	—
Ariel	1914	3½ 2-sp. sidecar	£65	—
„	1913	3½ 3-sp. sidecar	£40	—
Bat	1914	6 3-sp. sidecar	£55	—
Bradbury	1914	6 3-sp. sidecar	—	£60
„	1913	4 3-sp. sidecar	—	£40
B.S.A.	1914	4 3-sp. sidecar	—	£65
Calthorpe	1914	2 2-speed	—	£19
Chater-Lea	1913	8 3-sp. sidecar	£55	—
Clyno	1914	6 3-sp. sidecar	—	£66
„	1913	6 3-sp. sidecar	—	£53
„	1914	2½ 2-speed	—	£31
Douglas	1914	2¾ 2-sp. T.T.	—	£42
„	1914	2¾ 2-sp. kick start	£41	—
Enfield	1914	6 2-sp. sidecar	£63	—
„	1914	3 2-speed	—	£38
Indian	1914	7 2-sp. sidecar	£57	—
„	1914	7 T.T. free engine	—	£46
James	1914	4½ 3-sp. sidecar	£58	—
Lea-Francis	1914	3½ 2-speed	—	£47
Levis	1914	2½ 2-speed	—	£30
Matchless	1914	8 3-sp. sidecar	—	£69
„	1913	8 2-sp. sidecar	—	£54
New Hudson	1914	6 3-sp. sidecar	£59	—
„	1914	4 3-sp. sidecar	—	£47
New Imperial	1915	2½ 2-speed	£27	—
O.K.	1914	2 2-speed	—	£24
P. & M.	1914	3½ 2-sp. sidecar	£54	—
Premier	1914	3½ 3-sp. sidecar	—	£52
„	1913	3½ 3-sp. sidecar	—	£36
Rex	1914	6 3-sp. sidecar	—	£55
Rover	1914	3½ 3-sp. sidecar	—	£56
„	1913	3½ 3-sp. sidecar	£42	—
Rudge	1914	5 multi sidecar	£48	—
Scott	1914	3¾ 2-sp. sidecar	—	£52
„	1913	3¾ 2-sp. sidecar	£48	—
Sunbeam	1914	6 3-sp. sidecar	—	£82
„	1914	3½ 3-sp. sidecar	—	£63
Triumph	1914	4 3-sp. sidecar	£50	—
„	1914	4 3-speed	£45	—
„	1913	3½ 3-sp. sidecar	£50	—
Williamson	1914	8 2-sp. sidecar	£71	—

A Stolen Machine.

A private in the Motor Machine Gun Service has recently had the misfortune to have his motor bicycle stolen. The machine is a 3½ h.p. Rover, late 1913 or 1914 model, with Armstrong three-speed gear, frame No. 38,516, engine No. 3,317; the registration number is DU4598, but this has probably been altered. Any information likely to lead to the recovery of this motor bicycle will gladly be received by Pte. L. Godsell, M.M.G. Training Centre, Bisley Camp, Surrey.



An attractive sporting boat-shaped sidecar attached to a 5 h.p. Indian. It is "home-made," and is a credit to the owner, Mr. Hiskins, of Saltley, Birmingham.

SPECIAL FEATURES :

AMERICAN LIGHTWEIGHTS. (Illustrated.)

SHOCK ABSORBERS.

NEW MODELS.

TIME:

October 7
„ 9
„ 11
„ 13
In London

A LOWLAND SCENE.

There is plenty of game in Scotland this season, but few guns. This illustration shows a young Scottish laird and his head keeper, accompanied by a few of their dogs, which, like their owners, are living in happy anticipation of the days when the guns will return.

A Copied Number.

A contemporary states that 4,028 applications for despatch riders have been received by the Royal Engineers up to the present. This figure is quite wrong, and our contemporary has no means of ascertaining the number. That quoted was apparently copied from *The Motor Cycle* of September 23rd, but the number represents the applications from motor cyclists dealt with by the Editor of this journal for several different branches of the Service, including R.E., M.M.G.S., and A.S.C.

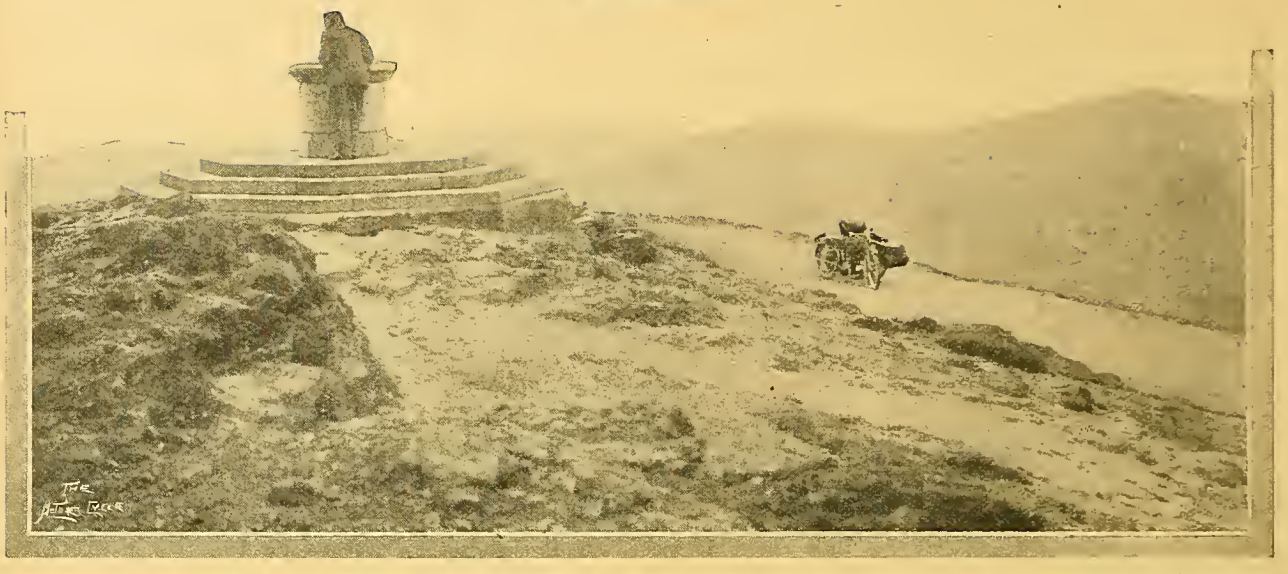
The Dartmoor Roads.

The main road across Dartmoor from Exeter to Tavistock was in excellent order a few weeks ago, and the scenery at this time of the year is gorgeous. The winding road through the woods up the long ascent of Duccombe, between Exeter and Moretonhampstead, is well engineered and the views magnificent. The day on which we crossed the moors was bright and breezy, and it was very pleasant coasting down the long hills at speed with the engine at rest. Continuing into Cornwall, we found the famous hill at Gunnislake in rather bad order owing to traction engine traffic, but beyond this point the roads were in fine condition.

A Boat-shaped Sidecar.

Of novel and weird design are many of the sidecars met on the road nowadays, and in their zeal for turning out something startling designers often overlook the fact that an ordinary human being has to occupy the sidecar for perhaps hours at a time. However, such a charge can hardly be levelled at the body reproduced on this page, and which, although on distinctly sporting lines, is yet, we should say, comfortable to ride in, provided one is accustomed to the lying down attitude which must be assumed.

Mr. Hiskins, who designed and built the body in question, has succeeded in evolving a very attractive and distinctive body, one which at the same time lends itself to speed work. It is only fair to add that the body in question is not original—Mr. Hiskins does not claim it so—as a skiff body was used in 1914 by a Coventry rider.

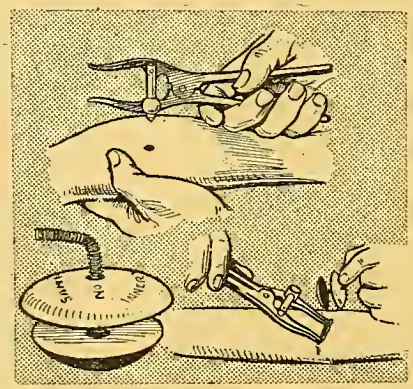


TO THE TOP OF THE WORCESTERSHIRE BEACON ON A LIGHTWEIGHT SIDECAR.

A two-stroke chain-driven Excelsior sidecar outfit at the top of the Worcestershire Beacon, which made the climb by the donkey path without a stop. There was no passenger, but the sidecar contained spare petrol and the rider's luggage. This model Excelsior has a two-speed box, and the gear ratios, we are told, were 13 and 6 to 1. It may be recalled that a 5-6 h.p. Excelsior made the first sidecar ascent of the Beacon under our observation a few years ago

THE SAMPSON REPAIR OUTFIT.

WE have lately received from Messrs. Brown Bros. a sample of the Sampson repair outfit, and the accompanying sketch shows clearly how the system operates. It will be noticed that the outfit consists of a number of special plugs (shown in the bottom left-hand corner of the illustration), which are threaded together by means of a short brass screw bent over at right angles, and a special tool is also supplied. When the puncture is located the sharp end of the tool (shown in the top illustration) is inserted in the puncture, and the tool is gripped like a pair of pliers. This has the effect of punching a neat round hole in the tube. The ends of the tool are then inserted in the hole, and the puncture expanded so that the lower end of the plug may be inserted in position. Afterwards it is only necessary to grip the bottom of the plug by pinching the outside of the tube and screwing up the top half tightly, while the next operation is to bend back the brass spindle and snap it off close to the top. The result is a permanently repaired puncture, which is quite unaffected by heat.

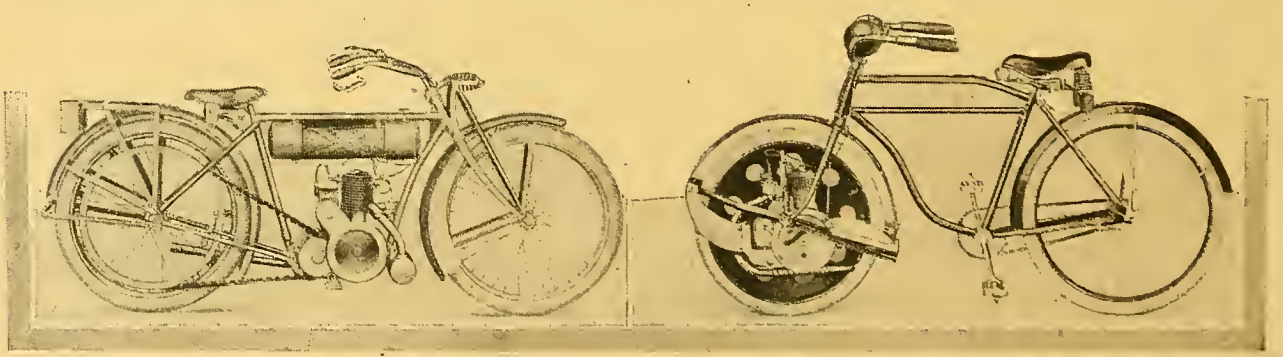


The Sampson method of repairing a puncture

NEWS FROM SERGT. W. A. DAVENPORT.

WE were surprised and sorry to hear that Sergt.-Artificer W. A. Davenport, the former Lea-Francis rider and now of the M.M.G.S., had been through such a serious and long illness. Some time ago we mentioned that he was in hospital at Rouen, but since then complications set in after pneumonia, and Davenport has had a bad time. However, he is much better now, and is in a hospital at Poole, from which place he has written us a cheery letter. He speaks in high terms of the considerate treatment he received in the Rouen hospital—where he was over three months—from the senior officers downwards. The C.O. and the second in charge, Davenport added, are keen motorists, and through the kindness of the latter Davenport was able to get *The Motor Cycle* regularly.

Our many readers who know Sergt. Davenport will join us in wishing him a complete and rapid recovery.

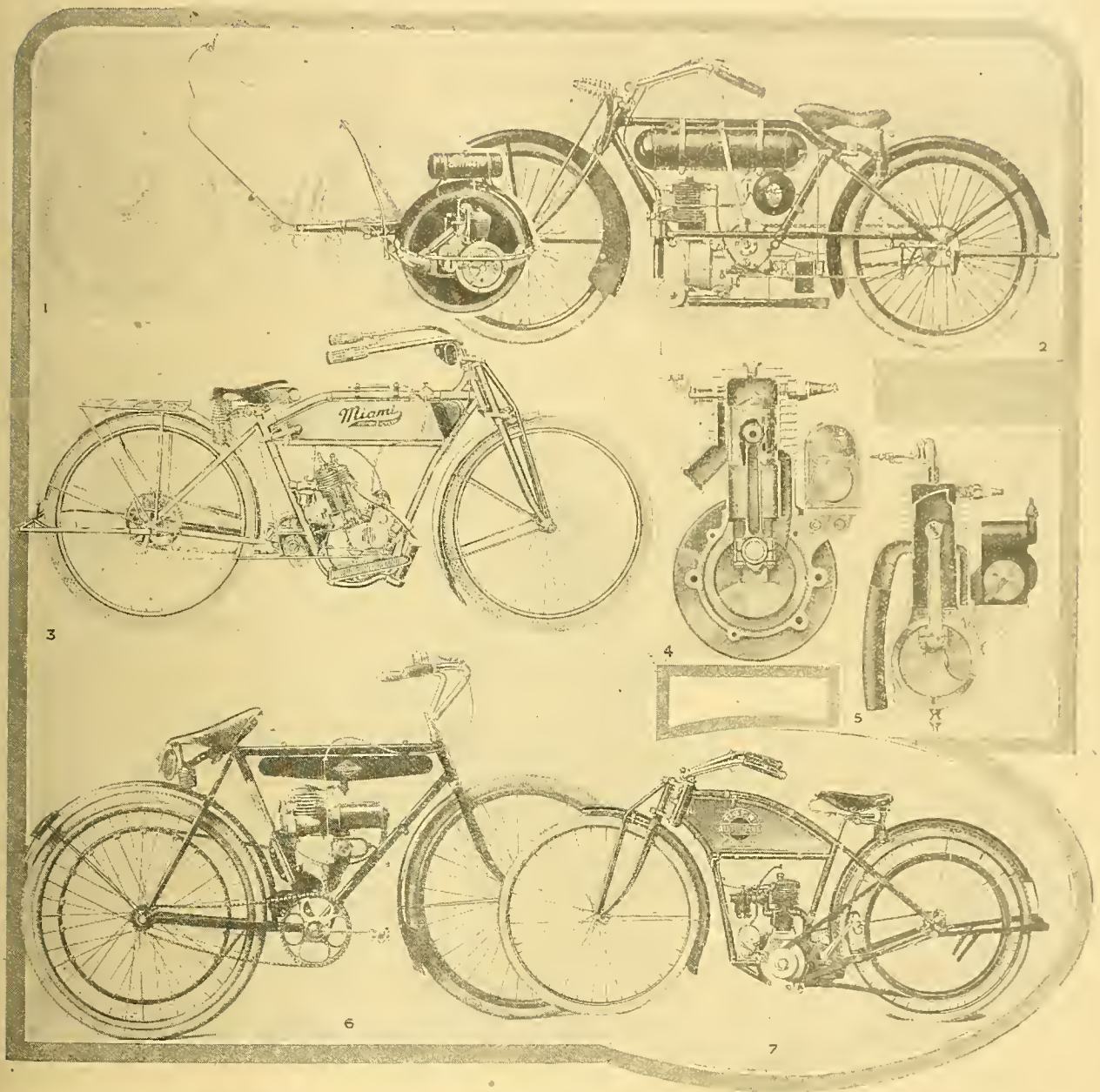


THE UNITED STATES AND LIGHTWEIGHTS. (See next page.)

The American Excelsior two-stroke, which might well be taken for a French grey Triumph—on paper.

The front wheel driven Dayton, one of the American freaks for 1916. It is announced as the "world's lowest-priced complete motor vehicle."

Lightweight Motor Cycles at the Chicago Show.



(1) The Smith wheel attachment. (2) The two-stroke Cleveland. (3) The Miami, which has a four-stroke engine. (4) Excelsior and (5) Indian two-stroke engines. (6) The Cyclemoter lightweight. (7) The Tiger lightweight.

THE Americans have at last followed the example of British manufacturers and given some attention to lightweights, both two-stroke and four-stroke, and several machines of this type were seen at the Chicago show. In some cases they seem to have paid us the compliment of following our designs rather closely. Some of the leading examples which made their first appearance are illustrated above and referred to in the following notes.

THE EXCELSIOR LIGHTWEIGHT is fitted with a two-stroke engine of the three-port type. The piston is perforated on the transfer port side, and the release valve connected with the exhaust port by a passage cast with the cylinder after the manner of the baby Triumph. The frame differs from the large Excelsior, in that it is of the loop type.

THE MIAMI POWER BICYCLE is made in three models, but two of these differ only in the matter of ignition, one being by dry battery and coil, the other by magneto (fixed ignition). Both are driven by flat belts. The 2½ h.p. Miami engine is a four-stroke, 63.5 bore and stroke (201 c.c.), having a roller bearing in the big end. It is inclined slightly rearwards in the frame, and fed by a Miami carburetter which has an adjustable jet. The third model is chain-driven, and is fitted with a two-speed countershaft gear with gears always in mesh and a double dog clutch, the gear ratios being 6.3 and 11.5 to 1. The friction clutch has four Raybestos discs interleaved with steel plates and requires no lubrication. An electric lighting outfit can be supplied with this machine; it consists of a set of dry cells, a head light, and a tail lamp.

Lightweight Motor Cycles at the Chicago Show.—

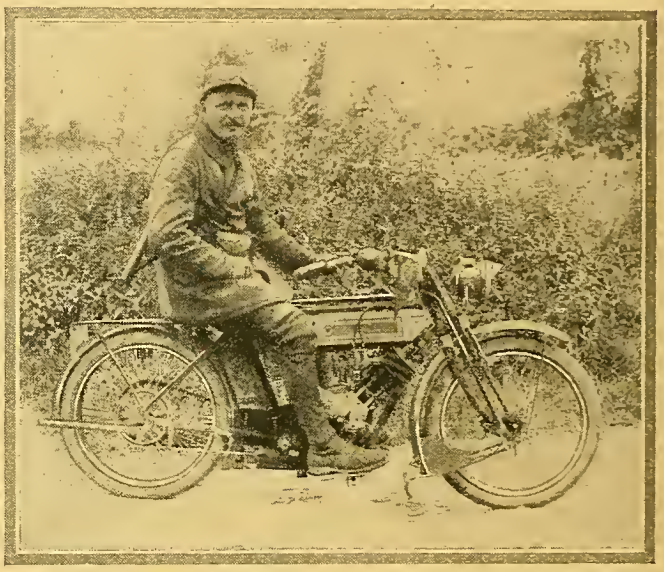
THE TIGER AUTOBIKE incorporates the Frederickson engine, which is rated at 4½ h.p. at 1,100 r.p.m.; the bore and stroke are 63.5×76 mm. (241 c.c.) It is on the two-stroke principle, but the transfer passage is connected to the cylinder head by a pipe containing a poppet valve which conducts the gas to the top of the cylinder. The carburetter is also connected to this passage through another automatic valve. For this method is claimed a cleansing and cooling action, together with a freedom from reversing and backfiring. The ignition is by a gear-driven magneto placed before the engine. It is claimed that this machine is capable of running 140 m.p.g.; it is finished in tiger yellow with black stripes, and sells at one dollar per lb. The tyres are 28×2in.

THE CLEVELAND LIGHTWEIGHT has recently been described and illustrated in our pages, and it has been compared to the two-stroke Triumph on lightweight F.N. lines. The engine, a two-stroke of 63.5×69.8 bore and stroke (220 c.c.), is rated at 2½-3 h.p., and set across the frame, *i.e.*, with crankshaft longitudinal. It is built in a single unit, with two-speed gear and magneto, the whole of which can be quickly removed from the frame. The petroil method of lubrication is adopted, and a B. and B. carburetter is fitted.

THE SMITH MOTOR WHEEL, an adaptation of the Auto-Wheel, was also in evidence.

THE CYCLEMOTOR is a power unit of about 1 h.p. (91 c.c.), built for the purpose of converting a pedal bicycle into a lightweight motor cycle; it can be fitted to any diamond frame machine of sufficient strength, and is said to be capable of a speed of 20 m.p.h.

THE INDIAN TWO-STROKE LIGHTWEIGHT was described last week; therefore we need only refer to it now. It has a 2½ h.p. engine and a three-speed gear.



The above French despatch rider, in forwarding his photograph, reports as follows: "After 25,000 km., the faithful P. and M. continues to behave well, in spite of the terrible state of the roads at the Front. The P. and M. was the first motor cycle to arrive among the ruins of Carency."

End of the Irish Competition Season.

Hill-climb at Cork.

THE hill-climbing competition for the cup presented by Capt. Pike was held on Wednesday afternoon last week on the hill leading from the Lough to Ballinhassig. A somewhat novel principle was used to arrive at the winner. The competitors were sent up the hill singly in the first instance, and the relative merits of their performances were determined by *The Motor Cycle* formula $\frac{C \times t^2}{W}$. The four best competitors on the formula results afterwards competed in a handicap, in which the starts were fixed by the differences between the times in the first trial. The fact that the riders had to do their best to get into the final quartette prevented any attempt at pulling in the first trial. The plan worked out very satisfactorily, although two of the finalists failed to ride up to their first performances.

The results on formula were as under:

		Fig. of merit.	Time. secs.
1.	R. S. Russell (2¾ Douglas) ..	1,717	39
2.	M. J. Fitzgerald (2 Levis) ..	1,847	53¾
3.	F. L. Dooley (4¼ B.S.A.)	2,112	40½
4.	Sergt. Hughes (3½ Triumph) ..	2,210	40⅘
5.	E. G. Jack (3½ Rover)	2,445	46⅘
†	M. English (2¾ Douglas) ..	2,550	49⅘
†	J. Hennessy (5 Indian)	2,550	38⅘

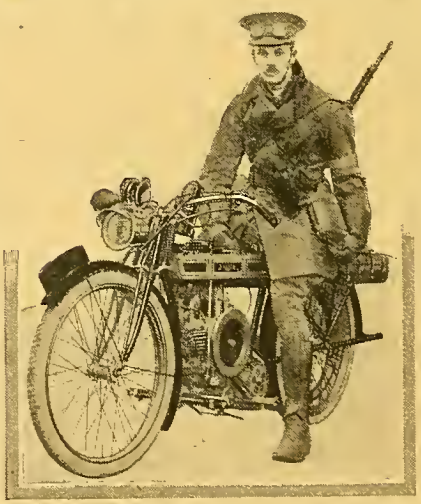
The handicap result for the cup was as follows:

		H'cap.	Actual time.	H'cap time.
1.	R. S. Russell	¼s.	39⅘.	38¾
2.	Sergt. Hughes	2⅘s.	42	39⅘
3.	M. J. Fitzgerald	15⅘s.	70	54⅘
4.	F. L. Dooley	2s.		failed

The competition being the last of the season, it is now possible to announce the winner of the English Cup, offered for the best aggregate marks in the competitions of the year. The cup is won by the popular hon. secretary, R. S. Russell, who was also the winner of Wednesday's hill-climb.

Dublin Club's Half-day Trial.

The concluding competition of the season of the Dublin and District Motor Cycle Club was held on Saturday afternoon, when a half-day reliability trial arranged by the president of the club took place.



A despatch rider attached to the R.E. Signal Section, with his complete equipment, which includes the inevitable Douglas. The rider in question, Corporal J. Stuart Hyde, speaks very highly of his mount

The conditions of the competition were not made known to those taking part until they assembled at the foot of the Dublin Mountains at Rathfarnham. Speedometers were disconnected and route cards were distributed, the latter giving the course without mileage. It lay for the greater part in the southern portion of the Co. Dublin, and embraced two well-known test hills, the long ascent through the Pine Forest of Glendhu to the top of the Featherbed Mountain, and the Devil's Elbow, a hill with two sharp hairpin bends on the borders of the Co. Wicklow.

None of those who competed failed to make a clean ascent of the two hills. A speed of eighteen miles an hour was scheduled for the first portion of the journey, and a speed of twenty for the remainder. A number of the competitors were caught napping at the one secret check that was taken at Glencullen, despite the liberal variation allowance of three minutes. The route ran from Glencullen to Bray by Golden Ball, and crossed the Scalp Road and the Ballyman Road. Silver souvenirs were offered to all obtaining 98% of the full marks, and the following were thus qualified:

R. Roche (3½ Rover)
A. W. Mooney (6 Bradbury sc.)
J. C. Cunningham (4 Bradbury sc.)
J. Browne (3½ Rover)
C. B. Franklin (7·9 Indian)
S. Morrogh (3¾ Scott)
S. Allen (3½ James)

"THE MOTOR CYCLE" RECRUITING SECTION.

R.F.C.

WITH reference to the appeal for motor cyclist recruits for the Royal Flying Corps a few weeks ago, the following letter has been received by the editor from Major W. E. S. Burch of the R.F.C. military wing: "I note the large number of applications which have been received for recruits. I am most grateful to you for the trouble and good work you have done."

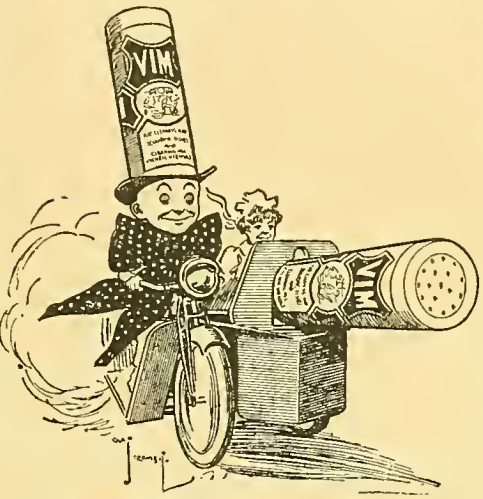
MOTOR MACHINE GUN SERVICE.

ALTHOUGH recruiting for the ranks of the M.M.G.S. ceased some weeks ago, there are still vacancies for a number of skilled motor cycle mechanics with workshop experience, also for car drivers having at least two years' driving experience. Applicants should communicate with Mr. Geoffrey Smith, Editor, *The Motor Cycle*, 19, Hertford Street, Coventry, stating age, height, chest measurement, and when free. Applications should be accompanied by two original references from employers.

Some recent recruits are:

W. Bell.
R. Bownass.
C. H. Carthorpe.
J. V. Gandy.
E. J. Sheldon.
W. M. Thomas.
R. Wray.

R. Bownass, well known as a T.T. rider and formerly with the Matchless and Nut-Jap firms, is the latest recruit. He is an A.S.C. artificer attached to the M.M.G.S.



An amusing illustration reproduced in a daily newspaper advertisement of a well-known household cleanser. The artist has evidently heard of the motor machine gun batteries!

A CHANCE FOR LADIES TO HELP.

LADY motor cyclists in Warwickshire who would care to assist with the National Register should send in their names to the Editor, giving some idea how much time they could spare per day or per week. This appeal is made at the request of the military authorities, who have already accepted the services of two Warwickshire lady motor cyclists who voluntarily offered their help to us in recruiting some weeks ago.

R.E. DESPATCH RIDERS.

DURING the last few days over a dozen motor cyclists in the South Midland divisional area have visited Coventry for the purpose of passing the necessary tests to qualify them for positions in the Despatch Riders' Section of the Royal Engineers.

As a matter of fact, over 125 enquiries from prospective D.R.'s have been received during the last fortnight from all districts; all particulars have been furnished and the enquirers referred to the nearest inspecting officer, that being the more convenient procedure form the recruits' point of view.

STILL CHEERFUL AFTER THE HARDSHIPS OF DESERT WARFARE.

Douglas motor cycles at Cape Town after their return from German South-west Africa. Out of twenty-eight used by the Forces, twenty-three, we are told, returned from the Front in perfect running order. The motor cyclists have either already joined or are joining other branches of the Army, as their own section has now been disbanded.

MOTORING IN SWITZERLAND IN WAR TIME.

WE have lately had a visit from M. Jules Neher, managing director of Motosacoche, Ltd., and president of the Swiss Motor Cycle Union. At the outbreak of war M. Neher had some difficulty in getting back into his own country. France was naturally closed to him, and, being in Italy, he made a dash for the Great St. Bernard Pass, which is open to motor vehicles on the Italian side only. The Italian Customs House officials told him that he would certainly be stopped in Switzerland, as all motor vehicles were forbidden to pass over the frontier. He told them not to worry, and proceeded on his Motosacoche sidecar machine. Nothing happened till he got right to the bottom. The jovial *gendarme* and he had a friendly talk, with the result that, after having discussed the matter over a bottle of wine, M. Neher was able to continue his journey.

During the first six months of war no petrol was sold in Switzerland for private purposes, only doctors and a few people who had to use motor vehicles for business purposes being allowed to ride motor bicycles or drive cars, the petrol being reserved exclusively for the use of the military. Petrol in normal times in Switzerland averages 2s. a gallon, and in war time it is sold at practically double that price. English motorists are better off even now.

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Scott Lubrication.

Sir,—Have any of your readers tried lubricating this machine with a mixture of petrol and oil as on the smaller two-strokes? I have been using this system now for some time, and should like to know if it has any disadvantage. The amount of oil used is one pint of oil to two gallons of petrol. I should be glad of any Scott owner's experience in this direction. T.E.D.

Silencing the Exhaust.

Sir,—It may be of interest to your readers to note that it might be possible to soften the bark of a 3½ h.p. T.T. single fitted with a long exhaust pipe minus a silencer by introducing a retarder into the pipe, such as employed in oil

A silencing idea consisting of a twisted metal strip inserted in the exhaust pipe. (See letter from J. B. Bose.)

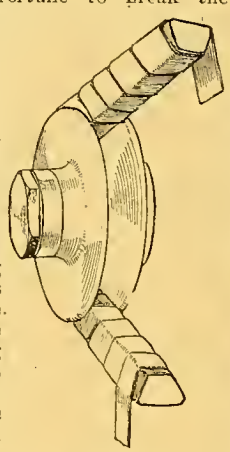
coolers, condensers, etc. A retarder is simply a narrow metal strip twisted in the form of a helix, as shown in the sketch. There is no reason why such an arrangement as this should create excessive back pressure. J. B. BOSE.

Some Useful Tips.

Sir,—I wonder if any of your readers have tried mixing a little paraffin oil with petrol. I find that it prevents the piston from getting gummed up, as well as being economical.

Whilst on tour I had the misfortune to break the petrol pipe which leads to the carburetter. As I had no means of repairing it by soldering, a length of young ash stick was cut from the hedge, and with a strand of barbed wire broken from the neighbouring fence a hole was bored in the centre of the stick, this being quite easy, as it consists of pith. The ends were then widened with a penknife, to slip outside the tube, some twine being tied over and under the stick. This repair carried me safely home.

Broken petrol pipe temporarily repaired by means of hollow stick bound round with string.



Cloth strip wrapped round belt to take up slack. (See accompanying letter from R. Irwin.)

If a belt becomes too loose to drive the machine, and there is no way of tightening it, it can be tightened by tying securely some lengths of cloth (or twine) along it, provided the engine pulley is deep enough. The above makes the belt larger, which raises it higher in the pulley and so effects the tightening. R. IRWIN.

Clergymen and Waiving the Petrol Tax. Why Not?

Sir,—In view of the increased tax on petrol, I think that a certain class of motorists might claim your aid. I allude to those clergymen who, like myself, find the motor cycle an absolute necessity for their work. If we wish to insure, we, as "professional men," must pay more; therefore, as professionals, we, like the doctors, should pay less petrol tax. For my part threequarters of my mileage has been for duty. Perhaps, Mr. Editor, you can come to our aid. 2¾.

[It does not seem at all unreasonable that clergymen should be placed on a par with doctors in regard to the petrol tax.—ED.]

Despatch Riders as Infantrymen.

Sir,—I have been an ardent motor cyclist for the past eight years, during which time I have been a regular reader of your valuable paper. I enlisted as signaller and motor cycle despatch carrier with one of the regiments of the Australian Expeditionary Force. We at first thought we were bound for France, but, of course, as "Jacko" the Turk came in and had too much to say, we had to come here and entertain him. The nature of the country on the Gallipoli Peninsula not being suitable for mounted troops or motor cycles, we have left our beloved mounts behind and volunteered as infantry, as, after all, we left Australia to fight for King and Country and not to choose for ourselves.

Now, Mr. Editor, as I have read your paper for so long and miss its news so much, would you be good enough to post me a few copies as soon as it is convenient?

SIGNALLER C. VANTIN.
Australian Expeditionary Force, Gallipoli.

[Signaller Vantin's request has already received our attention.—ED.]

Signaller C. Vantin (3½ h.p. Douglas), who joined one of the Australian regiments now in the Dardanelles, as a despatch rider, and subsequently volunteered to go into the trenches. The photograph was taken in Cairo. See letter on this page.

A Capable Youthful Motor Cyclist.

Sir,—I have a son who, though only fourteen years of age, is a competent motor cyclist. His mount is a 6-8 h.p. J.A.P., to which is coupled a tandem sidecar. He has recently driven a gentleman and his family to Bournemouth on a two

A youthful motor cyclist, who, though only fourteen years of age, makes long runs daily on the 8 h.p. J.A.P.-engined N.L.G. sidecar outfit shown. See letter on this page from Mr. F. Driscoll.

weeks' tour, and while there did an average of 100 miles per day. The gentleman was so amazed at the youthful driver that he was almost afraid to start out, but on his return he expressed his delight and astonishment at the able manner in which my son had manipulated the heavy outfit.

The gentleman who was recently taken on the tour is prepared to offer a silver cup to any person of the same age driving a machine of the same power carrying the same weight and number of passengers from London to Bournemouth.

F. DRISCOLL.

Mind and Machine.

Sir,—I have forestalled some of the objections to the psycho-mechanical theory in Mr. McClelland's delightful letter. His argument with regard to those mental processes in which the original suggestion is unconsciously received is made good use of, but does not in any way affect the theory under discussion. The suggestion need not originate from an inanimate source or from some absolutely extraneous circumstance; on the contrary, it is much more likely to be transmitted from a sentient origin, between which and the receiving mind a psychic connection has been established. At the same time, I admit that suggestion of this kind may be received from an inanimate agent.

Mr. McClelland in one paragraph refers to "the cry of the slipping clutch," as a psychological statement, and in another as a poetical metaphor. This is distinctly evasive. I can assure him that I have no wish to obscure my reasoning by sentimentality of any kind.

The psycho-mechanical theory rests on this proposition: That all vitality and all consciousness being produced by motion, and obeying the laws of motion in their continuance, a reciprocal and sympathetic relation may exist between the human consciousness and any piece of mechanism with which it is associated, the motion of the machine being sensitised by the corresponding psychic motion of the mind. It is obvious that, if the machine were in itself a thing possessing sentience and will, it would be capable of spontaneous motion—a state of affairs too appalling to contemplate, even in theory. But the existence of a psychic relation between mind and machine is almost a demonstrable fact.

C. E. VULLIAMY.

Castor Oil.

Sir,—I have come to the conclusion that castor oil is one of the best motor lubricants one can use. It appears to possess greater viscosity, which is less affected by heat than the average lubricant, mainly composed of the heavy paraffins (mineral oil).

I have a two-stroke Levis, with automatic lubrication. On experimenting with undiluted castor oil I found it too thick and viscous to flow readily down the cylinder feed, although when I got some down the result was excellent.

Unfortunately, castor oil is not miscible with the ordinary lubricants of the mineral type, so I am unable to thin it in this way. Is there any objection to using about 20% of kerosene? I find on experiment that castor oil will take up into solution this amount, the resulting oil being one which would flow down the lubricating pipes, and the presence of the kerosene would prevent the freezing of the castor oil in winter.

I should like to take the opportunity of saying how useful I find the various articles and "tips" contained in *The Motor Cycle*, including the replies to correspondents.

H. E. WOOSTER.

Changing from Benzol to Petrol: A Warning.

Sir,—I had an interesting experience last week-end. I have for many months used benzole, but now it cannot be obtained, and I had to fill up with petrol. Being desirous of going into Wales from Liverpool over a little fresh road, I took my sidecar outfit *viâ* Birkenhead, Hope, and to the top of the mountains, to the cross roads that run from Llangollen to Ruthin, turning left and going down to Llangollen. Before starting I looked into my tank of petrol, and thought that there was enough for fifty to sixty miles, and as I was only going about forty-five miles concluded I should have sufficient. But I forgot it was petrol, *not* benzole. As we climbed the last stretch and reached the level on the top of the mountains, the engine stopped. Investigation showed an empty tank, and nearly fifteen miles to travel. Benzole would have covered it easily. Luckily, we were high up, and were able to free-wheel with clutch out down to the canal at Llangollen, though this meant pushing the machine half a mile along a flat road into the town.

The experience is simply a warning that motors that would run between seventy and eighty miles on a gallon of benzole will only do sixty on petrol.

J.E.

A Lady and her Motor Cycle.

Sir,—I enclose a photograph of myself and machine. I find the Levis splendid and quite suitable; I can start easily by paddling off. The man's machine is more rigid, and not so unwieldy as most ladies' machines. I have wide and rather low handle-bars; these give me a most comfortable riding position, and with them tramlines, traffic, and grease never worry me.

MABEL BASTOCK.

Miss Mabel Bastock on her Levis (see accompanying letter).

ENGINE RATTLE IN TWO-STROKES.

A Reader's Experiences and Suggestions.

I HAVE followed the correspondence *re* engine rattle in two-strokes with the utmost interest. The explanations of cures by various riders differ so greatly, I was inclined to think that, as "Ixion" seems to suggest, the phenomenon was simply the equivalent of "knocking" or "konking" in four-strokes. I was, on the whole, rather inclined to blame the plug points for this, considering that they (or it, rather, as single-point plugs are a *sine quâ non* with two-strokes) became incandescent much more readily than is the case in four-strokes, owing to the much greater amount of heat generated, a proof of this, to my mind, being that a very thick electrode undoubtedly gives the best results, there being less tendency for such to get red-hot than would be the case with a thin one. I even theorised so far as to assume that the rather rapid wear of connecting rod bearings alleged for two-strokes was an outcome of this rattle, or knock, it being naturally twice as rapid as in a four-stroke, and therefore sounding more like a rattle than the familiar knock. The shock to which the bearings would be subjected at high engine speeds, when plug pre-ignition engendered this rattle or knock, would mean their much more rapid wear, seeing that not only was it a sort of "double knock," but that it occurred with greater frequency than in the case of four-strokes.

This theory of mine was apparently borne out by the fact that when I received my machine (a Junior Triumph) about a year ago it had a four-point plug, with, of course, smaller electrodes than is the case with the best single-point specimens. At high speed after some distance a rattle commenced, which increased to an alarming extent if the throttle were opened any further, the handle-bars vibrating till they absolutely *stung* my hands, but which diminished, and finally disappeared, with less throttle.

This rattle was much more pronounced than it ever has been since I substituted a single-point plug with a good thick electrode. (I notice the Triumph Co. now adopts a single-point plug for this engine.) Furthermore, the machine was new; the engine had just about been run in, and therefore carbon deposit could not have been the cause.

Two Curious Stoppages.

That great heat was directly or indirectly responsible for this "rattle" was proved, to my mind, by the fact that once, after driving the machine fairly hard for some distance, after stopping to cool the engine, and on attempting to restart by raising the compression release valve, the compression was *not* released; and on looking for the cause I found that the solder by which the nipple was attached to the end of the Bowden wire controlling the valve had melted away until not a trace was left upon the wire, only a few "splashes" of solder adhering to the front of the cylinder fins remaining to tell the tale. I easily effected a start, however, by opening the valve with my thumb, a thing which is perfectly feasible while straddling off with the low gear engaged. I may add that since getting the single-point plug this mishap has not recurred. But regularly thereafter the rattle would become apparent at speeds of 27 m.p.h. or more (though not so pronounced perhaps), and at about 1,500 mileage the engine, not having been cleaned or attended to in any way since the start, suddenly stopped during a run.

Taking out the plug to see if it were sooted (as had often happened with the four-point plug), I found nothing wrong with it, and by the time I screwed it in again the engine went off as well as ever. After some further mileage the same thing again happened, the plug also being all right this time. (I may say that I have only experienced sooting of this plug once in over 3,000 miles use, and this was when the engine had been run exceedingly slowly for some distance.) Finally, at 1,667 miles exactly, I had the engine taken down to be cleaned. This, according to the makers' instructions, should have been done at about 1,000 miles, so I had no reason to complain of the two involuntary stops at over 1,500 miles distance. The carbon deposit was not very excessive, however, although a greater proportion of oil to petrol than usual, viz., one to twelve instead of one to sixteen, is adopted in this engine (petroil lubrication). The upper piston ring was stuck in its groove at the exhaust port side (the usual experience with two-strokes), and the big end bearings required taking up. I communicated with the makers, who treated me more than well, and who advised the use of a pure mineral oil to minimise the tendency of the upper ring to stick. This I have not tried so far, as my stock of "compound" oil was so large that I have not yet come to the end of it. The peculiar thing is that, though using the same proportion of oil to petrol as before (and always being very exact about the measurement), the second time that the engine needed cleaning occurred at an interval of 1,093 miles from the first (or about what the makers advise).

An Unexplained Cure.

The symptoms were engine rattle at lower speeds than previously, and slowing down when driven up to 25 m.p.h. The only way I could prevent the engine stopping was to throttle well down, thus cooling it somewhat, when the rattle at once stopped, and in a minute I was again able to open the throttle moderately. Again, there was not a very great amount of deposit, but the top piston ring was stuck as before, though this time the bearings were all right. Since the second overhaul I have ridden nearly 850 miles (or 3,600 in all), and everything seems right. Fairly recently, however, rattle became slightly apparent, either when the engine was driven rather faster than usual (I do town riding every day) or when hill-climbing—in other words, when it had "work to do." Then on a ride of over 100 miles I noticed that for the first five or ten miles distance the engine rattle occurred every time I endeavoured to drive at over 25 m.p.h., and sometimes when climbing hills on top gear.

After the first five or ten miles of this ride, however, and without the engine having even been stopped, no rattle whatever occurred during the whole ninety miles or so, although the machine was driven at 27 or 28 m.p.h., and even 30 for some distance occasionally; sometimes 35 having been reached and kept up for a minute or so, and 37 being once attained. Then a day or two later I again had a ride of about the same distance, and during the whole time no engine rattle whatever occurred, nor has it done so on any occasion since (and that is a fortnight ago, or 300 miles back).

Now this last experience of mine goes so dead against every possible explanation that I can conceive that I am constrained at last to give my experience in your columns to make the problem even more difficult than it was before! No solution has been given by any rider which would meet this case of mine. Nothing was done to the engine: the same petrol (Shell or Pratt's No. 2) and the same oil (Price's Motorine C) were used, in the same proportion, and the same plug was in the engine all the time. Yet when the engine and plug should have been getting hotter, the rattle stopped (and has ceased altogether since, under every condition of driving). Furthermore, the day was hot—by a long way the hottest we had had this year—yet on previous days, at comparatively moderate speeds, and for short distances, the rattle occurred!

Plug Position.

I am curious to know if any rider has found that radiating devices, such as the Harcourt and Koolah, have diminished this elusive engine rattle; also, incidentally, if they decrease the tendency for the upper piston ring to stick. Another thing that I wonder is if the sparking plug in two-strokes were placed vertically in the cylinder head instead of horizontally behind the cylinder, as is usual, would it have a better chance of radiating its heat when the machine was travelling fast? As it is now, the heated air from the cylinder flanges actually converges upon the exterior portion of the plug—and how much greater heat there is than with a four-stroke (which usually, by the way, has its plug in the position I advocate). Of course a four-stroke plug is situated in the inlet valve pocket, and is thus comparatively screened from oil, whereas in the two-stroke it might be argued that it would possibly get more oil thrown upon it in a vertical than it does in its present horizontal position.

OILE.

QUESTIONS & REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Drilling the Pistons.

Referring to the article in your paper of May 6th, 1915, "Tuning a Standard Machine," I have just purchased an American 1915 three-speed Excelsior. I shall be obliged if you will tell me if drilling the pistons will not upset the balance of the engine? If not, I would like to drill mine a little, but not nearly so much as shown in the illustration. To get more speed and better lubrication, would you advise me to drill the pistons? As it is, the machine runs perfectly, and has a marvellous acceleration, and I am very well pleased with it.—K.E. (Calcutta).

If the machine is running well, accelerates well, and you are pleased with it, we should not advise you to drill the pistons, as you might upset the balance slightly, and also cause a slight amount of extra carbon deposit on the combustion head. Doubtless you might improve the running a little, but you would get this improvement at the expense of other things.

An Oil Leak.

(1.) I have a 1915 6 h.p. twin-cylinder machine, and lately oil has exuded from the front cylinder, apparently from a point near the lowest flange. I have taken the cylinder off and examined it carefully, and poured paraffin round the flanges, but cannot detect any leakage. I have also run the machine in a dark room so as to see any sign of flame, etc., but with no result. What could this be? It is most puzzling, and apparently the leakage is not from the valves. Even during a short run of three or four miles oil comes out. (2.) The roads in winter in this district (Edenderry, King's County) are full of stones, and I thought of fitting a combination rubber and steel-studded 650×65 mm. tyre. Would this be the most suitable tyre, or an all-rubber of the same size? (3.) Is Price's hub lubricant suited for Renold chains? I find it seems to keep the chains more greasy and is more lasting than oil.—H.S.M.P.

(1.) We can only think that there is a tiny blow-hole through which the oil exudes. You have tried the ordinary tests, and you must now submit the cylinder to a high pressure water test in the manner some makers test their cylinders. (2.) Either of the two types of tyres mentioned would be suitable. (3.) The lubricant referred to would do, but we think you would find a little graphite grease to be better.

Advice to a Two-stroke Rider.

I am a beginner, having only just bought a lightweight two-stroke. I had previously read a good deal about the various parts of the motor bicycle and their use. I am able to ride fairly well, provided everything is in good order, and so far have had no serious trouble. I am a solo rider, and do not have the advantages of club membership, and only very gradually find out that there are many little tips one would like to know. (1.) Why does the engine occasionally four-stroke? (2.) Why does it not always start easily? (3.) What are the correct positions of levers in going downhill? (4.) Should throttle be closed in rounding corners, or is it better to raise the exhaust? (5.) What would help me to use the oil pump correctly? The makers state one charge every four or five miles. I have no cyclometer, and seldom see one on other machines. (6.) Are there other remedies than shortening for a slipping belt? (7.) What is the proper method of taking off and putting the belt on the pulleys? (8.) When should the magneto and magneto chain be oiled, and what oil should I use for this purpose? —E.J.W.

(1.) All two-stroke engines are liable to "four-stroke," especially at slow speeds, due to bad scavenging. (2.) Easy starting is obtained by giving a strong mixture and a small quantity thereof. Open the throttle half-way, see that the air is closed, and have the spark fairly well advanced, when the machine should start easily. (3.) When going downhill close the throttle and raise the exhaust. (4.) When rounding a corner close the throttle. (5.) As regards lubrication, we should advise you to follow the makers' instructions. We should recommend you to have a speedometer, which would also give you the distance travelled, so that you could check your petrol consumption, lubrication, etc. (6.) The only remedy for a slipping belt, if it is a rubber one, is to shorten it. (7.) To take off the belt, pull it away from the bottom of the belt rim, and wheel the machine forwards. (8.) You may lubricate the magneto with engine oil, also the magneto chain. You will get some useful information from "Motor Cycles and How to Manage Them," "Tracing Troubles," and "Hints and Tips for Motor Cyclists."

Private Johnson (Morgan) starting in the "any type of machine class" at the Army and Navy hill-climb reported in our last issue.

Decarbonising.

(1.) Which method of decarbonising would you recommend to a rider who is not anxious to take down his engine? (2.) My machine, a 2 h.p. lightweight, will not do more than 30 m.p.h.; the makers claim 45 m.p.h. The valve timing is all right, whilst the magneto points break the instant the piston reaches the top of its stroke. The ignition is fixed. Should it be further advanced, and, if so, how can this be done? The top gear is 6 to 1. —P.D.A.

(1.) The only satisfactory method of cleaning the cylinder and piston without dismantling is by burning with oxygen, but even this is not as satisfactory as taking the engine down and cleaning it out, as this way you are able to clean behind the rings and inside the piston. (2.) Thirty miles per hour is very good with a small machine, and a 6 to 1 gear is very low for speeds in excess of 30 m.p.h. You would probably find that by advancing the magneto timing slightly, allowing the points to separate when the piston is about one-sixteenth of an inch from the top of the stroke, you would improve the speed, but the machine would not run so well at slow speeds, and would be more difficult to start. To advance the ignition, you will have to slacken the nut securing the sprocket to the armature-shaft, loosen the wheel on the taper, then turn the magneto armature to the desired position, taking care not to move the engine, then tighten the nut again.

Two-stroke Lubrication.

(1.) I have recently fitted an Everest carburetter to my Villiers two-stroke. This uses considerably less petrol than the carburetter previously fitted, so should I mix more oil with the petrol? The engine seems to get sufficient oil. (2.) Should I be wise to fit a Knight lubricator in place of petroil lubrication?—F.J.W.M.

(1.) It is not necessary to give more oil; also, if you increase the proportion of oil to petrol unduly you will experience difficulty in the mixture refusing to flow through the carburetter, as it will be too thick. (2.) We personally like the idea of a separate lubricator.

Too Bright Head Lights.

I was summoned recently in London for driving a cycle car with too powerful head lights. In addition to being fined, my licence (so far a clean one) was endorsed. As this is not an offence under the Motor Car Act, was the court within its rights in doing this, and must the endorsement remain? There was no other charge against me.—S.K.S.

Unfortunately, the Bench was quite in order in endorsing your licence. A similar case was recently brought to the Court of Appeal and lost. Also, we are afraid that the endorsement must remain on your licence so long as you hold one.

Excessive Petrol Consumption.

I have a new 2¾ h.p. motor cycle, which I have ridden just 200 miles. The petrol consumed is 4½ gallons, which, of course, is excessive. Can you tell me how to cut this down?—A.L.M.

The consumption is far too high for so small an engine. See that the right size jet is fitted, and the level of the spirit just below the top of the jet orifice. A good deal of petrol is often lost through waste in filling the tank too full, when a great deal escapes through the filler cap, also through leaky petrol unions, and owing to a flooding carburetter. Look carefully, therefore, to these points, and give plenty of air when driving.

A Cracked Induction Pipe.

I have a 7 h.p. F.N. and sidecar. On two occasions—several months intervening between—both when riding at night after considerable mileage during the day, the first two cylinders, counting from the front, have become red hot, the No. 2 cylinder especially. The fact of a plentiful supply of oil has saved the engine from seizing up. In the first instance I traced the trouble to a fracture in the induction pipe, and when this was bound up with insulation tape everything went well until the present occasion. In this instance the engine was firing well up to about 120 miles, when it became very irregular in its running. I imagine only two cylinders were working, and the remainder of the journey back home (about sixty-seven miles) was accomplished with this irregular firing unless the middle gear was engaged and the engine speeded up, when the firing became more regular, but overheating took place. In starting up from cold I have lately had some difficulty, and on more than one occasion I have been obliged to make a start by pushing off. Do you think the platinum points require attention?—F.G.L.E.

It is very hard to say what is the matter with your machine without actually seeing it. We think you are suffering from further trouble with your cracked induction pipe. The only really effective remedy would be to fit a new one. We should therefore recommend you to get into communication with the makers of the machine. The trouble would account for the difficulty in starting and irregular running. There seems no reason to suppose that your ignition system is out of order, but there would be no harm in overhauling it.

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"G.L.S." (B.E.F.)—Junior Triumph. General reliability, hill-climbing, and upkeep.

"C.C.W." (Hertford).—1914 or 1915 three-speed Triumph or Rudge Multi. General efficiency, economy, stability, weatherproofness, and belt wear.

"F.W.W." (Mayo).—Douglas. Cause of blowback through lubricator, resulting in observation glass becoming fouled and obscured.

"L.N." (Kidderminster).—6 or 8 h.p. twin countershaft Zenith. Efficiency and reliability for sidecar work. Weatherproofness, wear on belts, and belt slip on low gears in wet weather.

"S.C." (Ranelagh).—Grado pulley for use with 3¾ h.p. Precision engine for sidecar work. Reliability and belt slip.

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Reading, Twyford, Maidenhead, Beaconsfield, Amersham, Chesham, Tring, Dunstable, Luton, Hitchin, Baldock, Royston, Cambridge, Ely, Downham Market, King's Lynn. Approximately 132 miles.

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,, ,,	26×2⅜×2¼	20/-	28/-
,, ,,	26×2½	20/9	28/9
,, ,,	26×2½×2¼	20/9	28/9
,, ,,	26×3	25/-	34/-
Basket Pattern Heavy	26×2¼	24/6	34/-
,, ,,	26×2½	27/-	37/6
,, ,,	28×3	35/-	48/3
Combination	26×2¼	36/-	50/-
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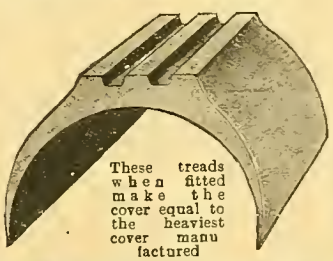

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All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

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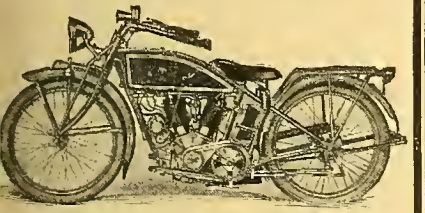

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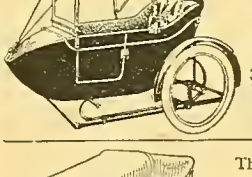

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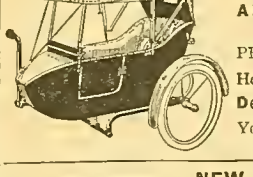

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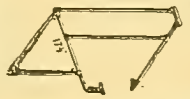

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DOUGLAS, 1914¾, 2¾h.p., 2-speed, kick start, clutch, Bosch, perfect condition, accessories, and spares, powerful, economical; nearest £42.—M., 44, Walliscote Rd., Weston-super-Mare. [X9140

DOUGLAS, 1913, 2¾h.p., 2-speed, kick-starter model, new Watford 4 gn. speedometer, Lucas lamp set, horn, spare belt, new tyres, perfect condition throughout; £36.—The Morris Garages, Oxford. [X9183

DOUGLAS, 1914, 2¾h.p., T.T. model, fast and handsome specimen, almost new, and absolutely genuine, complete with lamps and horn; £44, or very near offer.—Layton's Garage, Bicester, Oxon. [X9234

DOUGLAS, 1914, T.T., 2-speed, Miller lamp set, 60 mile an hour speedometer, horn, knee grips, new toolbag, and new kit of tools, spare chain, 2¼ tyres; £42/10.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [3752

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ELSWICK, 4h.p., 1913, 3 speeds, and sidecar; £36.—1, Prebend Gardens, Chiswick, W. [3646

Enfield.

2½h.p. 1911 Enfield Lightweight, good condition; £16/16.—26, Highbridge, Waltham Abbey. [3844

ENFIELD 2¾h.p. Twin, mag., h.b.c., tyres and belt good; £15.—Sibley, 106, Market Place, Romford. [3956

ENFIELD, 1915, 3h.p., 2-speed, free engine, very little used; £40.—31a, Broomfield Rd., Chelmsford. [3980

ENFIELD 1914 6h.p. Combination, in excellent order, complete with all accessories; £62/10.—Below.

ENFIELD, 1915, 3h.p. twin, delivered from stock. 50 gns.; also 6h.p. combination, 80 gns.—Elce and Co., 15, Bishopsgtae Av., Camomile St., E.C. [0552

ENFIELD Combination, 1914¾, as new throughout, fully equipped; £63.—79, Aldred Rd., Kennington Road, S.E. [X8990

ENFIELD 1915 6h.p. Combination, in stock for immediate delivery. — Sole Agents, The Morris Garages, Oxford. [X9189

ENFIELD, 3h.p., new in June, perfect, horn, and tools; £45, or lightweight in part payment.—Godwin Bros., Woking. [X9153

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ENFIELD Coachbuilt Combination, 1913¾, speedometer, spare covers, tubes, valve, perfect condition; £52.—Osborne, 177, New Park Rd., Brixton. [3607

2¼h.p. Enfield, 2-stroke, 1915, Palmer tyres, lamp, horn, etc., new; £40.—The Park Motor Co., Ltd., Wells St., Jermyn St., London, S.W. Gerrard 1927 & [3749

ENFIELD 6h.p. Coach Combination, in splendid condition, tyres nearly new, with lamp, horn, etc., complete; £55.—Fursland, 51, Bristol Rd., Bridgwater [3822

1914 6h.p. Enfield Combination, Lucas lamp set Stewart, horn, 700×80 cover back wheel, in pink of condition; £67.—Harvey, Hudson, and Co., South Woodford. [X9104

1913-14 6h.p. Enfield Combination, splendid condition, Palmer cord tyres, nearly new, lamps, horn engine just overhauled; £55.—A.E.C., Felsgarth, Horsham, Sussex. [X8980

1915 Enfield 6h.p. Combination, new August, no punctured, speedometer, lamps, horn, etc.; and trial; £78.—B.B., Strathmore, Richmond Av., Leigh Rd. Westcliff-on-Sea. [3820

2¾h.p. Enfield Twin, 1914½, just overhauled by makers, done 3,750, new back tyre, speedometer horn, lamps, perfect condition; £34.—Brown, 9, Brook St., London, W. [3701

3h.p. 1915 Enfield Twin T.T., 2-speed, ridden less than 100 miles; owner leaving for foreign service genuinely as new; £47/10.—Robinson's Garage, Green St., Cambridge. [6867

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ENFIELD 1915 6h.p. Combination, coachbuilt side car, the finest combination made, all complete £84; just arrived from works; immediate delivery.—Vilkins, Simpson, and Co., 11, Hammersmith Rd., London. [3661

ROYAL Enfield Combination, £84; 3h.p. twin, 5 gns.; 2¼h.p. 2-stroke, 38 gns; immediate delivery all models.—Exeter Motor Cycle and Light Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd. Plymouth. [057

ENFIELDS, all models actually in stock.—6h.p. combinations, 3h.p. 2-speed twins, T.T. and touring models, also 2¼h.p. 2-speed 2-stroke.—P. J. Evans, 87-91, John Bright St., Birmingham, controlling district agent. [3871

ENFIELD, 1915, 3h.p., 2-speed, and free engine chain drive, kick starter, mechanical lubrication Palmer tyres, just arrived from works; immediate delivery; £52/10.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [3661

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1912 3½h.p. Excelsior (Coventry), good condition what offers?—Williams, 12, Kimberley Rd Rugby. [X8661

EXCELSIOR 3h.p. and Sidecar, Saxon spring fork in running condition; clear at £7/10, or offer.—64, Mill Lane, Brixton Hill. [X9291

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EXCELSIOR (American), 7h.p., 3-speed, standard £62; De Luxe, £71/10; Yorkshire dealers supplied.—Sole Yorkshire distributers, Halifax Motor Exchange, Horton St., Halifax. [0381

EXCELSIOR, 3½h.p., 1913, and Mills-Fulford coach built sidecar, Sturmey-Archer 3-speed, wind screen spare belt, Miller lamp, etc.; £48, or nearest offer. Day and Sons, Okehampton. [3811

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XCELSIOR (American), 1913, 7-9h.p., handle-bar clutch, new Dunlop, spare Renold, insurance, ps, etc., £36, offers; sidecar, £4. Lightweight nted.—Clementson, Prospect House, Mossley, near nchester. [X9215

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.N. 1909 Lightweight, mag., lamps, and tools; £12. —Smith, 16, Haverstock Hill, London. [3927

.N. 2h.p. Lightweight; £8/10; in real good order.— Percy and Co., 337, Euston Rd., London. [3853

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.N., 5-6h.p., 4-cyl., purchased new November, 1911, carefully used week-ends only, nice condition, per- t running order; too powerful for owner; highest h offer, or exchange for good make 3½h.p. machine. airbrother, Grocer, Moira, Leicestershire. [X9146

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[ARLEY-DAVIDSON 7-9h.p. Twin and 4h.p. in stock.—Turpine, 29, Preston Rd., Brighton. [0713

[ARLEY-DAVIDSON Combinations in stock; exchanges.—Middleton, 27, Stroud Green Rd., N. [3106

915 Harley-Davidson, 11J model, hardly soiled; £73.—Colmore Depot, 31, Colmore Row, Birmingn [3701

[ARLEY-DAVIDSON Sidecar Combinations in stock for immediate delivery.—The Premier Motor .. Aston Rd., Birmingham. [2800

915 Harley-Davidson and Gloria Sidecar, 3 months old, electric lighting and horn, guaranteed per- t; any trial; £80, or offer.—Howes, 139, South Lamh Rd., S.W. [3803

[ARLEY-DAVIDSON, 1915, 11h.p., electrically equipped with horn, lamps, 3-speed, fortnight old, y done 100 miles, absolutely new; £74, or offer.— nuis, 5, Cambridge Rd., Lee, Kent. [3885

[ARLEY-DAVIDSON, 1915, electrically equipped, and Mills-Fulford Empress sidecar to match; cost 3/10 last week; too powerful for owner; offers wanted, h or exchange.—Deane, Matlock Bath, Derbyshire. [X9142

[ARLEY-DAVIDSON, model 11 J, 7-9h.p., 3-speed, with electric dynamo lighting outfit and electric rn, fitted with special Gloria sidecar, the finest mbination on the road; £97/13 complete; imme te delivery.—The Premier Motor Co., Aston Rd., rmingham. [1922

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Hobart.

[OBART, 1914, 2-stroke, as new; £20; lamps, etc.— 11, Luna Rd., Thornton Heath. [3593

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912 Humber and sidecar, 2-speed; £21.—169a, Lower Clapton Rd., N.E. [3836

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9113¼ Humber, 3½h.p., 2-speed, free engine, handle starter; bargain, £21.—Davis, The Heath, Crayd. [X8968

[UMBER, 3½h.p., 2-speed, free engine, handle starter, and sidecar; £20.—29, St. Leonards St., w. [3897

[UMBER, 3½h.p., 1913, lamp, horn, free engine, 2-speed, beautiful condition; £25.—Carter, Motors, ays. [3637

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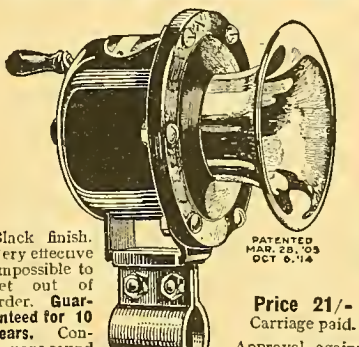

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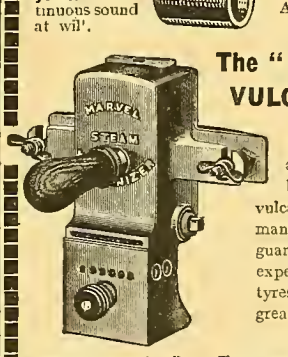

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HUMBER, 3½h.p., and sidecar, 2-speed, free engine, handle starter, Kempshalls, all good order; £26.— 22, Durham Rd., Plumstead, S.E. [X9036

3½h.p. Humber, 2-speed, free engine, and coachbuilt sidecar; £26, or exchange with cash for good twin.—20, Greenwood Rd., Dalston. [3804

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HUMBER Motor Cycle and sidecar, good running order, just overhauled; £35, or offer.—Apply, B. Riley, King's Head Buildings, Coventry. [X8341

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1913 3½h.p. Humber, wicker sidecar, 3 speeds, free engine, nearly new tyre back wheel and sidecar; £33; seen by appointment.—G.S., Bowland, Rickmansworth. [3751

HUMBER, 3½h.p., 1913¾, and Montgomery sidecar, 3 speeds, kick-starter, lamps, horn, etc., perfect throughout; £42.—Mylam and Co., 197, London Rd., West Croydon. 'Phone: Croydon 2379. [3886

1911 2-speed Humber, handle starting, wicker sidecar, in excellent condition; price £21.—Tuka and Bell, Ltd., Motor Engineering Department, Carlton Engineering Works, High Rd., Tottenham, N. [3998

HUMBER, 1911, 3½h.p., 2 speeds, handle starter, B. and B., Bosch, Lucas head light, Watsonian featherweight sidecar, 4 covers, 5 tubes, horns, and spares; £26/10, near offer.—30, Uckfield Rd., Enfield Lock. [X9266

HUMBER, 3½h.p., with 1915 Philipson pulley and sidecar, all tyres brand new, and the whole in perfect condition, lamps, horn, speedometer, and full outfit of tools and accessories; price £25; can be seen by appointment.—F.P. Lambert, 13, Union Rd., Leytonstone, N.E. [X8975

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INDIAN, 1915, 5h.p., in stock; immediate delivery. —Nelson, Gloddaeth St., Llandudno. [X9149

1913¼ 7h.p. Indian, 2-speed, free engine; bargain, £35.—25, Ormskirk Rd., Newtown, Wigan. [3816

5-6h.p. Indian, 1911, just done up by makers; £28.— Buckingham, 21, Tiudal St., Chelmsford. [3691

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INDIAN Combination, 2-speed, clutch, splendid condition; £31/10.—Wadhams, Orphanage, Turton, Bolton. [3894

INDIAN, 7h.p., 1913 clutch model (new May, 1914), perfect; £32.—Clutterbuck, Terrets, Kingswood, Warwickshire. [3778

1914 7h.p. Indian, Canoelet sidecar, electric, perfect, well kept; buying car; £70.—Burton, Jeweller, Nuneaton. [X8970

1914¾ Indian Combination, 7-9h.p., electrically equipped; 50 gns., a bargain.—Thomson, Cowgate, Peterborough. [X8657

INDIAN, 1914 Hendee Special, coach sidecar, semi T.T. and tourist bars; £65; splendid condition.— 69, Beckett Rd., Doncaster. [X9171

INDIAN, 1915, 7h.p., clutch, T.T. model, and torpedo sidecar, excellent condition; £50.—P. J. Evans, John Bright St., Birmingham. [3879

INDIAN 1914 Combination, 7-9h.p., electric equipment, little used; £55, bargain; call before 4.— Universal, 52, Gray's Inn Rd. [3786

INDIAN, 1915, 7-9h.p., model C, new last month, run 600 miles only, guaranteed perfect and unscratched; offers.—Moss, Wem. [X9195

INDIAN, 1915, 5h.p., 3-speed model, complete with speedometer, etc., had exceptionally little use, guaranteed perfect; £58.—The Morris Garages, Oxford. [X9184

INDIAN, 1911, 5h.p. twin, free engine; £30, or nearest offer; condition very good, T.T. and standard bars.—Piears, 10, Terrace Rd., Aberystwyth. [3769

1915 Indian, 5h.p., 3 speeds, only done 100 miles, long horn, acetylene head light; cost £63, what offers?—Box L1,518, *The Motor Cycle* Offices, 20, Tudor St., E.C. [3984

INDIAN 1915 7-9h.p. Road Racers, model D, delivered from stock; £57; exchanges or extended terms arranged.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0597

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INDIAN 1914 7-9h.p. Combination, Model de Luxe; must sell at once; owner going abroad; cash price £65, or arrangements for paying by instalments.—Haycroft, 40b, High St., Hampstead, N.W. [3635

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INDIAN, late 1913, 7-9h.p., with Cowey speedometer and Mills-Fulford Radio spring wheel sidecar, whole outfit in perfect order; £55.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter and 28, Tavistock Rd., Plymouth. [0569

1914 7h.p. Indian, 2-speed, complete with dynamo electric lighting set, electric horn, and speedometer, smart Indian coachbuilt sidecar, whole outfit in very good condition, and thoroughly overhauled; 50 gns.—Julian, Broad St., Reading. 'Phone: 1024. [X4835

1913¾ Indian, 7h.p., T.T., clutch model, kick start, 18 gn. Indian coachbuilt sidecar, 4 gn. Lucas lamp set, tyres unpunctured, enamel and plate hardly scratched, combination fast, powerful, splendid condition, guaranteed perfect, accessories; £41.—47, Mosford St., Burdett Rd., Bow, E. [3962

INDIAN Model B. and sidecar in stock; deferred payments quarter down and balance in 12 months; special discount for 3, 6, or 9 instalments; also 1914 7-9h.p. clutch model, full accessories, 50 gns., or deferred terms.—Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green. [3735

Ivy.

IVY 1915 4h.p. Twin, 3-speed countershaft, very fast, ridden 100 miles; owner going to Front.—Apply, Box 9,373, *The Motor Cycle* Offices, Coventry. [X9075

Ixion.

1915 2½h.p. Ixion, 2-stroke, new condition; £23.—53, Brownhill Rd., Catford. [3830

1914 2¾h.p. Ixion, 2-speed, new tyre, perfect; £26.—Quick, Causeway, Great Baddow, Chelmsford. [3917

James.

JAMES, 2-stroke, 2-speed, late 1914, newly overhauled; £26.—Davies, Dunloskin, Fraserburgh. [X9176

1915 James 3½h.p. Twin, in stock for immediate delivery.—Nelson, Gloddaeth St., Llandudno. [X9148

1915 4¼h.p. James Combination, Montgomery sidecar, all perfect; £56.—Wallis, High St., Saffron Walden, Essex. [X9330

JAMES 1915 4½h.p. Combination, 3-speed countershaft gear, Lucas dynamo lighting set, coach sidecar, condition as new, many extras and spares; £72/10.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0492

JAMES, 1915, 4½h.p., 3-speed countershaft gear, clutch and kick starter, chain drive, Canoelet sidecar, with Lucas electric lighting outfit, Lucas electric horn; £90/15.—Colmore Depot, 261, Deansgate, Manchester. [0674

J.A.P.

4h.p. 1914 J.A.P., Sturmey 3-speed, new condition, complete; £40.—Chapman, 26, Highbridge St., Waltham Abbey. [3845

J.A.P., 3½-4h.p., B.S.A. carburetter, Bosch, good tyres, Pedley, fast, low; £16, or exchange 2-stroke same value.—Box L1,506, *The Motor Cycle* Offices, 20, Tudor St., E.C. [3654

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J.A.P.

J.A.P., 5-6h.p., handle starter, F.E., Roc clutch, B and B., Bosch, Druids, wicker sidecar, 2 new tyres thoroughly overhauled; £20.—Reid, 41, Grove Vale, East Dulwich, S.E. [3661

Kerry.

KERRY, 2¾h.p., perfect running order; £6/10.—Sibley, 106, Market Place, Romford. [3955

KERRY, 2¾h.p., h.b.c., running order; £4/10, or offer.—3, Elden Park, South Norwood. [3592

3½h.p. Kerry-Abingdon Engine Machine, in splendid order; cheap; owner enlisted.—Full particulars from Wood, Bridge Rd., Chatburn, Lancs. [3841

3½h.p. Kerry-Abingdon, with Roc 2-speed, Best and Lloyd, in good order; £27; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0723

Kynoch.

1914 4h.p. Kynoch, J.A.P., coachbuilt sidecar, 3 speeds, clutch, lamps, horn, and spares; £47.—Chauffeur, Queenebury House, Friars Lane, Richmond, Surrey. [X9276

Lea-Francis.

4h.p. Lea and Francis, 1915 model, little used; £60.—Writer, 163, Lower Kennington Lane, S.E. [3645

1914 3½h.p. Lea-Francis and Henderson light sidecar; £54.—T. Jerrison, "Moscar," Millhouses, Sheffield. [X9237

LEA-FRANCIS, 1914, 3½h.p. twin, 2-speed, hand clutch, splendid order; £49/10.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0491

LEA-FRANCIS, 3½h.p., countershaft 2-speed, kick starter, enclosed chain transmission, Jones speedometer, Lucas lamp and horn, in splendid condition; £46.—Hucklebridge, 133, Sloane St., London. [X9162

Levis.

LEVIS, 1915, 2-stroke, as new; £22 cash.—11, Lane Rd., Thornton Heath. [3595

BROOK, Motor Cycle Specialist, Burnham, Som., can supply from stock No. 1 model Levis. [3602

LEVIS New 1915 Models, 2¼h.p. Popular, delivery from stock; £28/1 cash, or easy terms.—Wanchope's, 9, Shoe Lane, London. [X9131

1915 Levis, 2¼h.p., Popular model, absolutely in stock; £28/1; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6410

LEVIS 1915 Popular Model, just arrived from works; immediate delivery; £28/1.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [3667

LEVIS, Baby, carefully kept, good tyres, lamp, footboards, Stewart speedometer, Lycett's saddle; £28.—Simpson, 1, Peahen Buildings, St. Albans. [3817

1915 Levis Popular, purchased in May, in perfect condition, new Miller lamp, horn, accessories, tip-top bargain, £19/10.—Wood, 69, Waterloo Rd., Hallington, Crewe. [X9039

LEVIS 2-stroke Motor Cycles, latest 1915 models.—Sole London and district agents, Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent. [0711

LEVIS No. 1 in stock, £36/17, or £10/13/9 down and 12 payments £2/6/8; special discount for 3, 6, or 9 instalments.—Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green. [3734

Lincoln-Elk.

1913 Lincoln-Elk, 3½h.p., 2-speed, free engine, good condition; £25.—Mason, 60, South St., Doncaster. [X8974

1912 Lincoln-Elk, 3½h.p., Bosch, Dunlop belt, good tyres, splendid condition; £15.—Cpl. Smith, 4, Bungalow, Batchelor Village, Cove, Farnborough, Hants. [3738

L.M.C.

1913 4h.p. L.M.C. and Coach Sidecar, 2-speed gear, free engine, decompressor, drip feed oiler, in good order; bargain, £35.—75, Osborne Rd., Forest Gate. [3760

Matchless.

MATCHLESS Combination, 8h.p., 2-speed, twin drive; nearest £50.—49, England's Lane, Hampstead. [3961

MATCHLESS Combination, 8h.p., good condition running order; £40.—25, Upper Kennington Lane, S.E. [3605

MATCHLESS, 1912, 3½h.p., single, J.A.P., B. and B., clutch; £22.—Rutter, 140, Tenison Rd., Cambridge. [X9052

1912 Matchless, 3½h.p. J.A.P. engine, fixed, good condition, just overhauled; £20, offers.—Hollings Downs, Bromyard, Worcester. [X9253

MATCHLESS, 1914, 6h.p., Canoelet sidecar, fully equipped, good condition; £65, or near offer.—Mills, 14, Kirkside Rd., Blackheath. [3615

MATCHLESS, 4h.p. J.A.P., 1915 cylinder and piston specially built, perfect condition, fast and reliable; £33.—Ross, 39, Holly Hill Rd., Erith. [X9083

MATCHLESS 1914 8B Combination, in new condition, not been on the road this year; bargain £75.—40, Marmion Rd., Clapham Common. (D) [393

MATCHLESS-J.A.P., 4h.p., P.M. 2-speed, free engine, chain drive, with torpedo sidecar, and accessories; £30.—185, Shernhall St., Walthamstow. [359

THE MOTOR CYCLE
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Two-stroke or Four-stroke?

AT the moment the two-stroke engine may be said to be at the height of its popularity. Though one of the oldest types of engines, it was not until recent years that engineers in any number devoted their attention to perfecting the two-stroke engine for motor cycle use, and, as we all know, the result has been the advent of the lightweight in its thousands. Lightweights there have been in plenty since motor cycles came into being; indeed, the original motor bicycles were lightweights, though, sorry to relate, inefficient ones. Their main troubles, too, were such that their four-stroke engines, with their miniature valves, could not retain their efficiency for any length of time, which brought into use the common expression "L.P.A.," signifying "light pedal assistance," more often the reverse of light. The valveless engine was seized upon when once its capabilities had been proved, as it eliminated the one weak point of the forerunners of lightweight motor cycles, *i.e.*, the poppet valves; but even now that the best brains have been expended on the development of the two-stroke engine, it is still found wanting in certain respects—for example, internal and external cleanliness—and any thinking man is bound to wonder what may be the ultimate development of the type.

It is well-known to two-stroke users that the excessive carbon deposit which forms so readily in a two-stroke is its greatest drawback. This carbon does not confine itself to the piston head, and the interior of the piston, but causes the top ring to stick in its groove, thus quickly lessening its power output and necessitating frequent removals of the cylinder. This problem has puzzled engineers for a long time past, as also the difficulty which has been discussed at length in our pages, viz., the metallic rattle that is set up in certain types of engines. This rattle does not seem to apply to every make of two-stroke, just as the excessive carbon deposit is not so pronounced in some designs as in others, but nevertheless the two phenomena which have caused engineers "furiously to think" for some months past, are causing them to reflect that after all the miniature four-stroke engine in its very latest form may still prove a rival to the two-stroke. Incidentally the modern highly efficient four-stroke with its practically unbreakable valves is infinitely superior to the lightweight engines of bygone days. We have even heard of one or two manufacturers who, having come to the limit of their patience in the matter of perfecting the two-stroke, are now disposed to change over to the four-stroke. At the moment, the trend of development would suggest that the cheapest and lightest motor bicycle of the future will have a two-stroke engine, whilst the four-stroke lightweight, so far from being ousted by its simpler rival, will continue to grow in popularity. Personally, as our readers know, we have always favoured the two-stroke for lightweight machines, this simple valveless engine lending itself splendidly to this purpose, and being so much in keeping with the light motor bicycle selling at a popular price.

Further, the experience which makers have had with the two-stroke is short compared to that with the four-stroke, and we are convinced that there is still much field for research and experiment, and are strongly of opinion that the troubles we have named are not insuperable. We should not like our readers to get an exaggerated idea of the importance of these failings. Indeed, it is only the engineer and the designer, or the mechanically-minded user who worries himself unduly concerning them. The average potterer, who forms the larger part of the ranks of two-stroke users, does not find these difficulties a real drawback to the two-stroke; a little erratic running immediately after starting, an objectionable spluttering on occasion, and the frequency of cylinder removals, and extravagance in petrol and oil consumption being all that concern him.

An Index to the advertisements in this issue will be found on the page facing the back cover.

MILITARY NOTES.

SWIVELLING HEAD LIGHTS.

THE General Officer commanding the Third Army C.F., who is the competent military authority for all Essex outside the Metropolitan police area, all Herts. outside the Metropolitan police district, and the whole of Buckinghamshire, points out that prosecutions have been very frequent under the Defence of the Realm Regulations (1914), especially in the case of motor cyclists. This is a regulation affecting the use of lamps capable of movement independent of the vehicles to which they are attached. He considers that these contraventions are probably owing in many cases to ignorance. We are engaged in a serious war, and it hardly seems reasonable to criticise the action of the military authorities, but we cannot help feeling that this particular regulation is one which was made without considering the motor cyclist in the slightest degree. Having made it, the authorities will not go back, and will offer no suggestion as to a means of fixing a motor cycle head light. If the head lamp is fixed so that it cannot be moved vertically, there is no regulation to prevent a man taking off the lamp and waving it in the air, or otherwise using it for signalling.

THE SUPREME TEST.

"A CONVOY which has no trouble with its vehicles does some good out here to the makers. You have got no idea the battering about the cars and motor cycles get on these roads. It's just awful, and to keep them up to the work requires the greatest possible knowledge of their parts."—Extract from a letter received from Lieut. T. E. B. Chalmers, who is workshop officer to an ambulance convoy in France.

The convoy consists of fifty Daimler ambulances, one Daimler 30 cwt. lorry, three Peerless 3 tonners, four Sunbeam cars, and seven Triumphs.

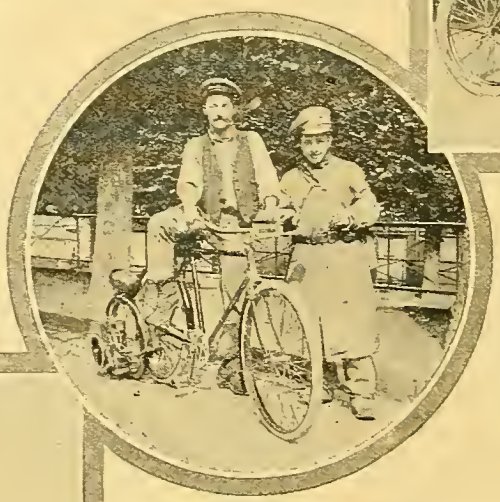
Lieut. Chalmers was formerly a well-known Birmingham tradesman by reason of his connection with the Jennings-Chalmers light car. He will probably be better known to our readers, especially those in Scotland, as a competition rider of a big twin Bat.

A WELL-KNOWN RIDER KILLED.

WE regret to learn that Pte. L. W. Spencer, Motor Cycle Orderly, G. Co., 13th Kensington Battalion, County of London Regiment, has died in hospital in France after being shot in the head whilst on duty.

L. W. Spencer was at one time running the Little Giant motor bicycle at Uxbridge. He was, to the best of our knowledge, the only British motor cyclist to make a motor cycle tour in Iceland. He also contributed to this journal an account of a tour in Devonshire, and was the first motor cyclist to climb Dunkery Beacon and Snowdon on a 3½ h.p. Rover. When our men were suffering so much in the flooded trenches, he wrote to this journal marvelling why Hutchinson boots were not adopted by the Army. Waders were given to the men about the time his letter appeared.

Corporal Frank B. Day, R.E., who has spent two birthdays in France. His mount is a countershaft model Triumph.



A Frenchman riding an Auto-wheel on a pavé road.

Corporal Bevan, R.E., makes a temporary repair to the handle-bars of his Douglas with the aid of a stiff bough from a tree. He had fallen into a hole made by a shell.

A TALE OF A SPECIAL CONSTABLE.

A SOLDIER was out for a spin on his motor cycle and sidecar with his best girl on board, when a special constable stopped him and asked to see his licence. As he did not have this important document on his person he attempted a little bluff, and told the special that he was carrying despatches and must not be detained. "Oh, indeed," replied the special, "that is most interesting. I will write to ——" (mentioning one of his officers) "and tell him what you say. I will also inform him that your despatch on this occasion was a girl in a sidecar." The soldier was obliged to langh and admit that he had been fairly caught, so he then satisfied the curiosity of the energetic special with the least possible delay.

COVENTRY MOTOR CYCLIST KILLED.

IT is only a week or two ago that we referred to Sec.-Lieut. Theo Newsome as frequently being confused with Sec.-Lieut. C. T. Newsome of the Rover Co., both men being prominent motorists of Coventry, and members of the Coventry and Warwickshire Motor Club. We now much regret having to report the death of Mr. Theo Newsome, who was killed in action at the end of last month. Of the thirty-six odd members of the Coventry Club on Active Service, this is the first fatality.

DOUGLAS WAR WORK.

NOT only is the War Office regularly taking batches of the 2¾ h.p. Douglas, but it is also demanding big supplies of 4 h.p. sidecar outfits of the same make, and the French Government has placed an order for this same combination. On top of this we find Messrs. Douglas Brothers are manufacturing a number of shells, and sets are being supplied weekly for Marconi wireless. They make a further set for the Admiralty, which is fitted in transport lorries.

J. H. Slaughter, the old Triumph and L.M.C. rider, is busy testing Mandslay lorries. He told us he would like to compete in a munition workers' competition.

OCCASIONAL COMMENTS.

By "IXION."

The "Dymag."

It's a horrid word, I know, but I suppose the craze for abbreviations will saddle us with this or some similar atrocity. Still, I want to discourse about facts rather than terms. I have now acquired a little experience of the combined lighting-cum-ignition outfits, and I see clearly that one of two things must come to pass. Either a little trouble must be taken to bring them up to the high standard of reliability already attained by the magneto, or else we shall suffer more frequent ignition stoppages. The wiring circuit of a "dymag" is a fearsomely complex affair, and even if its complexities are tolerably easy to keep in working order when once comprehended, by no means every motor cyclist is quick to grasp their significances. To mention but one case in point, they usually include an automatic cut-out, which prevents the battery from exhausting itself into the dymag, when the current output at the dymag terminals is of less voltage than the current at the battery terminals. On the machine in question this cut-out is most ingeniously designed for operation by the suction of the inlet valve. The owner concerned blissfully imagined that the metal pipe connecting his engine with the suction switch was some kind of oil-pipe; in course of time his check valve got a speck of dirt in it, and misfiring set in. The trouble was corrected in a couple of minutes when he twigged its nature, but, needless to say, his diagnosis was long, painful, and hesitating. The trade must consider very solemnly whether the average rider is sufficiently clever to be trusted with circuits so complex. For myself, I think the trade pays the average user too high a compliment in considering him worthy of such outfits.

Those Yankees!

It is interesting to notice that the American manufacturers, from the Hendee Co. downwards, are nibbling at the lightweight. For a long time past the Schickel has been almost the only home-made two-stroke on their market, but there are a lot of *débutantes* in that field this autumn—beg pardon, "this fall," I should say; and precious ugly little beasts some of them are. The big Yankee twin conceals its native ugliness because all the odd corners are filled up with gear of one sort or another, but when they come to house a baby engine in a lonely corner of a half-empty frame, the American's lack of an eye for beauty is sadly obvious. They are making the Wall Auto-wheel under licence, and are boosting it tremendously. In addition there is a 21 lb. 1 h.p. two-stroke attachment for push-bicycles, alleged to be capable of 4,200 r.p.m. under load on the road; I should imagine the load was a postage stamp, and the road was the face of a precipice. A contributor, under the heading "Injecting Pep for Speedwork," speaks of a horizontal twin which can do 3,000 r.p.m. when lying on a bench, without any securing bolts! One firm announces a new baby two-stroke incorporating poppet valves in the head, which is expected to revolutionise the valveless world! One thing is certain, and that is the big American twins are touching a very high standard. Doesn't it make one envious to read of petrol at 14 cents (7d.) a gallon?

The "Tight Spot" in a Chain.

A correspondent writes to question whether the well-known "tight spot" in a chain is really due, as suggested, to any unevenness of wear, and alleges that the tension is unequal even when the machine is brand new. He ascribes it to the fact that sprockets (and especially the larger countershaft sprockets) are finished before they are mounted on their shafts, and that they generally lose their "truth" to a fractional degree during the mounting process. He believes perfectly even tension could be procured if the sprockets were tested and trued after mounting. I regret that I do not possess the shop experience requisite for a verdict on the point, and as it happens, there is no showroom handy on which I can test the truth of a dozen brand new and unused chain drives. If my correspondent is correct, the trade could obviously increase the life of its chains and sprockets very considerably by attending to this detail, and it is possible that the point may partly explain why different riders claim such divergent mileages from a set of chains. Alternatively, the facts, if true, would suggest that heavier sprockets, incapable of being strained in fitting, or a method of fixing which obtains rigidity without forcing, might prove cheaper than a system of re-truing the sprockets after fixing on their shafts.

Side-by-side Valves.

The abandonment of the overhead inlet valve by a firm of such standing as the Indian Co. gives one furiously to think, especially when contrasted with a marked European inclination to push the overhead pattern, whilst overcoming its defects, by encasing the rocker gear. It would be very interesting to have access to the evidence on which two such eminent concerns as the Hendee and the M.A.G. technical staffs have come to diametrically opposite conclusions; and, in my lay ignorance, I am tempted to suggest that the Swiss firm has laid the greater stress on pure technics, and that the Hendee engineers have been tenderly mindful of the average user and his yearning for accessibility. On the one hand, I always feel that an overhead valve engine (even if only the inlet valve be promoted to the upper house) has an extra vim and *élan* which no side-by-side valve engine of equal cubical capacity and workmanship can quite hope to match. Against this factor one must remember that the overhead inlet obstructs access to the exhaust valve; is not too accessible in itself, even when naked; is apt to wear very rapidly so far as its rocker gear is concerned, where no cover is provided; and will shed parts or lose adjustment unless its construction is very solid and weighty; in particular, the replacing of a stout spring on such a valve is "some" job. *Per contra*, the side-by-side type never seems to produce quite the same kick and acceleration, but is infinitely pleasanter to handle in any repair work. I consider the design of M.A.G. engines ideal on the road, but sigh for something simpler when decarbonisation is in the air. So I rather fancy that the Hendee engineers settled the problem with one eye on their myriad customers who ride in rough lands, where time is precious and repairers are few.

ROAD TESTS OF NEW MODELS.

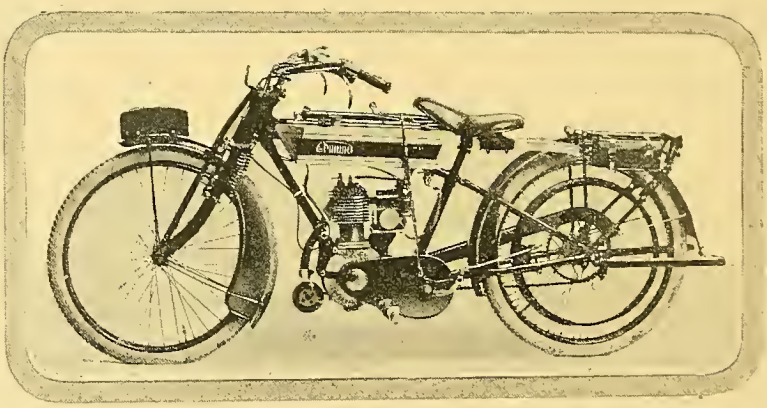
2½ h.p. Spring Frame Edmund-Jap; Bore and Stroke 70 × 76 mm., Cubic Capacity 292 c.c.; Enfield Two-speed Gear and Transmission.

WE recently had the opportunity of putting a machine of the above make to a somewhat extensive test, and since our riding was done over roads which considerably varied in hilliness and quality, we are now able to speak with practical knowledge concerning this interesting lightweight.

The machine is of special interest on account of its springing, and since almost any make of lightweight engine can be adapted to the Edmund spring frame, our interests were centred more on the efficiency of the springing system than on the capabilities of the 2½ h.p. J.A.P. engine, the merits of which are sufficiently well known. In these days of bad roads any adequate system of rear springing for lightweight machines is of special interest to many of our readers, and it cannot be doubted that in due course rear spring frames will become the common order.

Description of the Springing.

Though we have already described the Edmund springing system, a brief outline as to its working points is here necessary. The weight of the rider is supported by two long leaf springs extending from under the saddle to the rear carrier stays. The tension of these springs can be adjusted to suit one's weight by raising or lowering the bolts that support their thin ends, and for this purpose the stays are flattened and several holes are drilled to give the various settings. Short coil springs, which act as shock absorbers, are fitted to the lower ends of the stays. The top bar, which is pivoted at the steering head, moves vertically with the saddle, and the footrests are attached to the extended saddle pillar which passes through the seat tube. Thus it will be seen that the saddle and the footrests move in unison against the tension of the long leaf springs, which insulate the rider from road shock and engine vibration, the portion of the frame which carries the engine and the road wheels being rigid.



The Edmund spring frame motor cycle, our experiences with which are recounted in the accompanying article.

The tank is attached to the top bar, and, since this member is sprung while the engine is unsprung, petrol and oil are conveyed from their respective tanks by flexible petrol-proof rubber tubing as used by the British and French Governments on flying machines. The originality of the frame design also necessitates a divided tank, one compartment of which carries one quart of oil and half a gallon of petrol, while the other carries one gallon of spirit. The convenience of possessing two tanks is fully realised in practical use, though the compartments can be interconnected if desired.

The Comfort Provided.

Extreme simplicity of design is a great point in favour of the Edmund springing system, the few unconventional features involved being obvious at a glance. Many of the roads we negotiated would be hard to equal for their rapid succession of pot-holes, and during the year we have ridden many machines, from the big touring twin down to the two-stroke lightweight, over these same roads. There is no question, however, that the machine under review has proved by far the most comfortable we have handled amidst such conditions, the action of the long springs being so gradual that only the worst of pot-holes conveyed anything resembling a jolt to the rider. Probably the chief point in favour of this system of springing is its absence of sudden recoil when negotiating pot-holes in rapid succession. There is no tendency for the rider to bounce up and down with increasing violence when travelling at speed, the action of the springs being at all times slow and steady—a point we emphasise for the benefit of those who have had no experience with rear sprung frames. Some such arrangement is obviously in demand during this period when lightweights are so much used about our military centres, where the roads are generally of the worst. The carrier is partly sprung, and is more comfortable than the rigid type for pillion riding, but it would add to the general satisfaction of the machine for present-day demands if this portion were sprung with the saddle—an embodiment somewhat difficult to attain.

Engine and General Efficiency.

The 2½ h.p. J.A.P. engine displayed a surprising kick and vigour when opened up to normal speed, and we found the machine slightly faster than most two-strokes we have handled of the same power. The marvellous economy of this little mount is, however, its most surprising feature, the re-filling of the petrol tank being such an occasional event that one is apt to forget it as a practical necessity. The machine is fitted with Amac carburetter and Dixie magneto.

Its hill-climbing capabilities are all that can be desired for normal work. The Enfield gear and transmission is delightful in action, the machine

Road Tests of New Models.—

picking up from a standing start on quite a steep gradient. In no way, therefore, would this little mount fall short of meeting the demands of the ordinary pleasure rider, and yet it is by no means heavy.

There are, however, one or two insignificant points where improvement might possibly be made. The fixed ignition prevents one from obtaining the best out of the engine, and does not improve matters when starting from cold. Like almost every lightweight we have handled this season the footrests are too near the ground. On these little machines, with their safe riding position, one gets into the way of leaning the machine at a considerable angle when negotiating right angle bends, and if the road surface is irregular one is apt to foul the footrests with considerable force during moments of forgetfulness. We would also like to see the chain guards of lightweight machines made of more solid material, so that these members are not so susceptible to injury and the resultant rattle.

USEFUL MOTOR CYCLE FORMULÆ.

Some Aids to Easy Calculations.

MOST motor cyclists who are keen on the pastime, and there are few who are not, find themselves confronted at some time or other by queries relating to the effect of variations of the gear ratio, upon the road speed, the number of engine revolutions per minute being a known quantity, or the effect of variations of engine revolutions upon the road speed, the gear being the known factor, and it is with the idea of providing simple, handy formulæ that the following notes are penned.

The one constant which is required in all calculations of this description is the number of revolutions which the wheel of the cycle makes in travelling one mile, this being arrived at by dividing one mile (one mile = 63360in.) by the circumference of the wheel. In the case of a 26in. wheel the circumference is 81.681in., so that the wheel will make $\frac{63360}{81.681}$, which equals 775.69 revolutions to one mile, consequently to find the number of engine revolutions per minute, knowing the miles per hour that the machine is travelling, and the gear ratio, the miles per hour must be multiplied by the constant 775.69 which gives the revolutions of the wheel per hour, this being multiplied by the gear ratio to give the engine revolutions per hour and divided by 60 to give the engine revolutions per minute, thus:

$$\text{Engine revolutions per minute} = \frac{775.69 \times \text{speed in m.p.h.} \times \text{gear ratio}}{60}$$

$$\text{which simplified} = \text{m.p.h.} \times 12.9 \times \text{gear ratio} \quad (1)$$

This formula may, of course, be transposed to give the miles per hour the machine is travelling with known engine revolutions and gear ratio, the formula being then

$$\text{Speed in m.p.h.} = \frac{\text{Engine revs. per min.}}{12.9 \times \text{gear ratio}} \quad (2)$$

A further variation is that required to give the necessary gear ratio to provide a given road speed, the engine revolutions being known, the formula will then become:

$$\text{Gear ratio} = \frac{\text{Engine revs. per min.}}{\text{m.p.h.} \times 12.9} \quad \ldots \quad (3)$$

It often occurs that the cyclist requires to know what speed his machine is travelling when timed in seconds and fractions of a second over a distance measured in yards, and in this case the following will be found useful:

$$\text{Speed in m.p.h.} = \frac{\text{Distance in yards} \times 3{,}600}{\text{Time in secs.} \times 1{,}760}$$

$$\text{which simplified} = \frac{\text{Distance in yards} \times 2.0454}{\text{Time in secs.}} \quad (4)$$

or, having the speed of the machine in miles per hour:

$$\text{Distance in yards} = \frac{\text{Speed in m.p.h.} \times \text{time in secs.}}{2.0454} \quad (5)$$

To find the time in seconds required to cover a given distance at a definite speed:

$$\text{Time in secs.} = \frac{\text{Distance in yards} \times 2.0454}{\text{Speed in m.p.h.}} \quad (6)$$

When using the above formulæ for other than 26in. wheels it will be necessary to substitute the following values for the constant 775.69in. in formulæ (1), (2), and (3).

24in. wheels = 840.35. 28in. wheels = 720.27.

N.B.—No allowance is made for the flattening of the tyre.

H.H.S.

A HAPPY SOLUTION OF THE FAMILY TRANSPORT PROBLEM.

The outfit is a 7 h.p. three-speed Indian, with a double-seated Millford sidecar owned by a French reader resident in Cairo. The owner says it is most comfortable, the two eldest children occupying the forward compartment, while the baby travels with his mother.

NEW MODELS

· MANUFACTURERS' PROGRAMMES FOR 1916 ·

IVY IMPROVEMENTS.

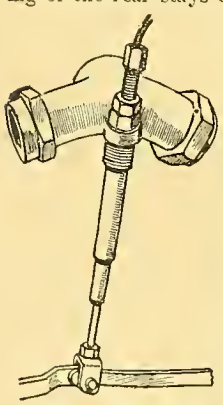
Some Detail Refinements on both Four and Two-stroke Machines.

ALTHOUGH entirely new Ivy models are not being produced by the makers, Messrs. S. A. Newman and Co., for 1916, the present models have undergone certain minor improvements which should render these machines more popular still in the future than in the past.

Foot Brake Design.

As an instance of the changes, the foot brake on the 5 h.p. twin has been redesigned with a very much longer bearing, and is now of somewhat more massive proportions. This brake acts upon the belt rim externally, whereby it is unnecessary ever to disturb the brake shoe before removing the rear wheel for a tyre or cone adjustment. A great number of rear wheel brakes develop play in the bearings and connections because such parts are difficult effectually to lubricate, and are inevitably bathed in mud during a winter run. Consequently, to add to the bearing surface must stiffen the brake as well as making it more durable.

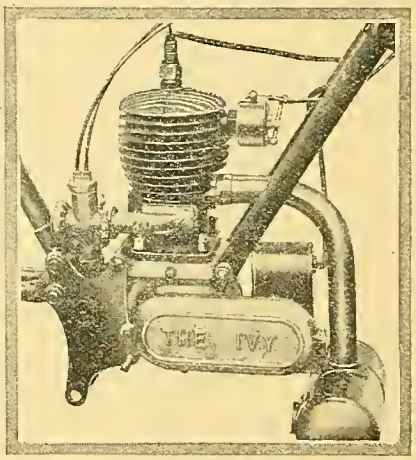
Another improvement is the redesigning of the rear stays to take a very much wider mudguard, which is carried well below the centre of the wheel.



Exhaust lifter with rod attachment from inlet pipe to exhaust valve lifting levers. One of the 1916 improvements on the 4-5 h.p. twin-cylinder Ivy.

All single-geared machines, to which later the owners may require the standard two-speed gear fitted, are sent out with a special U section bottom bracket slotted to receive the gear box securing studs, while a lug brazed to the down tube is ready to carry the gear lever and its brackets—a detail saving expense and time.

A disadvantage sometimes found with the ontside lever exhaust valve lifter when fitted to a twin-cylinder machine is that the lever is apt to develop shake, to rattle, and on occasions to prevent the valves seating accurately. Moreover, the single uncovered Bowden cable being carried from the inlet pipe bracket to the tappet-lifting levers tends to whip, and therefore to fray out until the wire finally parts and the average rider is in a fix. To overcome this the latest Ivy twin is fitted with an exhaust valve lifter operated by a rod from the inlet pipe bracket



Ivy two-stroke engine in position. The location of the compression release silencer will be noted.

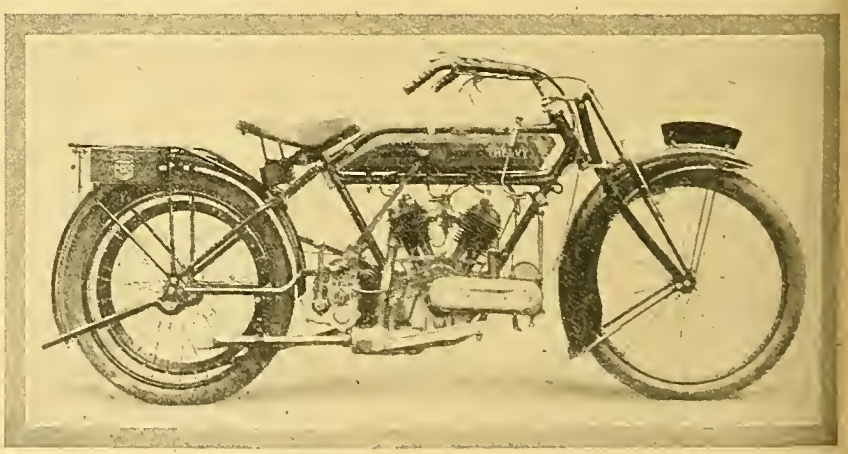
to valve-lifting levers, which rod, being held down by an internal spring, holds the levers stiff. The action is exactly that of the ordinary front wheel rim brake mechanism, and the Bowden cable is used from the handle-bar lever to the inlet pipe bracket where it is secured to the operating rod.

Following modern ideas, the engine chain case is a stiff aluminium casting in two halves bolted together, and therefore able to stand a good deal of rough treatment. The silencer is a steel tube turned on the outside and drawn at each end to form sockets for the forward and outlet exhaust pipes, the rear cylinder discharging straight into the silencer through a short pipe.

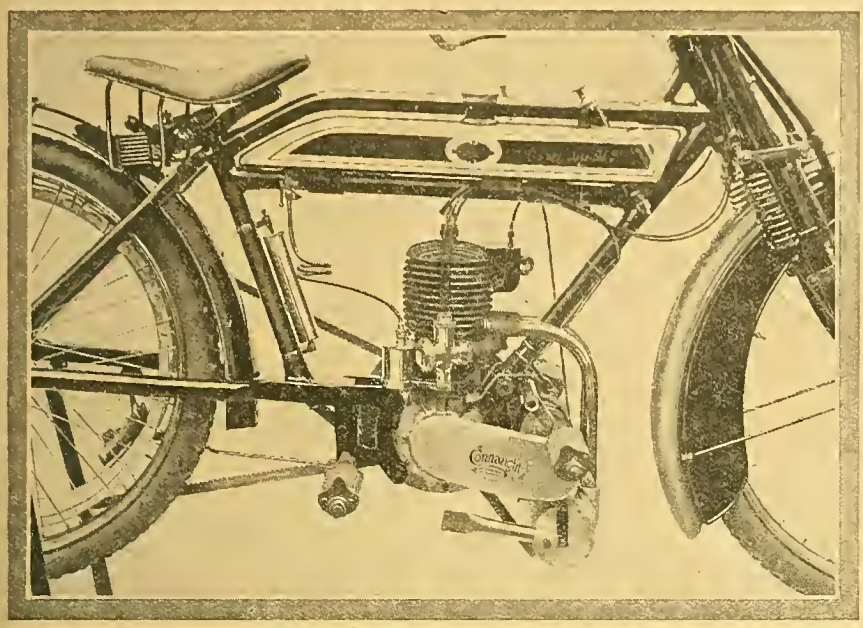
Two-stroke Modifications.

Much useful thought has been expended on the two-stroke model, and as a result it seems probable that all the machines will have an extra air inlet on the induction pipe, as experiments prove that with the present carburetter much power may be gained thereby. On all the compression release valve is fitted with a special silencer, consisting of a cast box enclosing the small mushroom headed valve and allowing the escaping mixture to expand within the casting and afterwards to escape through a few small holes, and in a measure preventing oil spray from being flung all over the machine. Certainly, the casing looks much neater than the bare valve and operating gear; at first the exhaust was taken from this silencer to the exhaust pipe, but latterly small holes were drilled direct in the outer casing itself.

These few details show that S. A. Newman and Co. are anxious to keep ahead, and when competitions recommence it is safe to say that the Ivy often will be found in the premier place once more.



1916 model 4-5 h.p. twin-cylinder Ivy, which is built on distinctly pleasing lines. Chain-cum belt drive is employed in conjunction with a three-speed box.



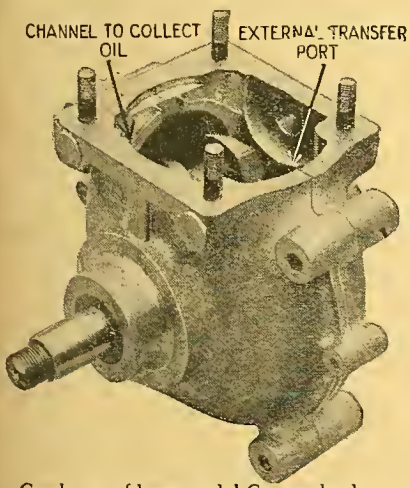
Power unit of the 1916 two-stroke Connaught. This view shows the new tank and other redesigned fittings.

1916 CONNAUGHTS.

Redesigned Cylinder and Piston.

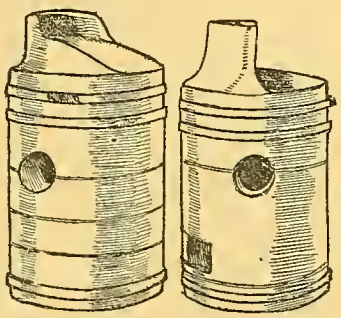
AS 1915 has seen many firms experimenting with circular, or nearly circular tanks, so for 1916 the octagonal or "Zeppelin" tank seems to be gaining favour. The 1916 Connaught tank, enamelled with a vermilion panel in the centre of an aluminium coloured backing, the whole being set off by black lines, is of this type.

This small two-stroke has undergone little alteration so far. The major details redesigned are, firstly, the cylinder,



Crank case of latest model Connaught showing new features of design.

which now has more fins than hitherto, and a transfer passage to the upper row of ports only, but outside the cylinder walls instead of inside, thus deleting the second and lower row of ports inside the cylinder bore, to conduct mixture in the crank case to the combustion space; secondly, an altered crank case, partly as a result of the transfer passage design, and partly to make it more pleasing to the eye.



1916 and 1915 pattern pistons of the Connaught two-stroke compared. There is a separate transfer passage in the latest pattern, thus deleting the piston port.

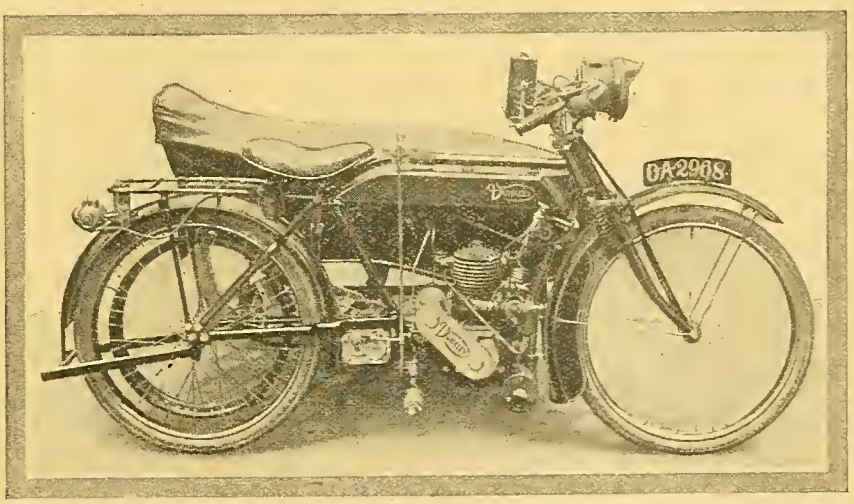
A slightly different piston is now used, having a longer skirt, oil grooves in the waist of the skirt, and a different baffle on the piston head. The piston skirt port is, of course, not required, as the mixture passes outside the cylinder to the ports. With these exceptions, the 1916 Connaught follows the lines of the 1915 model.

DUNKLEY LIGHTWEIGHT SIDECAR OUTFIT.

A Low-priced Sporting Mount for Passenger Work.

AS a result of careful experiment and testing, Messrs. Dunkley, Ltd., have produced a light sidecar outfit for those who require a mount inexpensive in first cost and upkeep. The designer has also had in mind the object of checking as far as possible the efforts of the misguided enthusiast who fits a heavy sidecar to an only-too-willing small two-stroke, thereby ruining for ever the alignment of his machine by using it for a purpose never intended by its designers. The model under review has been improved and strengthened by extra liners in the frame, so that it can withstand the heavy usage or a sidecar.

The engine is the 349 c.c. 75×79 mm. Peco, with a two-speed box, the gears of which are controlled by a horizontal lever placed near the rear of the tank after the Douglas fashion. Lubrication is still by gravity, the oil passing through a drip feed below the level of the tank. The feed is adjustable through a milled disc and locking pawl, and protected by the usual glass-faced casing. Druid front forks are used, and a combined drive is fitted, the engine chain being protected from mud by a shield. Experiments are being carried out with a large Senspray carburetter which may be adopted in the future, but at present



Dunkley lightweight sidecar outfit. The engine is a 349 c.c. Peco, and a two-speed countershaft gear is fitted.

New Models.—

any type specified by the buyer can be fitted. 26×2in. wheels, a 1in. Lyso belt, and a large comfortable pan saddle are included in the specification.

Novel Cushion Design in the Sidecar.

The sidecar is neat, pointed in front, and provided with a large side door, giving easy access, while great care has been taken to stiffen the sidecar mudguard support and to check vibration in the latter—a fruitful cause of unexpected trouble. Sprung at the back and front on large coil compound springs, the body is comfortable to sit in. The cushions are peculiar in that seat and back cushion are in one long piece, divided up into parallel strips about 3in. across, and therefore not liable to flatten, as might happen with a single large cushion. Being in one piece and fastened to the back of the car, it cannot be lost, while the tool box is readily accessible.

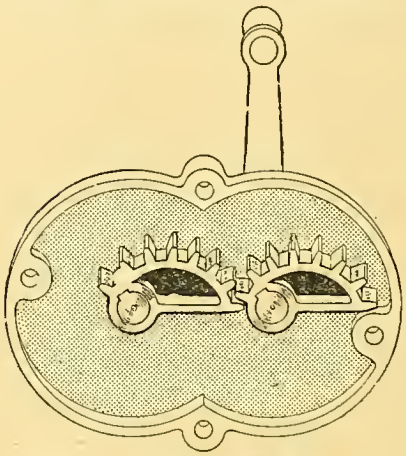
THE P. & M. FOR 1916.

FOR some months past the output of Messrs. Phelon and Moore, Ltd., has been taken up by the Royal Flying Corps, but recently the works have been placed under Government control, and the Union Jack now flies over the premises. Consequently there will be little change in the 1916 model P. and M., though minor improvements are to be made, which will add to the strength and efficiency of the machine. The gear change of the new twin is probably to be altered, a fresh form of change speed lever being adopted, which should add to the pleasure of handling this luxurious mount.

Until these improvements are carried into practice, the machines remain as described some time ago in the articles dealing with the 1915 models that have appeared in *The Motor Cycle*, except that the gear operating chain has been slightly altered.

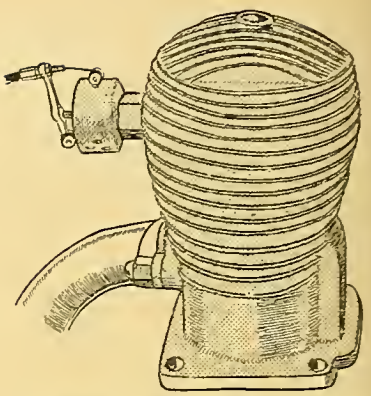
THE C. & S. STARTING GEAR.

AN ingenious form of starting gear has lately been introduced by Messrs. Simpson and Co., 39, Victoria Street, S.W. This is claimed to be an improvement upon the ordinary kick-starter, which is geared up to some extent so that a reasonable number of revolutions may be obtained to one depression of the pedal, and this fact makes it all the harder to cause the engine to turn. Now, the C. and S. starting gear appears to be a considerable improvement,



The C. and S. starting gear, which is described on this page.

as it consists of two gear wheels or segments, the teeth of which are constantly in mesh, and the pitch lines of which form involutes, or other curves, which give each wheel a constantly increasing radius, the arrangement being such that the teeth of the smallest radius of the one gear wheel mesh with the teeth of the largest radius of the other gear wheel, so that when one wheel is revolving and the

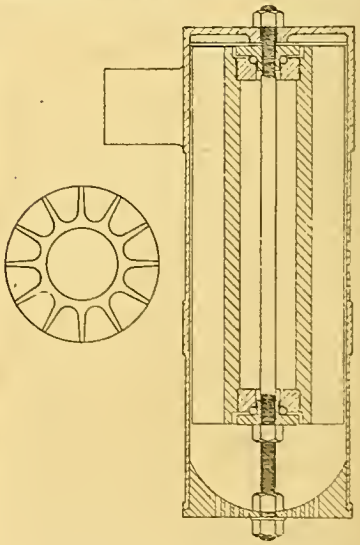


Cylinder of the Ivy two-stroke engine, showing the new compression release silencer fitted to front of cylinder. (See page 368.)

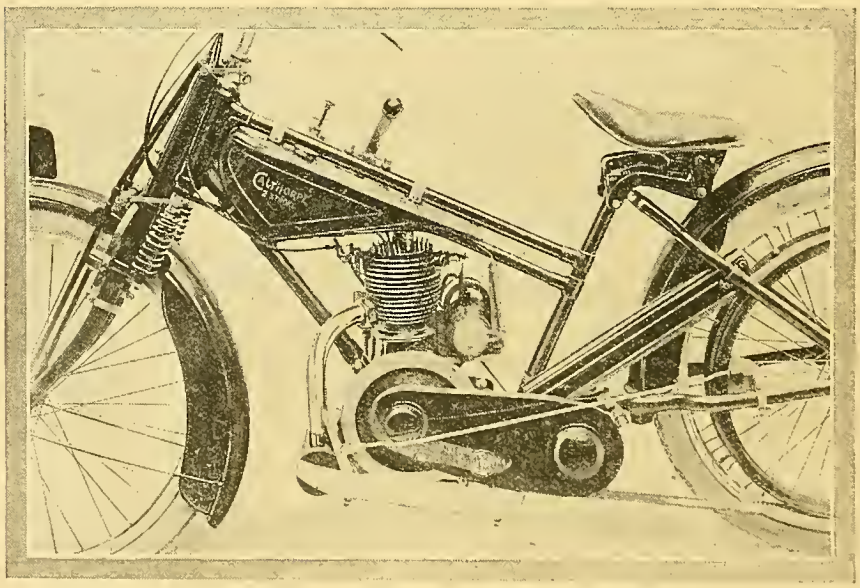
other driving a constantly increasing velocity ratio is obtained between the two shafts upon which the wheels are mounted. The result is that when one begins to start the engine the gear is particularly low, and a good deal of power is obtained at the expenditure of comparatively little force. When once the engine has been started, and the initial inertia overcoce, the gear automatically becomes higher, so that a greater velocity is obtained. We are hoping shortly to see a machine fitted with the device, and shall be very interested to see how it works in practice.

THE MANSFIELD SILENCER

A SKETCH on page 242 of *The Motor Cycle* of September 2nd showed a silencer containing a rotor, the design of Gunner Austin Jones of the M.M.G.S. This has brought forth the fact that a silencer designed on somewhat similar lines was patented by Mr. C. J.



Mansfield, of Prince's Avenue, Alexandra Park, N., also in the early part of 1913. In the Mansfield design (reproduced herewith) a spiral-bladed rotor is used, and it is mounted on ball bearings. The device, it is claimed, is most efficient both as regards silence and absence of back pressure.



A nearer view of the engine and transmission of the lady's Calthorpe, described on page 349 of our last issue. The position of the magneto by which the length of the h.t. wire is reduced to a minimum should be noticed.

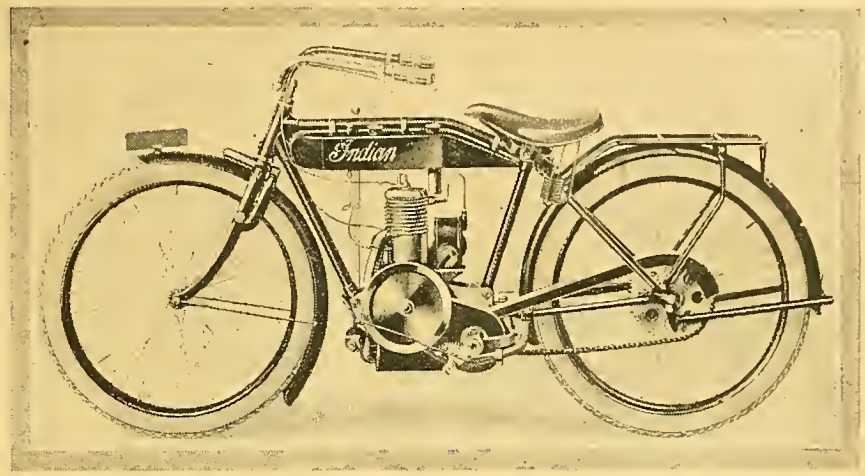
The New Lightweight Indian.

Three-port Two-stroke Engine, 64 mm. × 70 mm., 255 c.c. Re-designed Indian Three-speed Countershaft Gear and Chain Drive.

WE have already outlined the specification of the lightweight Indian, the newest addition to the Indian 1916 range, and are now able to give details of this machine, which is quite a new departure for the Hendee Manufacturing Co. It is by no means a baby, as the engine dimensions are 64 mm. × 70 mm. (255 c.c.), and it is rated at 2½ h.p.

A glance at the sectional photograph of the engine clearly shows its construction, while it is at once evident that the sheltered position of the magneto, carried, as it is, on a neat platform forming a portion of the crank case casting, is a most excellent feature.

This engine should give plenty of power for its size, and render the machine capable of going anywhere. The petroil system of lubrication, which first saw the light in America, a country in which the two-stroke has received considerably more attention than it has in England, has been adopted. (In America two-stroke engines lubricated with the petroil system have been in use for a long time for marine work.)



The 1916 2½ h.p. two-stroke Indian, the specification of which includes a three-speed gear and clutch and chain drive.

The New Three-speed Gear Box.

An excellently designed three-speed gear box, which is to be the new Indian pattern, is bolted to the bottom bracket. This contains a kick-starting device and three-plate clutch, the clutch being of the well-known Indian Raybestos and steel plate type.

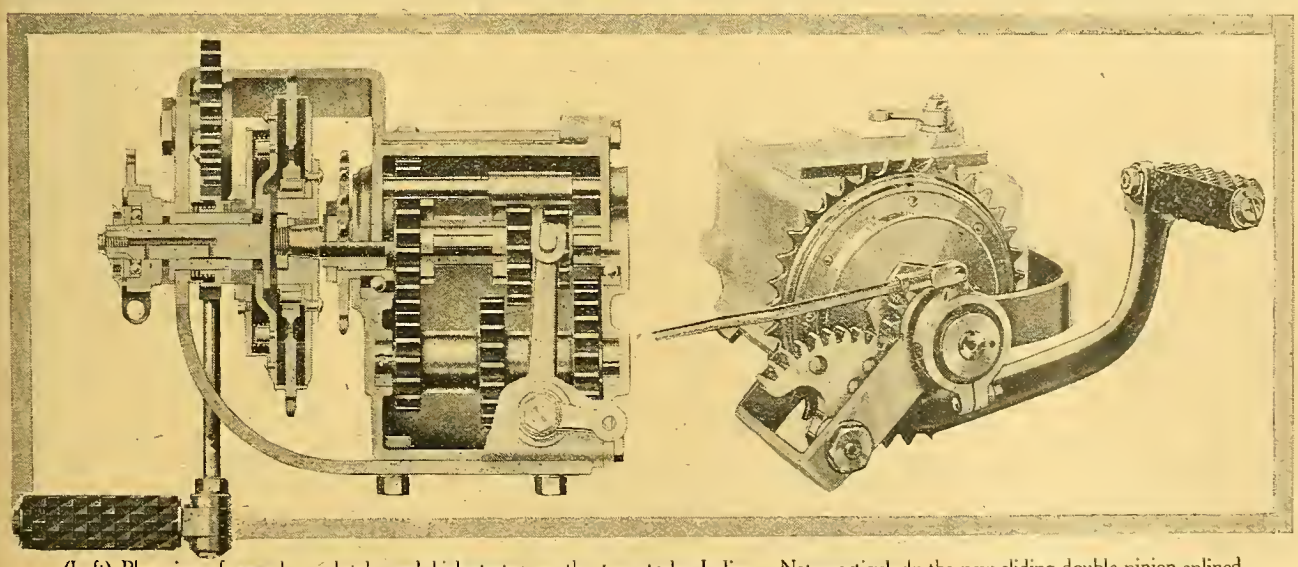
The two lower gears are now operated by means of a sliding double pinion splined to the main shaft. When this is moved to the left it engages the driven sprocket, which is loosely mounted on the main shaft, by means of dogs. Two gear wheels only are then in mesh, and these revolve idly; the other pinions revolve but do not engage. For the lower gears the pinions slide into engagement, and the drive is in each case through two sets of pinions, the third being out of engagement. This makes for quietness in running.

There are few lightweights on the market at the present moment possessing such up-to-date features as a three-speed gear box and friction clutch. The clutch control is either by hand or foot, the long lever shown in the illustration being that which actuates the clutch. The chain conveying the power from the engine to the countershaft is enclosed in a neat case, while a guard protects the rear chain.

The photograph which illustrates the gear box unit shows the substantial construction of the kick-starter as well as the straight bar on the top of the box which engages with a groove on the frame so as to ensure perfect alignment.

As previously mentioned, when we first referred to the Indian two-stroke, the design of the front forks is interesting, for they are the same as those found on the original Indian when it was first introduced into this country in 1909. It must be admitted that the design of the machine is most attractive. The sloping top tube, giving a low saddle position, an efficient carrier, and stand are excellent features, while the generally symmetrical outlines are particularly pleasing to the eye.

The usual twist grip control is fitted, and from the shape of the handle-bars and the size of the saddle it will be noted that the comfort of the rider has been well studied. The silencer is of large dimensions, and particular care has been exercised to render the engine quiet, as



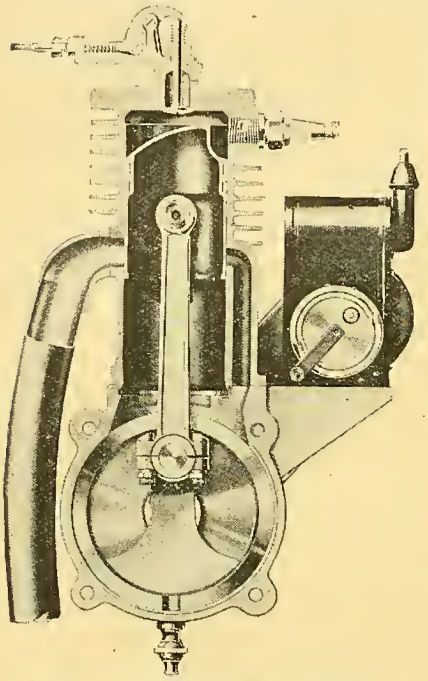
(Left) Plan view of gear box, clutch, and kick-starter on the two-stroke Indian. Note particularly the new sliding double pinion splined to the main shaft. (Right) The gear box viewed from the exterior, showing kick-starter mechanism.

New Models.—

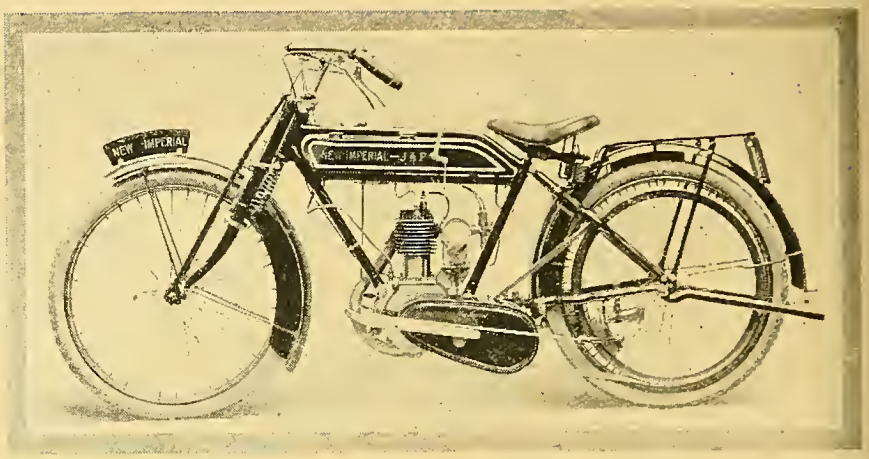
noise has hitherto been a common failing in two strokes.

The foregoing details of this and the firm's other models were obtained just on going to press, and we hope to refer to the other type Indians in our next issue.

This new model and the 7 h.p. engine with side-by-side valves, already referred to, constitute the principal Indian innovations for 1916.



Sectional view of the two-stroke engine fitted to the new 2½ h.p. Indian lightweight.



Latest model of the 2½ h.p. New Imperial. Two modifications yet to be made are extending the exhaust pipe still further and fitting adjustable foot-plates.

NEW IMPERIALS FOR 1916.

A Number of Detail Improvements.

THE alterations made to the 2½ h.p. ladies' model have been but slight, these alterations, however, making the machine a great deal more handy and serviceable than before. In the first instance, there is a metal disc clutch, controlled by a lever placed close to the left-hand grip, and having three discs with cork inserts held against plain steel discs by four coil springs adjustable without removing any part of the clutch cover or protecting shields. A long rod passes through the driving shaft of the two-speed box and, acting on a collar, presses the four springs outwards, thus disengaging the discs from one another. The action renders the clutch remarkably easy to handle as is essential in a machine made for the fair sex.

The Brake Work.

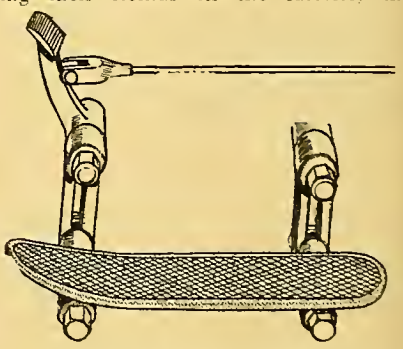
Dressguarding, an afterthought in far too many machines, is carefully considered in this particular case, the shields being placed with much ingenuity so that the mechanism is concealed completely, while no part becomes inaccessible. As will be seen in the sketch, the cylinder guard also is a wind scoop, yet the contact maker can be removed without detaching the guard, again the neat clutch shield exposes the coil spring adjusting collars.

Brake rods are somewhat a problem. If they are to clear the driving mechanism, the pedal being on the forward footrest, a crank is necessary, but this crank is liable to whip, making the brake uncertain. To overcome this the 1916 New Imperial brake rod is straight to a point near the brake shoe. Connecting the two is a + section cast arm, so stiff that whip cannot occur despite the crank necessary. This year the brake shoe is above the chain stays instead of below them.

Another detail of value is the adjustment for the footplates of the 2½ man's model, which adjustment, we were informed, was evolved while striving to fit the small machine to a particularly long armed subaltern.

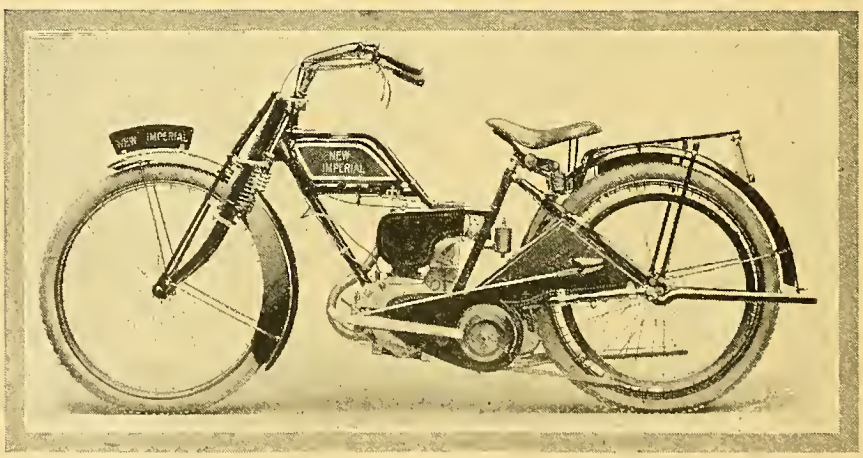
As will be seen from the sketch each plate is hung from the supporting rods by slotted links. Now, by undoing all four nuts the footplate can be moved fore and aft or raised in the slots to suit the rider. An adjustment of this type is most necessary if the comfort of every rider is to be considered.

To benefit those who insist on carrying their friends on the carriers, the 1916 model has this accessory greatly strengthened, and of tubular construction throughout.



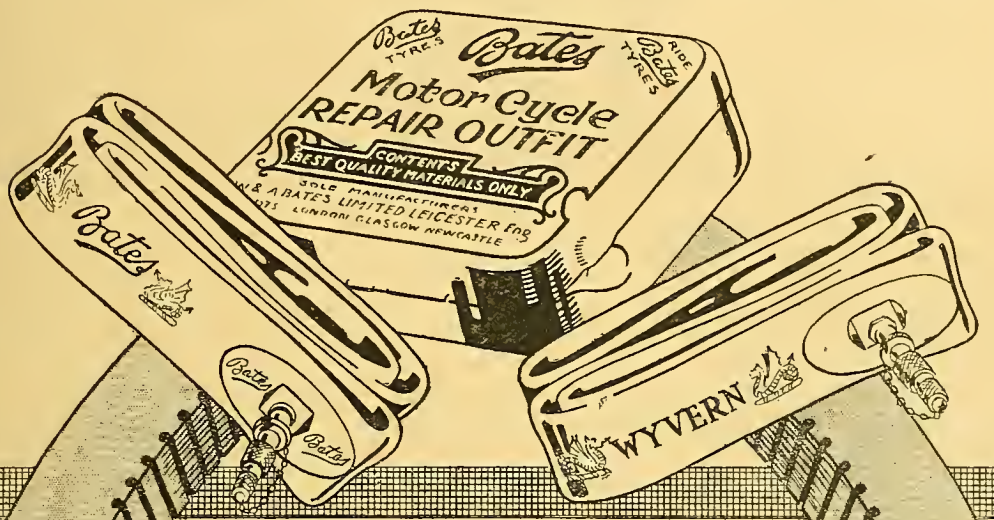
Slotted links allowing the foot-plates of the 1916 New Imperial to be adjusted in any direction.

A lever on the handle-bars now controls the ignition advance of the ladies' model in place of the old tank lever, while there will be a much longer exhaust pipe leading from the silencer and clipped to the chain stays near the rear spindle, experiments having proved this to be of greater efficiency.



1916 pattern lady's New Imperial. Note slot in mudguard for brake-operating arm. The brake shoe is now above the chain stay instead of below it

"Little things that help to kill big trouble."



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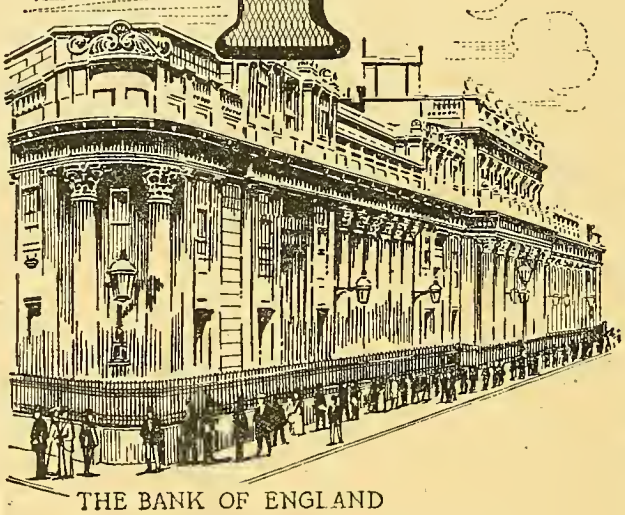
In answering this advertisement it is desirable to mention "The Motor Cycle." B5

Thrift



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The symbol of wealth in reserve.

The thrifty buyer helps the Bank by purchasing only goods with a high reputation, ensuring that the first cost shall be the only cost.

In the Motor Cycle World, the Bank, by reason of the sum involved by purchase, demands the closest attention. Too low a price may be paid, setting up a continuous run on the Bank for repairs, replacements, etc.

The B.S.A. Trade Mark attached to the motor cycle tells of a reputation too highly placed to be lightly hazarded, of workmanship above suspicion, of unequalled productive facilities and a fixed determination to give entire satisfaction under the only two headings which count—price paid and value received. The whole of the B.S.A. organization, reputation and resources are behind the B.S.A. guarantee.

RIDE A

B.S.A.

MOTOR BICYCLE

FOR SOLO & SIDECAR

B.S.A. Motor Bicycle List Free.

THE BIRMINGHAM SMALL ARMS CO. LTD.
13, SMALL HEATH, BIRMINGHAM.

"On War Service"—a book full of interest to motor cyclists—sent free on receipt of 1d. stamp for postage.

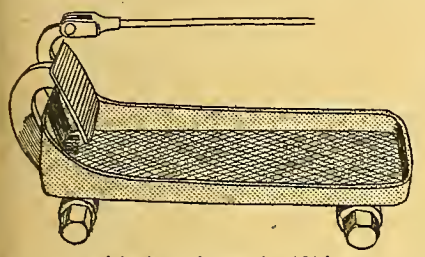
IMPROVEMENTS TO THE O.K. MACHINES.

ALTHOUGH the 1916 O.K. Junior motor cycles in the main are to remain unaltered, the detail work has undergone a certain amount of redesigning.

Firstly, improvements are to be effected to the gear control, which improvements are not sufficiently advanced as yet to warrant detailed description.

Secondly, the foot brake control is distinctly improved, being now placed so that the pedal projects over the footplates, and is relatively in the same position to the foot as is the case on a car; therefore it is unnecessary to remove the foot from the footplate, and a steady braking pressure becomes more possible.

As is the case with some of this year's models, the petrol tank has its seam along the upper surface and immediately below the top tube, a position where



Position of brake pedal on the 1916 pattern O.K. Junior.

this, the weakest point of a tank, is very securely guarded.

A casting replaces the strip iron used to secure the chain case in position, thereby stiffening the case, while it is probable that a sliding panel will be formed in the case itself, in order to allow the rider easily to inspect or remove the chain. Such small details as this frequently escape a designer's notice, and many a private owner has been prevented from giving necessary attention to a much ill-treated chain by the difficulties of obtaining access thereto.

1916 WULFRUNAS.

THE chief alteration made by the Wulfruna Engineering Co. affects the 4 h.p. and 5 h.p. machines placed on the market for 1915. Of these, the first is to have an Abingdon King Dick engine, and the frame is greatly altered, having a sloping top tube from the head straight to the seat pillar, and a longer head than hitherto. This entails redesigning the petrol tank to suit the altered frame, and brings the machine in line with other manufacturers, as the sloping top tube seems to be a feature for 1916.

A black enamelled tank picked out with gold will be used for all models for the next season, thereby adding very greatly to their workmanlike appearance. On the larger model a 6-7 h.p. Abingdon engine replaces the 5 h.p. of 1915, but the frame remains unaltered.

On all models a new heel-operated fibre-faced brake is used, the V block pushing into the belt rim slot, a change allowing the rear wheel to be extracted without interfering with any part of the brake gear.

The 4 h.p. and 2½ h.p. are to have the clutch slightly altered, and it will be placed on the right-hand side instead of on the left, while the altered 4 h.p. frame entails a slightly shorter wheelbase.

The 70×70 mm. engine is to be fitted to the 2¼ h.p. two-stroke model B as standard, this machine remaining practically unaltered otherwise.

Druid forks, already fitted to the 5 h.p. and therefore to the 6-7 h.p. model, in future will be on the 4 h.p. machines as well, while Amac or Senspray carburetters can be provided for any model, according to the customer's wishes.

A SURPRISE FOR ROYAL RUBY RIDERS.

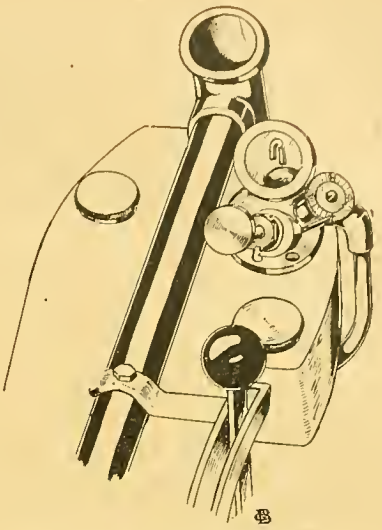
THE makers of the Royal Ruby will have a pleasant surprise for the riders of their heavyweight machines in 1916. As yet the new model is hardly an established fact, but we understand that several interesting alterations are to be made.

One of these alterations, which we most highly applaud, is the incorporation of a rear spring frame, at present under course of road test. It promises well, and should add much to the popularity of this already famous mount.

In the Overseas Dominions the popularity of the Royal Ruby is well established, and it is chiefly in consideration for their Colonial riders that the makers have decided to adopt a system of rear springing.

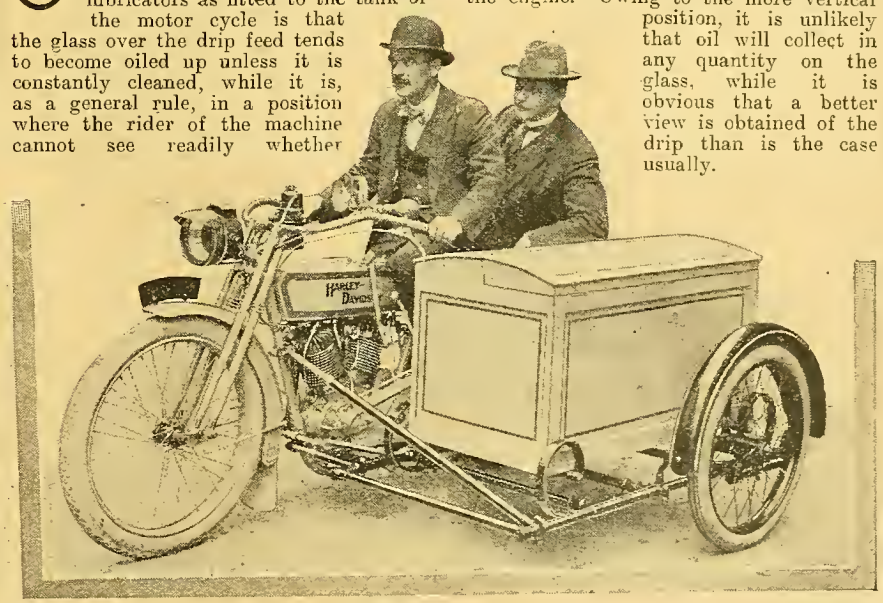
A NEW SIGHT FEED LUBRICATOR.

ONE of the difficulties which appear to be inseparable from the pump lubricators as fitted to the tank of the motor cycle is that the glass over the drip feed tends to become oiled up unless it is constantly cleaned, while it is, as a general rule, in a position where the rider of the machine cannot see readily whether

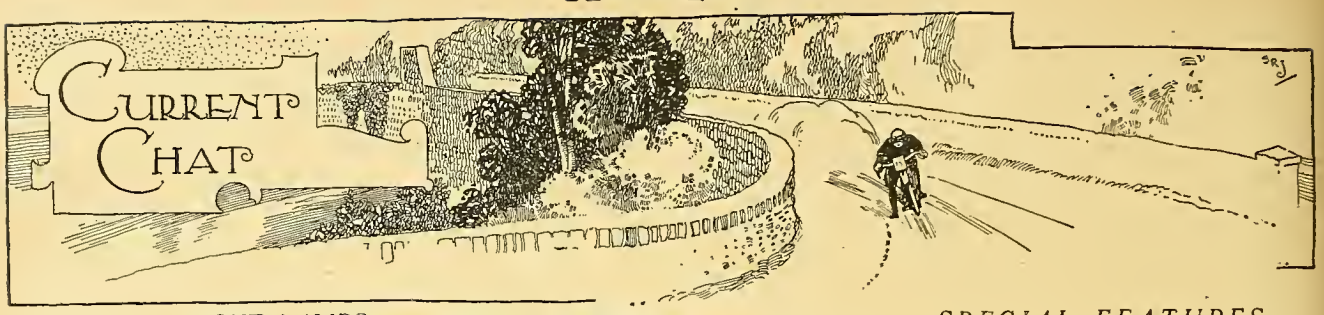


Latest Best and Lloyd drip-feed pump, having a readily visible glass

oil has ceased to flow or not. As the advantages of this type over the old direct pump consist almost entirely in the fact that it is possible to see exactly when oil has ceased to flow to the crank case, and thereby to regulate the quantity issued per mile, it is obvious that the glass of the sight feed must give a clear view of the drip. To obviate the above difficulties, the new Best and Lloyd lubricator has been produced. In this model the pump is exactly the same as hitherto, having a brass filter gauze at the bottom, and sucking oil from the main tank, but the metal sight feed is at an angle of 45°, facing the rider when he is seated on the machine. At the right-hand side is the notch and graduated disc which controls the amount of oil admitted to the engine. Owing to the more vertical position, it is unlikely that oil will collect in any quantity on the glass, while it is obvious that a better view is obtained of the drip than is the case usually.



One of a fleet of fifty-six Harley-Davidson sidecarriers supplied by Messrs. Robertsons to the Russian Government for the transport of ammunition, petrol, and oil Capt. Korotkevich, the Russian Government's representative, is seated on the carrier.



TIMES TO LIGHT LAMPS.

Oct.	14th	... ...	6.10 p.m.
,,	16th	... ...	6.6 ,,
,,	18th	... ...	6.2 ,,
,,	20th	... ...	5.58 ,,

In London half an hour earlier.

Can Any Reader Assist?

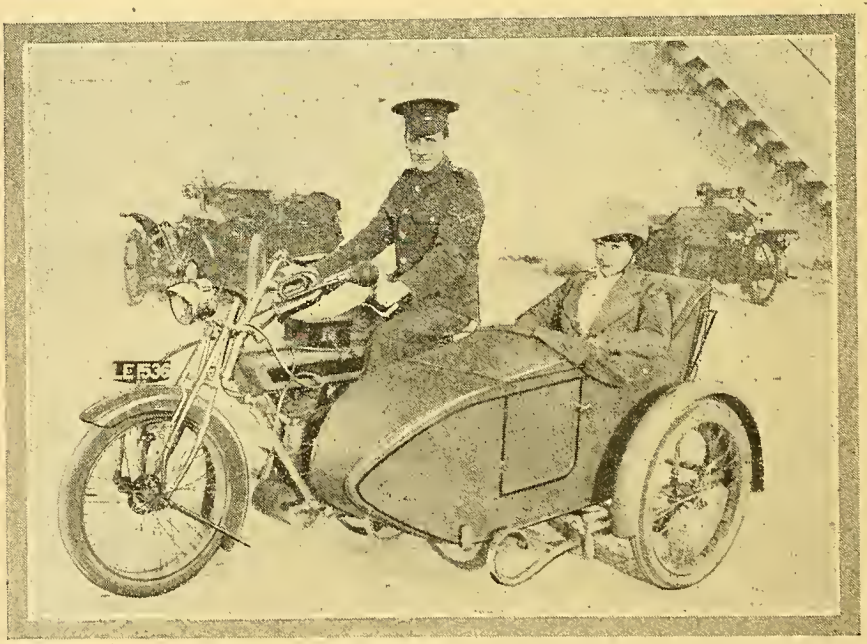
A Corporal, who has been invalided home through heart trouble, asks if we will appeal to some kind reader to let him have a motor cycle, either in the nature of a gift, loan, or at a very low price. He is attached to the staff of a Devonshire hospital three miles from the nearest town, over a hilly road, and his duties necessitate frequent visits there, although no transport is provided. Any offer received will be forwarded to the proper quarter.

Poor Engine.

The case mentioned in our last issue of the rider of a 5-6 h.p. Bat who had used unwittingly carbolic disinfectant for four months for lubricating his engine naturally caused a certain amount of amusement. The remarkable thing was that beyond poor running the engine received no damage. Similar cases are not unknown, especially in the early competition days, when the refilling of petrol and oil tanks was not so carefully supervised as it is now.

Animals on the Highway

The question of animals straying upon the highway is one of great importance to motor cyclists and car drivers, as owing to the chaotic state of the law great difficulty is experienced in proving negligence and liability against their owners. However, a case recently heard before Judge Radcliffe at Warwick County Court reveals some rather interesting facts. The charge against defendant was that of allowing a number of sheep to stray on the highway, which resulted in a motor car being overturned, for which damages were claimed. It appears that defendant had previously been fined for a similar offence. In giving judgment for the plaintiffs, his Honour said that defendant owed a duty to the public in general, and plaintiffs in particular, to prevent his sheep straying on to the highway; that he committed a breach of that duty by maintaining an inadequate fence between his field and the road, as a natural consequence of which his sheep escaped on to the highway and caused damage to the traffic thereon, and that as a natural consequence of such escape the accident was caused to plaintiffs' car, and particular damage done to them thereby. He would, therefore, give judgment for plaintiffs for £100 with costs on Scale C.



Lance-Corporal W. Pratt, the erstwhile P. and M. rider, who once covered six hundred miles under A.C.U. observation without using a tool. Pratt spent the winter in France, driving an ammunition lorry with the A.S.C., but was invalided home.

SPECIAL FEATURES.

MANY 1916 MODELS DESCRIBED AND ILLUSTRATED.

TWO-STROKE OR FOUR-STROKE?

MILITARY MOTOR CYCLING MATTERS.

Condition of the Hastings Road.

Visiting Hastings last week, a correspondent fonnd the direct road *via* Tonbridge and Battle in excellent trim. The alternative road *via* Catsfield and Bexhill is in wonderful shape.

The Latest London Lighting Order.

According to a statement made by the Press Bnreau last week, it is possible that public lighting of both main and side streets may be somewhat increased. The Commissioner of Police desires to emphasise the need for caution both by drivers of vehicles and *by foot passengers*. He has nrged the local authorities to assist the traffic by whitening street refuges and kerbs at street corners, and this course has already been followed by several borongh councils with excellent results.

Many Young Riders.

The reference in our correspondence columns last week to a gentleman prepared to offer a cup to any person of fourteen years who can drive an 8 h.p. sidecar outfit from London to Bournemouth has brought letters from various yonng readers in different parts of the conntry prepared to undertake the run. It would seem that the number of boys of 14 to 16 capable of motor cycle touring is much greater than the cup donor is aware.

What Colonial Machines have to do.

Two Capetown riders have recently made an adventurons tonr of the Northwest district of the Cape Province. The object was Calvinia, and a different route was followed on the return journey from that taken outwards. Much of the route followed is practically unknown to motor cyclists, and in some places the riders attracted considerable attention. A feature of the tour was the high altitnde reached, such as a 3,000 feet rise in a steady nine miles climb. This and the fording of eight rivers were severe tests for the 3½ h.p. Sunbeams on which the men were mounted, and it is remarkable testimony that only one involuntary stop (due to a sooted plug) was recorded. Many of the rivers were so deep that the magnetos and carburetters were entirely submerged, but both engines always fired at the first kick upon reaching dry land again! Sometimes the road surfaces were good, but at others many miles of sandy surface had to be tackled.

The Institution of Automobile Engineers.

On Wednesday, November 10th, Mr. J. H. Dickenson will read a paper entitled "The use and abuse of steel in automobile construction."

The Munition Workers' Competition.

The A.C.U. has decided that the support promised for the proposed munition workers' competition was not sufficiently great in any one locality to justify the Union going ahead with the proposal.

The fact that sufficient promise of support was not forthcoming is not surprising. Club secretaries well know that even when the date of an open event has been settled entries do not flow in until the last minute. Often club committees, a fortnight before the event is due to take place, are in a quandary as to whether to go ahead with an event owing to lack of entries, when a week later a record entry has been received. The A.C.U. decision, therefore, counts for little in this instance.

Average Prices.

We give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model, the average for the past week is quoted. If at least two machines were not advertised, the last occasion on which they were quoted is given.

Make.	Year.	H.P.	Average for last week.	Latest weekly average obtainable
A.J.S.	1914	6 3-sp. sidecar	£72	—
„	1913	6 3-sp. sidecar	—	£54
„	1914	2¾ 3-speed	—	£44
Allon	1915	2¾ 2-sp. 2-stroke	—	£32
Ariel	1914	3½ 3-sp. sidecar	—	£65
„	1913	3½ 3-sp. sidecar	—	£40
Bat	1914	6 3-sp. sidecar	—	£55
Bradbury	1914	6 3-sp. sidecar	—	£60
„	1913	4 3-sp. sidecar	£40	—
B.S.A.	1914	4 3-sp. sidecar	£59	—
„	1915	4½ 3-sp. sidecar	£72	—
Calthorpe	1914	2 2-speed	£19	—
Clyno	1914	6 3-sp. sidecar	—	£66
„	1913	6 3-sp. sidecar	—	£53
„	1914	2½ 2-speed	—	£31
Douglas	1914	2¾ 2-speed T.T.	£42	—
„	1914	2¾ 2-sp. kick start	£43	—
Enfield	1914	6 2-sp. sidecar	£65	—
„	1914	3 2-speed	—	£38
„	1915	3 2-speed	£46	—
Humber	1913	3½ 3-sp. sidecar	£37	—
Indian	1914	7 2-sp. sidecar	£60	—
„	1914	7 T.T. free engine	—	£46
James	1915	4½ 3-sp. sidecar	£65	—
„	1914	4½ 3-sp. sidecar	—	£58
Lea-Francis	1914	3½ 2-speed	—	£47
Levis	1914	2½ 2-speed	—	£30
Matchless	1914	8 3-sp. sidecar	£75	—
„	1913	8 2-sp. sidecar	£75	—
New Hudson	1914	6 3-sp. sidecar	£58	—
„	1914	4 3-sp. sidecar	—	£47
New Imperial	1915	2½ 2-speed	£32	—
„	1914	2½ 2-speed	£28	—
O.K.	1914	2 2-speed	£25	—
P. & M.	1914	3½ 2-sp. sidecar	—	£54
„	1913	3½ 2-sp. sidecar	£49	—
Premier	1914	3½ 3-sp. sidecar	—	£52
„	1913	3½ 3-sp. sidecar	£41	—
Rex	1914	6 3-sp. sidecar	£60	—
Rover	1914	3½ 3-sp. sidecar	£54	—
„	1913	3½ 3-sp. sidecar	£43	—
Rudge	1914	5 Multi sidecar	—	£48
„	1913	3½ Multi sidecar	£38	—
„	1913	3½ Multi	£34	—
Scott	1914	3½ 2-sp. sidecar	£52	—
„	1913	3½ 2-sp. sidecar	—	£48
Singer	1913	4½ 2-sp. sidecar	£43	—
Sunbeam	1914	6 3-sp. sidecar	—	£82
„	1914	3½ 3-sp. sidecar	£73	—
Triumph	1914	4 3-sp. sidecar	£53	—
„	1914	4 3-speed	£45	—
„	1913	3½ 3-sp. sidecar	£45	—
Williamson	1914	8 2-sp. sidecar	—	£71
Zenith	1914	6 Gradua sidecar	£56	—
„	1914	8 Gradua sidecar	£70	—

"The Motor Cycle" Buyers' Guide.

It is nearly ten years since *The Motor Cycle* Buyers' Guide was instituted. In the absence of a show, the compilation of a Buyers' Guide of 1916 models becomes more urgent and necessary. Thursday, November 25th, has been selected as the date of a special number embodying such a feature.

Problems.

We deal in our leaderette this week with problems which still confront the manufacturer of two-stroke engines. Excessive carbon deposit and a mysterious metallic rattle which is occasionally set up are the two outstanding troubles. *The Motor Cycle*, which has fostered the two-stroke engine since its adoption for motor cycle use, draws attention to the difficulties, and expresses the opinion that they are not insuperable.

A Pillion Seat Trial.

Whilst a continuous outcry is raised in England against the carrying of passengers on the carriers of motor bicycles, it is interesting to note that a trial has recently been held in Holland for pillion seats, prizes being awarded to the best designs. There was a good entry list, and various types of carrier seats were represented, from the simple cushion to the canework seat complete with upholstery.

The National Relief Funds.

At the week-end the principal relief funds stood as follow:

	£	s.	d.
The Prince of Wales's Fund	5,541,184	0	0
The Queen's Work for Women Fund	165,801	7	9
Belgium Relief Fund (approximately)	975,000	0	0
The Times Fund for the Sick and Wounded	1,744,097	0	8
The Weekly Dispatch Tobacco Fund (exceeds)	85,203	13	8

Exclusive Descriptions of New Models.

Six pages of this issue are devoted to illustrations and descriptions of new model motor cycles, several machines being introduced to the public notice for the first time.

Motor Cyclist Recruits.

It is interesting to learn that the London Motor Cyclist Reserve Committee, of which Mr. T. W. Loughborough, secretary of the A.C.U., is secretary, has dealt with 3,419 applications since the beginning of the war, and of this number 459 motor cyclists have actually enlisted as despatch riders attached to the R.E. Signal Service.

Motor Cyclists on Active Service.

H. B. Elliott, of the business staff of *The Motor Cycle*, has been granted a commission in the Motor Machine Gun Service. He is the fifth member of *The Motor Cycle* staff to answer his country's call.

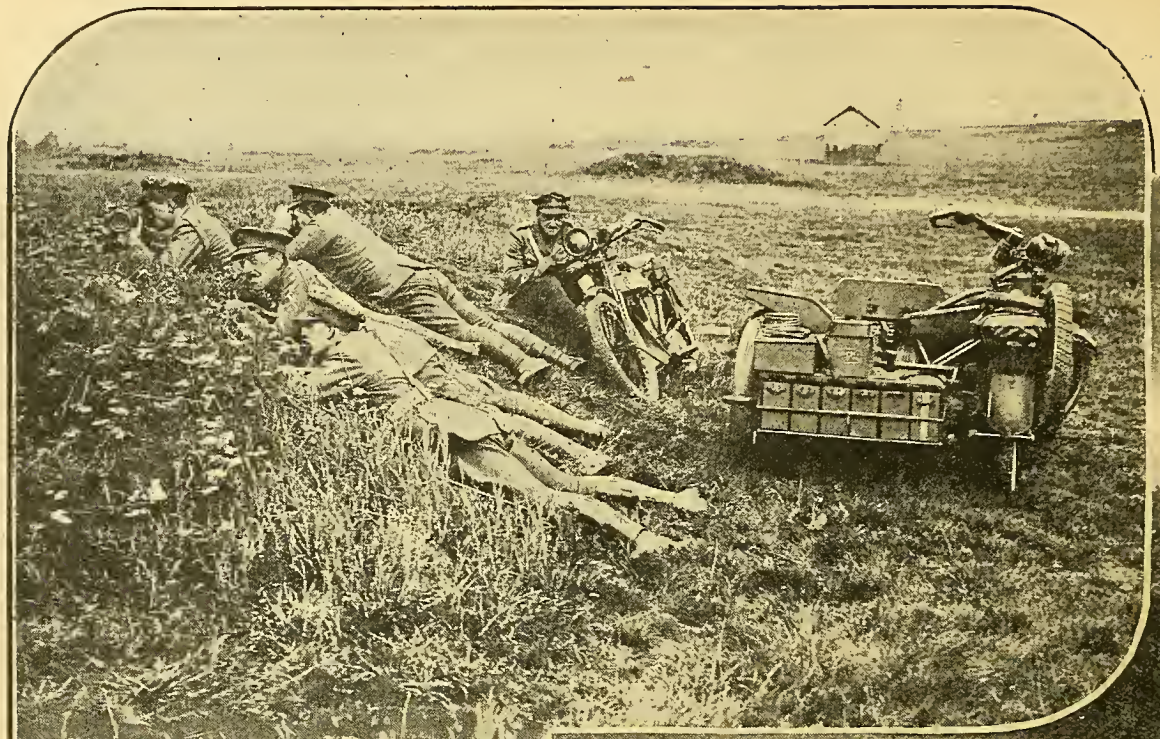
The number of employees of Messrs. Iliffe and Sons Ltd., proprietors of *The Motor Cycle* and allied papers, who have joined the Colours now amounts to 128.

A Busy Man.

With regard to a note in a recent issue, mentioning that there were no officials at the Army and Navy hill-climb attached to the Services—which was a fact according to the printed regulations—we have a letter from Second-Lieutenant F. L. Bassett, who has evidently interpreted our paragraph in an entirely wrong light, stating that he was clerk of the course and chief marshal, as well as chairman of the organising body, the Streatham and District Motor Club. Mr. Bassett was evidently a very busy man, as he was also a competitor in the event, and obtained first and second awards. This position, however, is not compatible with A.C.U. rules.

TRACK RACING IN AMERICA.

Two Indian riders travelling on the Tacoma speedway at a speed in excess of 80 m.p.h. The illustration gives a good idea of the magnificent board track.



Our Khaki Motor Cyclists.

THE series of exclusive photographs reproduced on this page show some of the gallant motor cyclists of the Motor Machine Gun Service. Many finely-built fellows who have served their novitiate on a motor cycle are already overseas on active service with this section, and hundreds of other no less willing and

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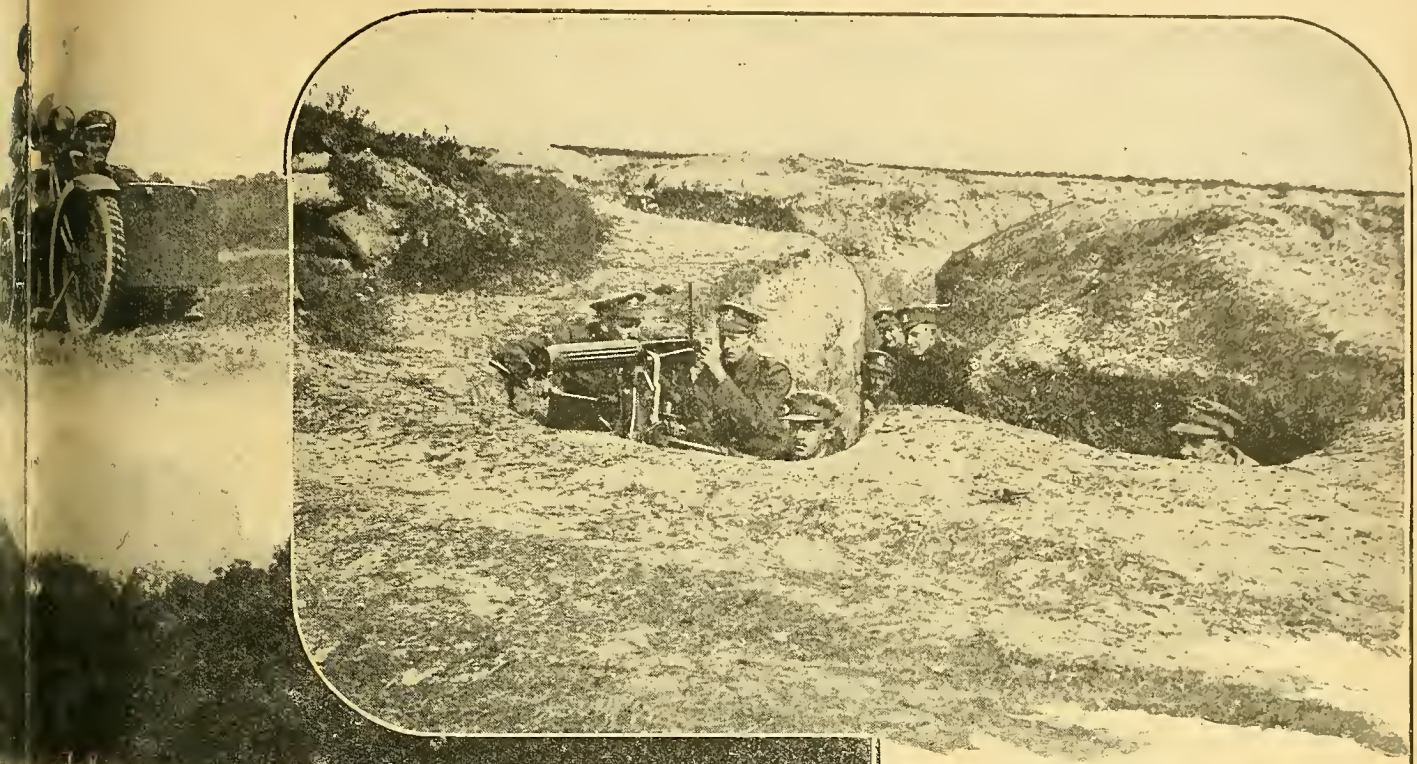

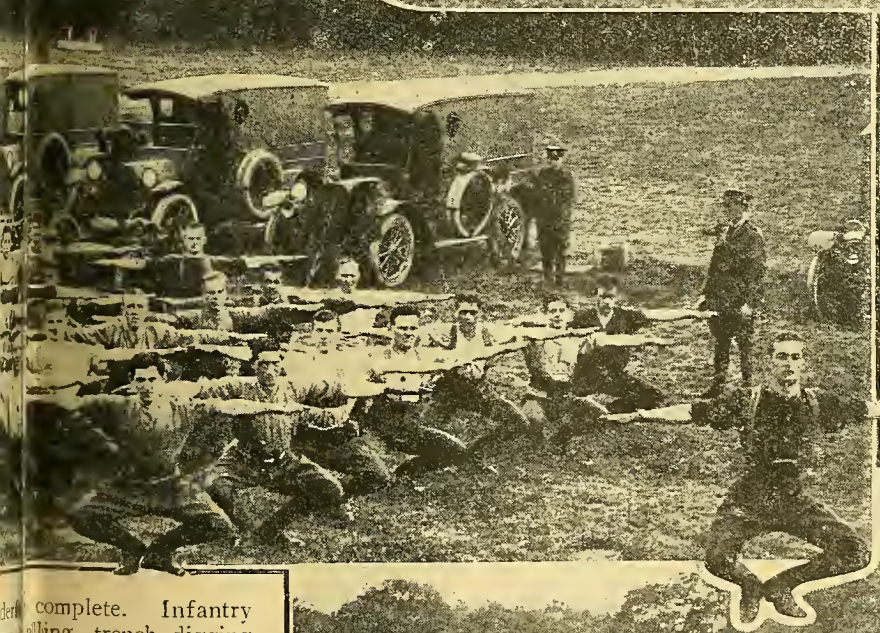

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of the different
growing army to help
common enemy.

enthusiastic riders are now undergoing the training necessary at the different training camps established in various parts of England to fit them for active service.

Meanwhile the motor cycle factories of the Midlands, notably the Clyno Engineering Co., are working day and night to provide the machines for the Vickers-Clyno machine gun equipment.

The M.M.G.S. is a "motor cycle" section throughout—even from the recruiting! The commanding officer has a touring type sidecar, whilst the subalterns are mounted on motor bicycles. The training of a motor machine gunner

are practically self-explana-
st illustration officers are
and taking the range; in the
is undergoing Swedish drill,
cars, and also the transport
unit; in two others the men are
ding a trench against attack;
are engaged in rifle practice.

THE HIGH-POWERED TWIN.

By "IXION."

ONE reason for the comparative unpopularity of the 7-9 h.p. twin in England as contrasted with the United States is that the American rider seldom takes the road in winter, whereas most of us ride throughout the year, so long as it is moderately dry overhead and not too cold. When the temperature is low and the roads are filthy only the daring owner cares for speed; and as these conditions rule four months of every year, and are not unknown during the remaining eight months, there are many, many days in a twelvemonth when the reserve capacities of a big twin are largely wasted. Once again the majority of our riders are short distance men, and if a man's definition of a "spin" is limited to fifty or sixty miles as a maximum, the amount of traffic riding looms rather large in his purview, for our towns are close set. *Per contra*, if a man is accustomed to ride from Carlisle to Nottingham or from Coventry to Cornwall five or six times in a season, the long stretches of open road bulk higher in his choice than the miseries of threading a factory town after a shower and in the dinner hour. So long as my club knowledge was confined to London, Coventry, and two or three very sporting provincial clubs, I failed to realise what short distances normally content the average rider; there are plenty of country clubs which cannot coax their men to rendezvous twenty miles from the base.

Weight in Traffic.

For myself I regard a "baby" two-stroke and a road-burning 8 h.p. as equally manageable in traffic; but the rather nervous and inexpert rider is by no means of my opinion. He knows that the "baby" will not leap away so ferociously if he blunders with a lever; he knows he can paddle it off with his feet if he gets blocked; he knows it will not fall so heavily if he skids on a greasy tramline: he knows, too, that it is easier to hoist on to its stand or to prop against a kerb. He may enjoy an occasional speed burst on a big twin-cylinder machine over dry summer roads as much as I do; but he also recalls cannily that from his point of view the roads are more often than not too wet or the weather is too cold for speed. He reviews his intended week-end spins, and reflects that he finds the light and medium weights more handy when he traverses the towns in his county, which are his real *bêtes noires* on every ride, and so he buys one of the low or medium-powered bicycles.

In sober fact, the big twin is almost as manageable as the lightweight in these days of refined carburetters, silky clutches, and variable gears. I had practically as soon cross London on an 8 h.p. as on a 2½ h.p. I have only two objections to the big twin, and they are rather of the paper order. One is that their tyres are less easy to handle when a puncture overtakes one; the other is that I detest hoisting a 3 cwt. monster on to its stand. Contrariwise, I admit that the 3in. tyre is not readily perforated by the little nails and tintacks with which city streets are bestrewn, and that one hardly ever uses a stand except in garage or for serious repairs; by the roadside one can usually pick out a grass turf edge which will do as well.

It cannot be denied that your nervous man takes some converting. It is no use to preach the delights of 50 m.p.h. on the flat or of accelerating up a single figure grade. He knows that his little machine is not at all comfortable at 35 m.p.h. on a bad road, and his mental conception of speed is the maximum discomfort of his "baby" multiplied by ten. It is useless to point out the sturdiness of your 8 h.p. to him, nor yet to rip past him all out in an exhibition dash. Some faint spark of surviving manliness in his soul may twitter enviously at the spectacle, but in reality he will be horribly frightened.

Power for Passenger Work.

Wait till he buys a sidecar. He will gradually acquire a hearty contempt for low-powered lightweights regarded as tourist vehicles for able-bodied men; and in time he will conceive his doubts of the 3½ h.p. It will teach him in time that 35 m.p.h. on the flat is a safe and comfortable speed, and when he indulges this weakness he will note in time that the big twin which flits past him is making far less pother about a greater speed. Then he will commence to picture the idea of fast climbing. He will grow dissatisfied with the slow and noisy progress of his under-powered outfit up grades, as the "hefty" twins roar past him doing countable revolutions on top gear in a manner that suggests reserves of acceleration on demand. Finally, he will very timidly order a 5-6 h.p. sidecar outfit, and, unless the sidecar chassis is brazed up solid with the bicycle, sooner or later the 5-6 h.p. will come out solo. Much to his surprise he will return home alive and exhilarated; and then there will be a chance of these points being settled on their merits.

In the meantime, I rather fear that the very common dread of long distances and high speeds indicates a certain deterioration in the national virility. Crowds of youngsters on 7-9 h.p. machines may become a sad nuisance at times, and even a public danger; but if a day ever came when only one man in a thousand wanted something more lively than a 2¼ h.p. machine, old England would certainly be on her last legs. The war has at least warned us that there is a high percentage of milksops in our manhood, and that a superabundance of rude and unbridled youth is not wholly a bad sign. Bernhardi certainly hit a nail on the head when he talked of the enervating effects of peace and prosperity. I have a new respect for the "knut."

THURSDAY, NOVEMBER 25th!

The date of THE MOTOR CYCLE BUYERS' GUIDE OF 1916 MODELS.

The issue will be considerably enlarged and will contain an illustrated review of the various 1916 pattern motor cycles.

"THE MOTOR CYCLE" RECRUITING SECTION.

DESPATCH RIDERS WANTED BY THE R.E.

ONE morning last week the Overseas mail brought us seven applications from Colonials anxious to enlist in the different motor cyclist sections of the Army.

Among the recruits who have enlisted as car drivers and mechanics in the Motor Machine Gun Service during the last few days are :

B. Bourke	W. Watson
F. L. Brown	(Timaru, N.Z.)
H. Readhead	W. L. Meredith

B. Bourke was for ten years with the New Hudson Cycle Co., Ltd., and has frequently figured with success in open trials. He was also a prominent member of the Midland Motor Cyclists' Volunteer Corps.

A Call for Despatch Riders.

Last week we received a call from Second-Lieut. H. Smith, R.E. (whose address is 6, Brynland Avenue, Bishopston, Bristol), who emphasised the need for more despatch riders on the waiting list of the Royal Engineers. A regular call for men from the R.E. has drained the South Midland Divisional areas' list of names.

Applicants for positions as despatch riders must be experienced motor cyclists able to perform all ordinary running repairs. The age limits are 19-38. Enlistment for duration of war. Pay 2s. 6d. per day, plus 6d. on completion of training.

Motor cyclists in the South Midlands should apply to one of the under-mentioned inspecting officers for particulars and an appointment for a riding test:

R. C. Davis, 11, Hythe Bridge Street, Oxford.

F. O. Moseley, Summerbrook University College, Reading.

P. Cann, Queen's Hotel, Clifton, Bristol.

G. Smith, Editor *The Motor Cycle*, Coventry.

North-country Motor Cyclists Wanted.

The secretary of the Motor Cyclists' Reserve Committee in the West Lancashire Divisional Area, Mr. S. W. Phillpott, of 60, Lime Street, Liverpool, has received notice to double the number of despatch riders supplied regularly each month in his area, and therefore appeals for motor cyclist recruits to pass the test and have their names put on the waiting list.

Wessex Divisional Area.

Motor cyclists residing in the counties of Devon, Somerset, Cornwall, Hants, Dorset, and Wilts., will be examined as to their technical abilities by one of the undermentioned inspecting officers of the Motor Cyclist Reserve Committee :

Captain G. Thorp, R.E., Military Central Telephone Exchange, Devonport.

Mr. G. E. Dominy, 39, Jewry Street, Winchester, Hants.

Mr. T. Golsworthy Crump, 8, St. George's Terrace, Taunton, Somerset.

On passing the examination, a candidate's name will be placed on the register, and as a vacancy occurs he will be enlisted in due course.

Well-equipped for bad weather. A Douglas mounted despatch rider Corpl E. Hooper, R.E., who has been with the B.E.F for twelve months.

WITH THE B.M.E.F.

LIEUT. F. E. MOCATTA, R.F.A., who is at present serving in the Mediterranean Expeditionary Force, writes as follows: "*The Motor Cycle* forms quite a link with home, and I always look forward to the next copy The machines out here, nearly all Douglases and countershaft Triumphs, have had a very 'thin' time, owing to an almost complete lack of roads; but, on the whole, they have stuck it marvellously well. Truly it will be a strange experience to ride on a surfaced road again."

IMPORTS AND EXPORTS.

THERE is a drop both in the number of motor cycles imported and exported compared with August. The decrease in the exports is a large one, and follows on a small decrease that the August figures gave when compared with the July figures. It is doubtless due to the fact that more factories have been taken over by the Government.

IMPORTS.

SEPTEMBER, 1915.—437 motor cycles, value £20,859 (complete with parts and tyres not imported with complete machines, £30,126).

AUGUST, 1915.—645 motor cycles, value £38,582.

SEPTEMBER, 1914.—36 motor cycles, value £1,389.

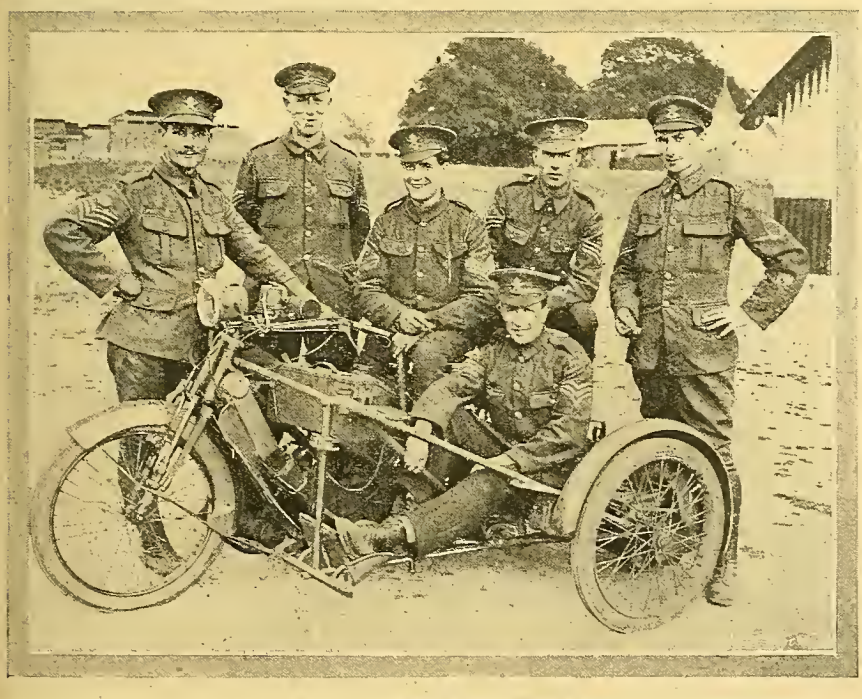
EXPORTS.

SEPTEMBER, 1915.—637 motor cycles, value £28,847 (complete with parts and tyres not exported with complete machines, £52,188).

AUGUST, 1915.—1,092 motor cycles, value £54,347.

SEPTEMBER, 1914.—1,004 motor cycles, value £44,018.

The Board of Trade returns have a special note to the effect that motor cars and motor cycles and parts thereof (except commercial vehicles and tyres) are subject to duty on and after September 29th, 1915.

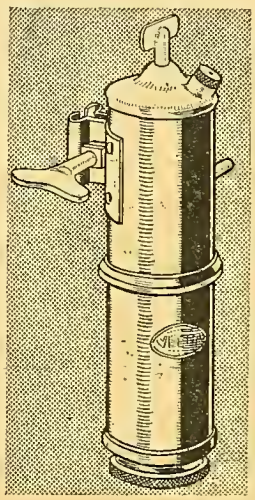


SIX N.C.O.'s OF THE M.M.G.S. WHO WERE WOUNDED AT THE FRONT.

The photograph was taken a few days ago at the M.M.G.S. training centre, and it shows that the men are well on the road to complete recovery. From left to right: Sergts. C. W. Stowers, L. A. Allen, F. J Harlow, R. Jones (on sidecar). J. G. Ougham, and Bombardier F. Beauvais.

A NEW TAIL LIGHT GENERATOR.

THE accompanying sketch shows a neat and well-made tail light generator recently placed on the market by Messrs. Brown Brothers, Ltd. The generator is constructed on standard lines, and presents no special mechanical features, differing only from the ordinary generator in that there is no spring device for keeping the carbide in position in the carbide container.

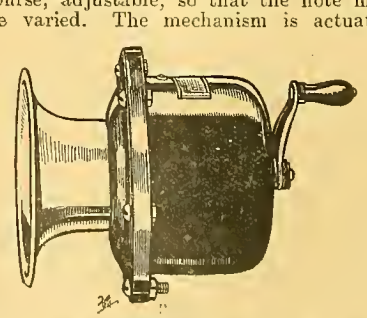


The Brown tail lamp generator.

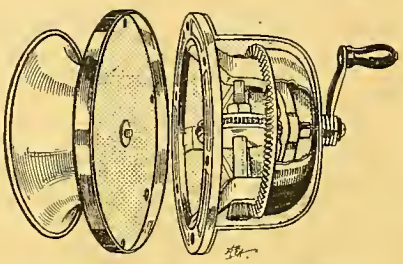
A NEW MECHANICAL HORN.

YET another mechanical horn has recently been placed on the market. The Taylor, as it is called, possesses several interesting features, one being the oil hole at the top which conveys the lubricant to the three places where it is most needed. The interior mechanism is clearly shown in one of the accompanying sketches. It will be noticed that it is exceedingly simple, consisting as it does of a large bevel and a small crown wheel, on the spindle of which is mounted the wheel engaging with the central pin in the diaphragm. This latter pin is, of course, adjustable, so that the note may be varied. The mechanism is actuated by means of a handle, which will allow a short note or a continuous sound to be emitted.

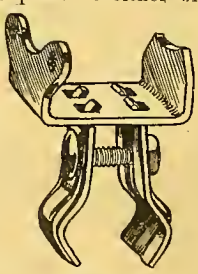
Another ingenious point is the clip, which is also clearly shown in the second of the sketches. It is adaptable, so that the horn may be placed on any size tube and arranged to point in either of two directions. It will be noted that one bolt only is necessary to secure the clip and the horn in a permanent and rigid manner. The standard finish is black, and the price one guinea. It may be obtained from Messrs. H. Taylor and Co., 21a, Store Street, Tottenham Court Road, London, W.C.



The newest mechanical horn—the Taylor, described herewith.



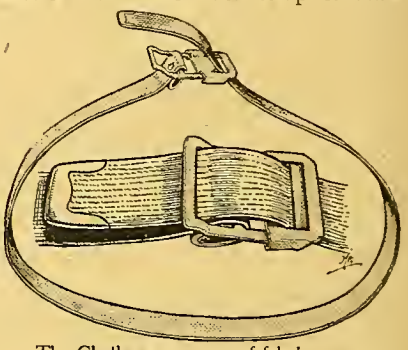
Interior mechanism of the Taylor mechanical horn.



The ingenious clip for fixing the horn to the top tube

CHALLENGE WATERPROOF FABRIC STRAP.

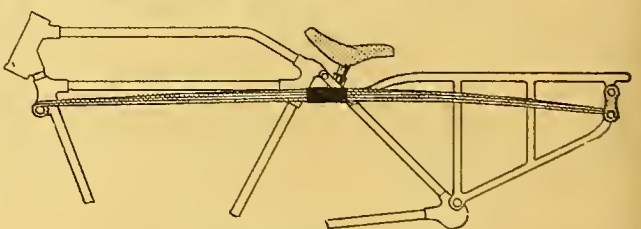
WE have received from Messrs. Brown Bros., Ltd., a sample of the Challenge waterproof fabric strap. The fact that it is made of a special waterproof fabric and not leather is one of its chief points of interest, especially as the price of leather is now very high; while the other is the ingenious buckle with which it is provided. The accompanying illustration clearly shows how this works. The end of the strap to be fastened is just passed through the sliding portion of the buckle and the strap pulled as tightly as possible. When the end is turned in and passed under the raised portion of the buckle, the strap is firmly locked in position, and will not slip. The material of which the strap is made is practically unstretchable, and is unaffected by wet. It is claimed to keep its colour under all conditions, and is suitable for tyre carriers, luggage grids, and other uses in connection with motoring. Straps are supplied in sizes from ½in. to 1½in., and are sold at from 6d. to 4s. each.



The Challenge waterproof fabric strap.

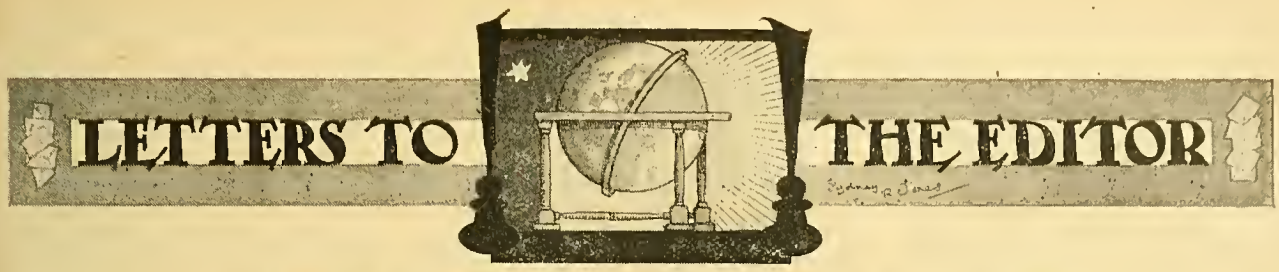
FOOT EASE.

UNDER this heading "Ixion," in the last issue of *The Motor Cycle*, said that he had never had anything so comfortable as a couple of pairs of rigid unsprung footrests which give a hold for the instep. This has brought forth a letter from the Kumfurt Motor Cycle and Accessories Co., who point out that one of their claims in their patented hammock footrests is "footboards flat or shaped to support the instep." So that readers may not be tempted to produce such a footrest, and so perhaps unconsciously infringe the Kumfurt Co.'s patent, we are asked to make mention of the above fact.



A LUXURIOUS SADDLE SUSPENSION.

An arrangement for springing the saddle patented by Mr. A. W. Gill, Barbados, West Indies. Two long leaf springs, one on each side of the frame, are used. They are attached at their forward extremities to the head lug, while at the rear they are slung on shackle pins. The saddle is fixed in the centre to a lug which binds the two springs together.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Motor Cycles in Gallipoli.

Sir,—As a letter in your issue of the 7th inst. gives the impression that no motor cycles are in use in Gallipoli, I wish to state this is not so. At Suvla Bay and across the Salt Lake district I saw motor cycles used. When I left (September 2nd) there certainly was not much room for their use. L.P.D. (CAPT.)

[*The Motor Cycle* has published a photograph of a group of motor cyclists landing. See issue August 19th.—ED.]

Infant Phenomena.

Sir,—Please allow me space in your valuable columns to state that I, aged 14, fail to see anything remarkable in Mr. F. Driscoll's son riding a 6-8 h.p. J.A.P. I myself ride, with the greatest of ease, a 7-9 h.p. electrically-equipped Harley-Davidson, which is infinitely harder to ride than a J.A.P.

As regards the cup offered by Mr. Driscoll, I do not think many other people would so disgracefully overload a machine for such a long run. I in no way wish to discourage Master Driscoll's efforts, but I fail to see the necessity of writing to two motor cycling journals about it.

F.E.P.

British Magnetos.

Sir,—Some time ago I noticed, in answer to your enquiries *re* the magneto position from home manufacturers, one firm was of the opinion that, as soon as the war is finished, the German-made instrument will be given the preference again. Since when I have looked for a contradiction from at least one of the principal makers, but failed to find it. Perhaps this point is not worth discussion, nor needing two thoughts, and this is the obvious reason for their not contradicting the statement.

Surely our memories would be short-lived were we to accept a machine with a German magneto, and buyers in the Colonies would certainly not think any more of the Home merchants for so insulting them. There will surely be a large demand for the British-made article, and a few shillings added to the cost of the machine (even were it equal to the present 5%) would not be grudged. In the course of time, when the public finds the home-made article at least equals the German, there would be no demand for the latter.

As regards most electrical goods, the German is the cheaper at the start, but the British cheaper in the end and infinitely better made and finished. We shall indeed be "soft" if we allow the Germans to regain the market. I suppose I had better certify that I have no interest in any concern of this sort, other than as a well-wisher.

"Ixion," some issues since, enquired for a hot grease suitable for hot climates. For the past two years I have packed my hubs, likewise gear boxes, with Price's Belmoline "A," and found this simply splendid for both purposes. There is no danger of this grease running from hubs in the hottest climate. PERCY C. DEWAR.

S. Rhodesia.

Clergymen and the Petrol Tax.

Sir,—I notice a paragraph in last issue regarding clergymen and the petrol tax, and I am sure your correspondent will wish to be absolutely correct in his remarks. I beg to advise him that he is mistaken when he claims that as a professional man he has to pay more by way of insurance premium than ordinary persons. This may be so with some companies, but from my own knowledge the policy arranged by the Auto Cycle Union through the Law Accident Insurance Co. gives full privileges to professional men without any increase in premium. Machines used for business purposes as apart from professional use do entail a higher premium. S. W. PHILLPOTT.

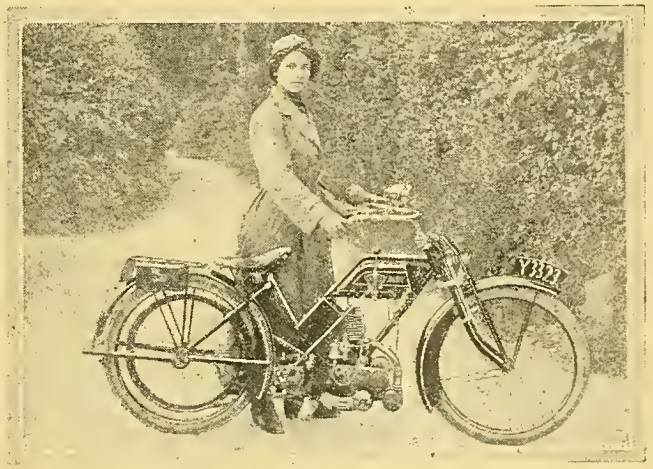
Sir,—I have been a motor cyclist for some years, and have often wished that the same reduction in petrol prices should be granted to clergymen as to doctors. In a parish like mine—seven miles in extent, with three churches and three villages to serve—the mileage that has to be covered every week for services, visiting, and parochial meetings is very considerable. I find my motor cycle of immense value for taking out into the country air people suffering with consumption, etc. So far my income of £140 per annum has not been taxed, now even that is to be reduced, so that I feel I must sell the motor cycle and take to the penitential "push bike" again until once more we have the blessings of peace. If the same terms could be granted to the clergy as to doctors I believe I could manage to keep on what is to me at one and the same time a help in my work and my one and only luxury! SPARTING PORSON.

Sir,—I thoroughly agree with your correspondent in last week's issue of *The Motor Cycle*. Like many other parsons, I find that this increased petrol tax is going to be a heavy burden.

Owing to the absence of my vicar on military service, I am left alone with a wide straggling parish of some twelve miles in area, when under normal conditions there is sufficient work to keep three hard-working priests fully occupied with the five villages which constantly require our ministrations.

The only solution to my difficulty was to purchase a small lightweight machine, so as to be able to give the parishioners the maximum of attention.

I do not contemplate any mileage at all except that in the exercise of my duties, as I have no time for personal



LADIES AND THE MOTOR CYCLE.

Miss Hilda Sage, of High Littleton, who reports having ridden her two-stroke Royal Ruby 2,000 miles without trouble.

amusement, even did I so desire it, which I do not, whilst hundreds of my parishioners are in the fighting line.

We wish to be patriotic and to support the Budget of a Coalition Government, but at the same time it seems hard lines that we clergy should have to pay the extra duty on petrol, whilst medical men, who financially are usually better off, should be exempt.

I trust that the great influence which your paper wields may be productive of a fair view being taken of the parson's motor bicycle, which in many cases is no luxury, but, unfortunately, a necessity.

CURATE IN TEMPORARY CHARGE.

Sir,—In reply to "$2\frac{3}{4}$" of last week's issue, I hardly think it is fair to myself and many hundreds of working men that professional men should grumble at the increased tax. Surely they have the means, whereas I am an insurance agent collecting £5 per week, with 20% commission only (no weekly wage). To collect this I have to go out four days each week and cover between fifty and sixty miles. If professional men can get a reduction, what about the hundreds who are situated as I am?

ERNEST ROBINSON.

Eliminating Weaknesses in Motor Cycles.

Sir,—With reference to Mr. Charles S. Patterson's letter concerning military motor organisation, I had waited so that perhaps someone more able than myself might reply. However, I beg to state my own personal experience in connection with this branch of the service.

In the first place, I have held a responsible post on the technical staff of one of the largest firms in the motor cycle industry for the past three years. Previous to this I was with another concern of equal standing in a similar capacity. My experience of the trade (actual practical experience) dates from 1906. In my working capacity I have been handling since the commencement of the war large numbers of official requisitions for replacements, spare parts, and repairs for motor cycles being used in the service of the Government both at home and overseas.

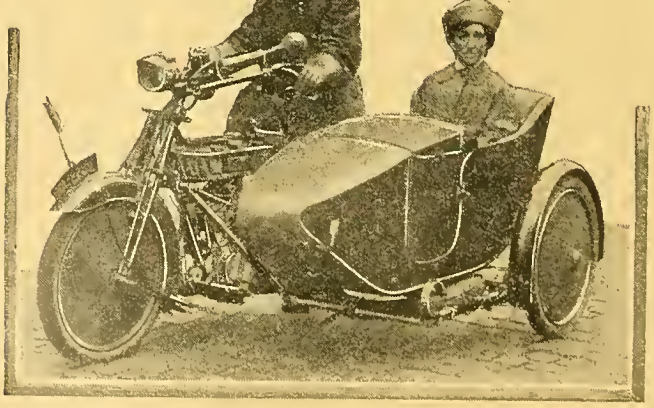
The absurd nature of the majority of these orders first drew my attention to the department in question. Apparently all orders are simply copied (accumulative errors as well) from the original request of the artificer right through the usual red tape channels to destination, when in the majority of cases the unit concerned has to be communicated with to find out really what is required.

Knowing from my own experience exactly what would be required to run the entire department in question as far as motor cycles are concerned, and considering that my knowledge fitted me to take up such duties without any preliminary training or waste of time, I applied for a commission in this branch.

Date of application, May 31st, 1915. Acknowledgment received June 14th, and necessary forms. These were satisfactorily completed in every respect as regards education, character, previous military service (six years), and technical ability; also accompanied by a splendid recommendation from the managing director of my firm.

Result—after waiting nearly four months, instructions received to attend War Office at my own expense for personal interview. Notification received four days later regretting the inability to utilise my services (perhaps I was too big). Coincident with this notification, the appointment was confirmed in the *London Gazette* of candidates for commissions in the A.S.C., M.T., of gentlemen *straight from Sandhurst*. These officers, whilst no doubt possessing a theoretical knowledge of military science, cannot by any means attain to that very necessary practical knowledge which is only to be obtained by years of practical experience in the shops.

However, I have offered my services and stood to lose all had they been accepted. That they have been refused is perhaps my luck, as time will show. TECHNIQUE.



An Enfield sidecar outfit, fitted with gold finished disc wheels, belonging to a Manchester reader. The appearance should be indeed striking

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Overheating v. Red Hot.

Sir,—I have read the letter of Geo. F. Campbell in the issue of September 30th *re* cylinder getting red hot.

"Seeing is believing." A couple of months ago, between 9.30 and 10 p.m., in this town (Grantham), a soldier was riding a motor cycle, single-cylinder, going bang, bang, bang, bang, bang, etc. He went round St. Peter's Hill, came into the main street again, passed me closely, and then I was startled to see the engine red hot, not black, but the same as a red hot fire. W. BEECH.

Deserving of an Iron Cross.

Sir,—I came across a little incident recently that may interest your readers. I noticed a Douglas rider in trouble, so pulled up and put things right—merely a choked jet. I noticed while testing that the drip oil feed was turned off, and the engine seemed a little dry. The owner gave the startling information that he had used the machine nearly two years, five days a week, for business, about 150 miles per week, and his method of oiling was to pump three charges into the engine on starting out each day, and then to give no more oil till next day. This is a remarkable testimony to the efficiency of this engine, as it was in very fair condition after this ill-treatment. C. E. THOMAS.

Engine Rattle in Two-strokes.

Sir,—I have read with the greatest interest "Oile's" experiences in your last issue.

I have covered about 9,000 miles on this class of machine—6,000 on a Levis, and about 3,000 on my present Junior Triumph. Now, in each case, after about 500 miles running, this elusive rattle appears, and this on machines lubricated in totally different ways, *i.e.*, Levis drip feed to cylinder and bearings, Trinmph petroil. Taking the Triumph as giving my present experience, I find that the rattle seems to appear at certain critical road speeds, and not at engine speeds. For example, suppose I am travelling at 20 m.p.h. and open throttle to attain 24 m.p.h., the rattle will commence, but supposing the throttle is opened to maintain the 20 m.p.h. up a hill it will take it all without a murmur, or, if necessary, turn over very fast on low gear without trouble.

I have had the cylinder down four times, and, as your correspondent mentions, the top ring is generally stuck on the exhaust side (as was the case with the Levis), the bottom ring is always free, and the cylinder well lubricated. The bearings are in a very good condition.

I recently travelled to Town from Teignmouth, Devon, *viâ* the hilly Lyme Regis road. The whole journey of two hundred miles was done in ten hours, all hills except three were climbed on top, and yet, owing to engine rattle, I could not exceed 23 m.p.h.

I have tried Harcourt radiators on the Levis, but they failed to effect a cure.

I would like to say that I would not change my present Triumph for any similar machine. It is a splendid hill-climber, never four-strokes, even at starting, and last, but not least, the mudguards and fittings have been put on, not thrown on.

I feel that this rattle is common to the whole tribe, and would venture to suggest that it is not right for any rider whose machine has not covered at least 1,000 miles to say that his mount is free from this failing.

If your columns are the means of solving this problem you will deserve well of "two-strokers." A. C. BYRNE.

Paraffin Motor Cycle Lamps

Sir,—I should be glad to know if you or any of your readers could tell me where I could obtain a set of paraffin oil lamps for a sidecar outfit. I have been trying for some time to get these, but they do not seem to be obtainable. It seems to me they are just what are required in these days when lighting has to be low and expenses high.

P. W. JOHNSON.

A Satisfactory Two-stroke.

Sir,—I have often heard of intending motor cyclists being desirous of information respecting any make of motor cycle. I therefore send you particulars of my experiences with an Allon two-speed two-stroke, which I purchased early last June, since when I have covered 1,500 miles.

On August 3rd I commenced a seven days' tour, taking in Southend, Burnham-on-Crouch, Clacton, Yarmouth, Skegness, Grimsby, Hull, Bridlington, and Scarborough; returning by way of Malton, York, Selby, Doncaster, Sheffield, Derby, Tamworth, Birmingham, Droitwich, Worcester, Tewkesbury, Gloucester, Bristol, Bath, Newbury, Reading, Windsor, Staines, Kingston, and Sutton.

During the tour, and before, I have never had the slightest trouble with the Allon, and I have not encountered a hill which it would not climb. Since my return I have had the engine down, and was surprised to find it so clean; the cylinder and piston head were perfectly clean, and there was only a very small deposit round the top piston ring.

I may say that I have mostly used benzole and Vacuum T.T. oil. The engine has averaged from 90 to 95 m.p.g. of spirit. The machine can touch 45 to 50 m.p.h., and the low speed of 2 m.p.h. It is easy to drive and handle in the thickest traffic.

I am in no way connected with the makers of the Allon.

ALFRED D. WEBB.

[A lightweight two-stroke which can do 2 m.p.h. and also 45 or 50 m.p.h. is surely remarkable. It would be interesting to know how our correspondent certified his quoted speeds.—ED.]

Eliminating Weaknesses in Motor Cycles.

Sir,—The letter of Dr. Patterson comes as very pleasant to some of us who know some of the ways of the War Office, and probably explains why the War Office is about to send out to the Front machines with the same mudguarding which proved a failure last year (see your leader, page 293, September 23rd). It can only be brought about by the gross ignorance of those in authority. You have repeatedly put forth requests for improvement in military models, and I notice in your issue of September 23rd, page 299, a suggestion of how mudguarding can be improved to remedy the defect of machines as now used at the Front.

Now I ride a machine which is fitted with mudguarding devices, and have ridden it in all weathers over the muddiest slush you could imagine. I can ride with white shoes and white trousers on, and get not a splash, neither does my engine; as a matter of fact I never clean my engine, simply because it gets no dirt or grit on it. Of the efficiency of these devices I am convinced after nearly a year's riding over country mud.

The devices I refer to are Waigh's, and some time ago you had an article upon these patents for weatherproofing a motor cycle. Does the War Office not get a copy of your valuable paper?

I also have a rear mudguard which is the last word in efficiency. It incorporates a carrier with weatherproof pocket. Nothing could be better for military uses, and yet we go on supplying machines which have to be dismounted and cleared of mud every three or four miles, as you say in your leader.

Dr. Patterson, as a judge in the last A.C.U. Spring Trials, knows that mudguarding is essential, and that the methods in vogue are inefficient. It is of such men as he that we want to see our Board of Inventions composed, and then we may hope to see some progress. I might say that I am not at all financially interested in these patents.

D. PRYCE-JONES.

Machines for Despatch Riders.

Sir,—With reference to the paragraph headed "The Military Motor Cycle in France," giving the views of an ambulance driver (your issue September 23rd), I do not think many D.R.'s here would prefer a 2 h.p.-engined machine, such as is suggested, for the winter. Any machine lighter than a Douglas would be useless, as occasionally its power is taxed to the utmost. And the frames, as at present supplied with the 2 h.p. models, would collapse. We have enough trouble at present with frames and front forks

I think every D.R. will endorse the writer's other remarks, especially with regard to rear springing.

I was pleased to see your article on "Shields instead of Mudguards." Already I have had to stop half a dozen times to clean out the mudguards. If the makers will insist on fitting guards, they should give at least 2½in. clearance between the tyre and guard, and also fit stronger and much wider mudguards.

BRIGADE D.R., B.E.F.

Prices of Motor Cycles Overseas.

Sir,—In the Overseas Supplement for June 3rd a statement appears that the import charges on British motor cycles into New Zealand amount to 20%. This statement is frequently made out here by agents when discussing the high price of motor cycles; but it is not true. Some two and a half years ago I enquired from the collector of Customs at Auckland the amount of duty on a British 3½ h.p. motor cycle costing about £60 at home. The following is the reply received:

"From Collector of Customs, Auckland.

"February 28th, 1913.

"In reply to your letter of the 26th inst., I have to inform you that the engine, tyres, cranks and pedals, chain and chain wheel of an English motor bicycle are free, provided these articles are not attached to the frame. The duty on the frame usually amounts to from £3 to £4."

You will see, therefore, that the duty is far from being 20% on the whole cost. The cost of putting the parts together should be small, so that agents have in the past traded (and are now trading) on the ignorance of the public.

The law has not been altered since the above letter was received, though, of course, the war may bring a change any day.

NEW ZEALANDER.

Auckland.

The Modern Sidecar Outfit Compared.

Sir,—I have often thought that it was time I got rid of my three-year-old 4 h.p. single-cylinder sidecar outfit, but since watching the performances of similar new machines on the road I have decided to stick to the old mount for at least another year. The modern three-speed single-cylinder with coachbuilt sidecar may look better, but I find that my old two-speed with wicker sidecar is usually a good deal faster on the level and can also climb better. I have seldom any trouble in passing a new machine of similar power. It is almost always the machine of 1912 or thereabouts that puts up the best race. It is the same on hills. With a total load of 24 stone and a low gear of 7¾ to 1 I never have any difficulty in climbing Brockley Hill, near Elstree. The other day I waited at the top to watch other machines come up, and I saw several new three-speeders fail altogether, and in other cases the driver had to jump off and run alongside. I also saw a new 4 h.p. horizontal twin fail. On the top of Bury Hill, near Pulborough, Sussex, I was similarly disillusioned. The hill is about a mile long and has rather bad corners, but averages no more than about 1 in 11. I saw only one single-cylinder climb it successfully with a loaded sidecar, and that was a two-speed chain-driven machine at least a year old. The new three-speeders all failed to carry their full load, and there was a weary procession up the hill of passengers who had been shed.

The modern machine with its coachbuilt sidecar and three-speed countershaft gear appears to be a good deal heavier than my three-year-old, which may account for what seems to me to be a poor performance of the former on the road in the hands of the average driver. Certainly there is no inducement to part with an old machine while it is as reliable as ever and can pass the elaborate modern machine both on the level and uphill.

E. C. PALMER.

A selection of questions of general interest received from readers and our reolies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Difficult Starting.

I have a new lightweight motor cycle. Kindly tell me: (1.) How I can make the engine start easily? It starts when I run for about twenty-five yards, but I wish to start it from the saddle. (2.) Would a four-point plug make any difference? It is a single-speed model. (3.) Can I do anything to lessen the vibration of the handle-bars?—C.L.P.

(1.) Difficulty in starting is nearly always due to air leaks at the carburetter unions. If the carburetter union is not absolutely airtight, or the air slides are leaking, you will have difficulty in starting. For easy starting it is necessary to have a strong mixture and little of it. Too small a jet would also cause difficult starting. (2.) A single-point plug is best. (3.) We are afraid you cannot do anything to lessen the vibration of the handle-bars, unless you fit long rubber grips.

How to Climb Hills.

I have a 1910 Triumph. This is the fifth season I have run it. The engine was overhauled by the makers twelve months ago. On ordinary roads it runs splendidly, but on long stiff hills I have to close the air and sometimes ease the clutch. I find in climbing the same hills when I retard it will take them splendidly. Is this the correct way of driving, to retard on stiff hills? Does retarding injure the magneto? Will retarding cause broken valves? The exhaust valve has been running for three years. The cylinder is quite clean and the valves have been ground in. I always take the cylinder off every 1,000 miles.—J.F.B.

It is not uncommon to have to close the air during hill-climbing, or even to slip the clutch on single gear machines, and it is also natural to retard the spark if the engine requires it. Of course, retarding the spark does not injure the magneto, but makes the work easier for the engine. Continual driving on a retarded spark would cause overheating and damage to the exhaust valves; but what you have to aim at is to keep the spark advanced as far as possible, taking into consideration the nature of the road. You must, therefore, use your intelligence, and when the engine shows signs of labouring you should retard the spark slightly, after first cutting down the air supply.

Timing.

(1.) I have a 2¾ h.p. J.A.P. When the engine is starting it blows air back into the carburetter every time the inlet valve lifts. When the inlet valve is in the act of opening, should the piston be at the top of the cylinder or on the down stroke or coming to the top of the cylinder? (2.) When the inlet valve is in the act of lifting, where should the magneto points be? (3.) When the piston head is on dead centre, should the magneto points be closing or opening?—D.M.T.

(1.) The trouble is probably due to too weak an inlet valve spring, causing the valve to close rather late. The inlet valve opens just as the exhaust closes—that is to say, when the piston is at the top of the stroke or just after it has commenced to fall, and remains open for one complete stroke of the piston, or slightly more. (2.) When the inlet valve is in the act of lifting, the magneto points would be about halfway round the contact breaker after having broken, the explosion taking place, of course, at the moment of maximum compression. (3.) When the piston is at the top of the compression stroke, the points should be opening.

Pte. S. A. M Witham, who is stationed at an A.S.C. motor cycle repair base in France. Witham is well known to many of our readers, as he has figured in Brooklands and T.T. races. Previous to joining the A.S.C. he was a member of *The Motor Cycle* staff.

Blowback through Carburetter.

I have a 5 h.p. twin-cylinder motor cycle. Having taken down the engine and cleaned it, I find that it blows petrol through the air inlet hole of the carburetter. Kindly tell me how to stop this.—E.S.

You will almost undoubtedly find that the trouble is due to too weak an inlet valve spring, and if you fit a stronger one you will probably find that the trouble will cease.

Slow Running.

I recently bought a new big twin and sidecar with overhead inlet valves. After running it about twenty miles, I noticed that the inlet valves were adjusted with a great deal of play, the rear valve having a gap of quite $\frac{3}{16}$in. and the front one a good $\frac{1}{16}$in. I consequently adjusted them so that there was a just perceptible amount of slack when the engine was warm. Up till then the machine had been very flexible, capable of very slow running on top gear, and with a good lively acceleration when opening up, and it would take full air practically the whole time. Now it will keep up a steady 25 m.p.h. with the throttle only just open a small amount, and cannot be induced to fire regularly below about 15 m.p.h., nor take any air to speak of, and now and then chokes slightly on hills. The carburetter is a Senspray with so-called 38 jet (it looks smaller). The carburetter slides are working freely and close properly, and the jet and float chamber are quite clear. Do you think the trouble can be accounted for by the valve adjustment, and if so, why should a large gap be necessary to obtain flexibility?—W.A.N.S.

It is a fact that different engines require different clearances between the valve stem and the tappet, but a clearance of $\frac{3}{16}$in. will not allow the full charge to get into the cylinder as the valve does not begin to open until the tappet has travelled the distance named. In other words, if the lift of your tappet is $\frac{5}{16}$in. the valve itself is opening but $\frac{1}{8}$in. You might try the effect of a stronger inlet spring, as, according to what you say, the trouble must be due to the tappet clearances. We should also be inclined to suspect an air leak, probably between the valve stem and guide.

Licences.

In October last year I bought a second-hand motor cycle. Immediately after buying it I paid the Inland Revenue licence, renewing it again on January 1st. I have now bought, through a local agent, a new machine, giving the old one in part payment. Shall I require to pay another Inland Revenue licence, or does the present one hold good for this machine, and will the agent from whom I bought the new machine require to pay the licence for the old one he received from me?—A.T.

The same local taxation licence will do; there is no necessity to take out another. The agent who has taken your machine in part payment will have to take out a local taxation licence for it if he makes use of it.

Overheating.

I have a 2½ h.p. four-stroke engine which was new last year. After running, say, a couple of miles on rising ground on top gear, the power falls off all at once and the machine comes to a stop. If the distance is not too great I can generally get over the hill on low gear. I suspect overheating. After cooling, the engine pulls splendidly. The valve tappets are adjustable, and I have given all the lift possible to the valves, leaving just enough clearance. The compression is good. I use a No. 27 jet in the B. and B. carburetter. The engine will not take full air, but enough. Last autumn I sent the engine to the makers, and they found a broken crank pin; they also fitted a new piston and new tappets. The result was better, but the trouble is not cured. The gear is the Albion two-speed, the standard being 5½ to 1 on top and 10½ to 1 on bottom. Can you help me?—J.L.

The trouble is probably overheating. You might try the effect of a smaller jet, say 26. Also look to the valve springs, and see that they have not lost their temper from overheating. You might also try a slightly lower gear, say 5¾ to 1. Use a good brand of oil and make sure that the engine is getting a sufficient supply.

Purchasing a New Mount.

I am a novice, and am thinking of buying a new motor cycle. I have studied various catalogues and text books, and conclude that a two-stroke would suit my requirements. (1.) Is a two-stroke any good for hilly country? (2.) Is it desirable to have variable ignition on a two-stroke? (3.) Is it desirable to have kick-starter, or would this be superfluous?—B.C.

(1.) The two-stroke machine is quite good for hill-climbing. (2.) Variable ignition is certainly an advantage on any machine. (3.) It is not necessary to have a kick-starter, but a two-speed gear is desirable.

Lubrication.

Will you kindly let me know a suitable oil to use for a 2½ h.p. engine, and how many drops per minute should pass through the Best and Lloyd lubricator for speeds up to 25-30 m.p.h. on level roads? At present I am using Vacuum B.B. Also, I am anxious to know what lubricant to use for an Albion two-speed gear. So far I have not put anything in mine, as it was packed with some kind of grease when I took delivery. As I have since run 800 miles, I think I should be seeing to it again. Any information you can give me will be much appreciated. I should also be glad to know how often the chain from the engine to the countershaft should be lubricated.—J.J.G.

We should say that the oil you are using is quite satisfactory, and we see no reason why you should change. It should run forty to fifty drips per minute up to 30 m.p.h., more if you are travelling faster. The oil in question would do for the gear. This you will find all right in cold weather, but when it gets warm you might inject some grease through a grease gun; do this even now if the oil shows signs of working out. The chain should be lubricated when it shows signs of running dry. The best lubricant is grease and graphite. Clean the chain with paraffin and put it into a flat vessel, warm it over the fire and put some lubricant over it; as this melts it will run into the links. This does not pick up dust like oil does.

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"W.D." (Chesterfield).—Grado multi-pulley. General efficiency and belt wear.

"S.D.T." (Cape Province).—A.B.C. model B (T.T.). Speed, power, comfort, and reliability.

"W.W." (Stirling).—Junior Triumph. Easy starting and smooth running at low speed.

"J.C.B." (Berks.).—5 h.p. Indian and A.B.C. Speed, consumption, and reliability.

"G.W.C." (Yorks).—Mabon gear and Grado multi-pulley for use with 3½ h.p. Triumph.

"M.R.H.K." (London).—4 h.p. Douglas, for solo and sidecar work. Comfort, reliability, compression, consumption, hill-climbing (slow and fast). Also Lucas electric lighting outfit and Low generator.

RECOMMENDED ROUTES.

ROMFORD TO SCARBOROUGH.—H.L.T.

Romford, Waltham Abbey, Waltham Cross, Ware, Buntingford, Royston, Godmanchester, Stilton, Wansford, Stamford, Grantham, Newark, Retford, Doncaster, Ferrybridge, Tadcaster, York, outskirts of Malton, Scarborough.

AMPTHILL TO EASTBOURNE; avoiding London traffic.—J.H.C.

Ampthill, Dunstable, Tring, Chesham, Amersham, Beaconsfield, Slough, Windsor, Chertsey, Pyrford, Ripley, Guildford, Cranleigh, Horsham, Cuckfield, Chailey, Lewes, Eastbourne. Approximate distance, 125 miles. It is not the shortest route, but it avoids London traffic.

ROCHESTER TO TORQUAY.—F.H.

Rochester, Westerham, Reigate, Dorking, Guildford, Farnham, Alton, Itchen Abbas, Winchester, Bassett, Totton, Cadnam, Ringwood, Wimborne, Dorchester, Bridport, Lyme Regis, Colyford, Exeter, Chudleigh, Newton Abbot, Torquay.

A meet of the East London (S.A.) Motor Cycle Club. The great predominance of the sidecar machine will be noticed, and it is an interesting fact that half the machines in the group are Triumphs.

SPARKLETS.

Change of Address.

Messrs. G. B. Bartlett and Co., formerly of Kilburn, have now new quarters, these being at 74, Great Portland Street, W.

Catalogues Received.

S.R.O. ball bearings (the S.R.O. Ball Bearing Co., 115, Southwark Street, S.E.). A list of ball bearings of all sizes, single and double row, and of the thrust and journal type.

The Revere Showcard.

A good step in the publicity campaign pursued by the makers of the Revere two-stroke machine is the publication of a well-designed showcard which will appeal to agents. The Revere is made by W. H. Whitehouse and Co., Ltd., of Coventry, in two models, *i.e.*, with or without a two-speed gear.

Where there is No Shortage of New Machines.

Recently one of our North Country contributors paid a passing visit to the motor cycle depot of Messrs. Alexander, Lothian Road, Edinburgh, and in these days of scarcity of supplies he was surprised at the large number of new machines and sidecars on view. The various makes of American machine do not appear to be totally unknown to our friends across the Tweed; but, in addition, samples of the latest productions from the Douglas works were on exhibition, while every variety of Enfield and practically all the leading makes were represented.

The Dunlop Wholesale List.

Motor cycle dealers who have not yet received a copy of the new Dunlop wholesale list of cycle and motor cycle tyres and accessories, which was issued on the first of this month, are asked to send a postcard to Aston Cross, Birmingham, for one. A number of new accessories are listed, such as clip-on motor cycle tyre gaiters, cycle valve tabs, bolt valve plates, and a spare tube bag.

A Good Carbide.

At a time like the present when the demand for really reliable lighting systems is greater than ever, owing to the very necessary light restrictions, and the greater amount of traffic to be met with on the roads at all hours of the night, it is well to bear in mind the claims of Chemico carbide. The makers, the County Chemical Co., Ltd., of Bradford Street, Birmingham, are amongst the largest, if not actually the largest, packers of carbide in the world. The treatment of carbide has been with them a matter of especial attention for many years.

The "Old Timers" Dinner.

The "Old Timers" dinner—a yearly gathering of riders of the old high bicycle and tricycle of the 'seventies and 'eighties—is to be held this year at Frascati's Restaurant, on October 27th. The chairman will be Mr. Shirley Fussell, of the Pickwick Club, who was the secretary of the Hampton Court Meets, of which the last was held some three and thirty years ago. The hon. secretary of the dinner is Mr. W. J. Harvey, Holly Lodge, Gunnersbury, W., who will gladly forward particulars to any who consider themselves qualified as "Old Timers" to attend.

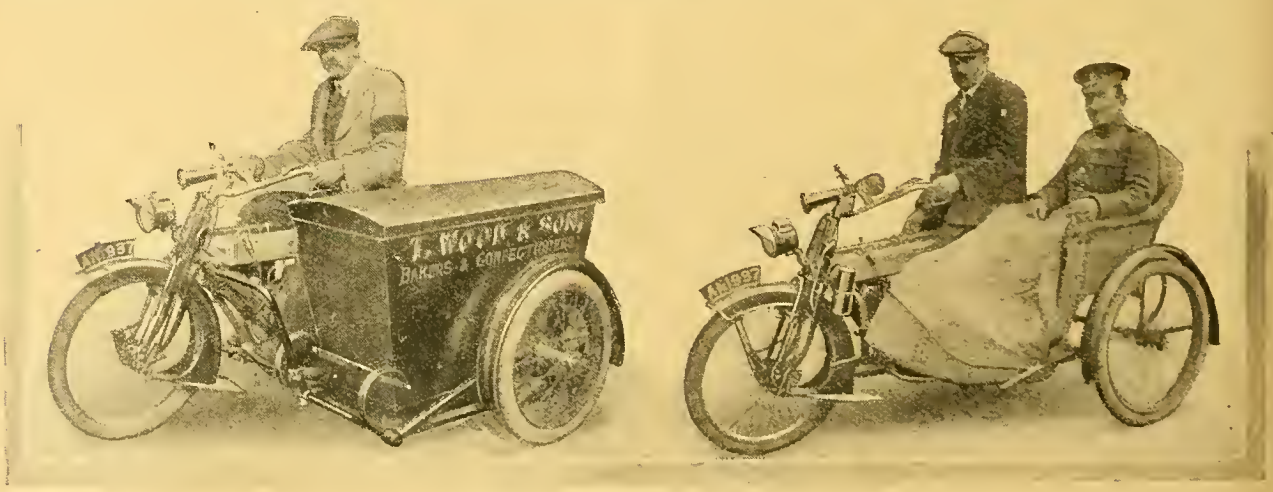
Reviews.

The Enfield Cycle Co., Ltd., has issued a revised edition of the handbook and spare parts list of the 2¼ h.p. Royal Enfield two-stroke. It is a nicely arranged handbook, and the makers will be pleased to send anyone a copy upon writing to the Redditch works. It is gratifying to note that the latest model Royal Enfield is fitted with a British magneto, *i.e.*, the M.L.

We are in receipt of an interesting booklet entitled "Hints for A.C. Owners." Every user of the A.C. Sociable should possess one of these books, as the working of this popular three-wheeler is so clearly explained therein. Particular care has been taken to elucidate by means of line drawings the lubrication system, the gears, and method of adjusting the machine.

Premier (Coventry), Ltd., have sent us a copy of their new catalogue. Even in these days of expensive and high-class catalogues that under review is a remarkably fine production. The Premier range consists of the 3½ h.p. single, 7-9 h.p. twin-cylinder, and the small two-stroke. Of these the latter, with its two vertical cylinders, is most interesting by reason of the many original features embodied in the design.

We have received a copy of a new booklet setting forth the claims of Mex spirit. It is worthy of note that Mex is owned, controlled, and distributed by a British company.



SATURDAY AND SUNDAY SIDECARS.

A P. and M. belonging to Mr. J. Wood, a baker of Bromley, to which may be attached either a sidecarrier or a cane sidecar. As a sidecarrier Mr. Wood finds the machine exceedingly useful in his business.

MOTOR CYCLES FOR SALE.

Alldays.

ALLON, 2-speed, condition excellent, 5 weeks old; take £36; exchange with cash for 1914 Douglas, accessories unnecessary.—C. Wilkin, Wraysbury, Bucks. [4293

ALLDAYS Allon, 2-stroke, new May, 1915, tyres good, lamp, horn, spare belt, chain, and tools, perfect order; £22.—Kay, 118, Pitshanger Lane, Ealing. [4244

Ariel.

ARIELS.—Special agent, Jones, The Broadway, Muswell Hill. Easiest of easy payments arranged. [3994

ARIEL, 1913, 3½h.p., 3-speed, with 1914 coachbuilt sidecar excellent condition; price £37 10.—Kemp, Vicars Lane, Louth. [X7943

1914 Ariel, 5-6h.p., 3-speed, gear box, lamps, accessories, equal new, Millford 1915 coachbuilt sidecar, £72; or with cane sidecar £65; exchanges.—Dosser, Slingsby, Malton. [X9989

ARIEL, 3½h.p., 1914, adjustable pulley, decompressor, powerful, and very little used, new tyres; open to expert examination; £33, or near offer.—Stovell, 16, Alan Rd., Withington, Manchester. [X9727

1913-14 Ariel, 3½h.p., 3-speed, and sidecar, in tip-top condition, 3 lamps, electric horn, new tyres, speedometer, and watch; bargain, £47/10; easy payments arranged.—Jones, The Broadway, Muswell Hill. [2871

ARIEL 5-6h.p. Combination in stock, £90/16, or £23/16/6 down and 12 payments £5/19/2; liberal discounts for quicker payment.—Lamb's, 151, High St., Walthamstow.—Depot 50, High Rd., Wood Green. [4073

A.S.L.

4h.p. A.S.L., excellent condition; £21.—43, Everard St., Crosland Moor, Huddersfield. [X9980

Auto-Wheels.

AUTO-WHEEL and 3-speed Raleigh, splendid condition; £12.—Barry, 16, King's Rd., St. Pancras. [4222

AUTO-WHEEL, B.S.A. Model de Luxe, new tyre, shock absorber; £8.—Gilmour, Stationer, Cupar, Fife. [X9395

AUTO-WHEEL de Luxe, £15/15, or 28/3 monthly; second-hand Wall Auto-wheel, perfect order, overhauled by makers, £10.—Seen at 248, Bishopsgate, London, E.C. [4389

AUTO-WHEEL, attached lady's B.S.A. bicycle, just overhauled; together £15/15, or separate, bargain; owner bought motor.—Celtic Cycle Works, Easthill, Wandsworth. [4174

AUTO-WHEELS.—For easy starting, maximum efficiency, and the limit of economy, order now an Everest carburetter, No. 7, special model.—Write, Everest Carburetters, Coventry. [X9695

Bat.

1914 4h.p. Bat-Jap, 3-speed, and sidecar.—Particulars, Nation, Lympsham, Weston-super-Mare. [X9984

1913 8h.p. T.T. Bat, 90×74½, speedometer, large lamp set, etc., guaranteed perfect; £28, offers.—Empson, Gaulingay, Sandy. [4344

BAT-J.A.P., 5-6h.p. 1913 2-speed twin, with coachbuilt sidecar, new tyres, all as good as new; any trial given; £40.—Carnarvon Arms Garage, Dulverton, Somerset. [X9784

BAT, late 1914, 6h.p., chain and belt, 3 speeds, countershaft, kick starter, lamps, cane enclosed sidecar, any trial given; £55.—Write, Bat, 1, Campbell Rd., Croydon. [X9856

BAT-J.A.P., 8h.p., 1914, perfect condition, 75 m.p.h., lamps, horn, speedometer, tools, spares, new tyres and belt; £40, or nearest.—Lieut. Denning, O.T.C., Fort Darland, Chatham. [X9875

BAT-J.A.P., 1913-14 2-speed 8h.p. Combination, all accessories; £49/10, or £14 down and 12 payments £3/3/4; special discount for prompter payments.—Lamb's, 151, High St., Walthamstow. [4072

1914½ Bat, 8h.p. Jap, spring frame model, chain drive, 3in. Palmer tyres, complete, with Mills-Fulford sidecar (cost £25), hood, screen, Cowey speedometer, lamp set; £58.—Willways, Bristol. [X9816

BAT-J.A.P., 1914, 6h.p., bottom bracket 3-speed, chain drive (new), coach sidecar 1915, all French grey, carefully used by expert, semi T.T. bars, very smart, fast outfit, tools, spares; £65.—Liddell, 20, Denning Rd., Hampstead. [4044

BAT Combinations, new 1915, countershaft models, 8h.p. J.A.P. engines, countershaft, chain drive, 3-speed and kick start, spring frame, handsome 5-point fixing sidecar, with spring wheel and adjustable grid, full of up-to-date features, the combination £98/8/9, delivery from stock; also 4h.p. twin models, solo mounts, 2-speed gear, £60/7/6, delivery from stock.—Wauchope's, 9, Shoe Lane, London. [X9900

Blumfield.

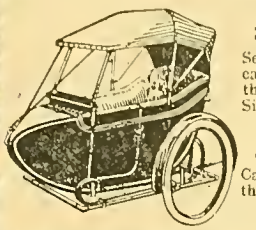
BLUMFIELD, 1915, 5-6h.p., twin, Bowden 2-speed kick start gear, enclosed Bosch, Mark II. Druids, Binks 2-jet, Chater hubs, 26×2½, mileage under 2,000, perfect, reliable, £55; or with coach sidecar £60.—Beeston House, Williams Av., Wyke, Weymouth. [X9941

Bradbury.

1911 Bradbury, 3½h.p., good order; £16.—Harris, Garage, Astwood Bank, Redditch. [X9807

CORONET Sidecar Chassis

is designed for long life, and has a wonderful reserve of stability, and is safe on greasy roads. Luggage carrier built into frame. Cannot shake loose, and is a boon when touring.



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We can give immediate delivery of all models, and suitable for any make of machine.

WE CAN DELIVER FROM STOCK

THE WORLD'S RECORD MACHINE.
THE WORLD'S VALUE MACHINE.

We will make a special allowance for your machine in part payment. Write for terms, as we are large contractors.

7-9 h.p. Harley-Davidson.

The most improved sidecar machine made. Fitted with automatic mechanical oil pump like a car, 3-speed sliding countershaft gear, fool-proof, both hand and foot control to clutch, spring seat, 3in. tyres, silent running engine, will just tick over when in free engine, double stem handle-bar made from rolled cold steel, carrier one steel stamping, spare petrol tank; in fact, refinements not found on any other machine. Full detailed catalogue upon application.

PRICE—7-9 h.p., 3-speed model £68 5
ditto, ditto, electrically equipped £76 13

You cannot beat us on exchanges. Yorkshire dealers supplied.

Coronet Sidecars for Harley-Davidsons.

We make a special Sidecar, enamelled French grey to match, 28 × 3in. tyre, apron to cover entire body, and fourth point attachment £13

BOOTH'S BIG BARGAINS.

2½ h.p. **LEVIS**, 1915 2-stroke model, with 2-speed gear £28 10
3¾ h.p. **PRECISION**, 1912 model, in nice condition £19 10
4½ h.p. **PRECISION**, 1913, 2-speed, and £13 coach Sidecar £31 10
6 h.p. **REX**, 1912, 2 speeds, complete with new coach Sidecar £33 10
4 h.p. **QUADRANT**, 1912, 2 speeds, complete with Sidecar £24 10
3½ h.p. **TRIUMPH**, 1913, 3-speed model.. £31 10
2 h.p. **CALTHORPE** Lightweight, 1914 model, Precision engine, countershaft 2-speed gear, easy starter, nice condition £18 10
3½ h.p. **QUADRANT**, 1912, 3-speed model. £20 15
6 h.p. twin **REX** Tricar, 2 speeds, magneto, water-cooled £12 15
8 h.p. **CHATER-LEA**, 1912, J.A.P. engine, 3 speeds, complete with coach Sidecar £48 10
8 h.p. **BRADBURY** Tricar, water-cooled, open frame, 2 speeds, magneto, coach-built, spare tyres and tubes £14 15
3½ h.p. **L.M.C.**, 1913, countershaft gear .. £25 0
3½ h.p. **REX**, 1909 Millennium 2-speed .. £15 15
MOTOSACOCHE Lightweight, magneto .. £6 15
P. & M., 1909, 2-speed, with Sidecar £20 10
4½ h.p. **JAMES**, 3-speed, chain drive, kick starter, coach Sidecar £48 15

MISCELLANEOUS.

New Trouser Overalls, usually £1 ..... 12/6
Wicker Sidecar, complete 32/6
B. & B. Carburetter, h.-b. control 13/6
Brand New Waterproof Magneto £3 15
New Accumulators, 10 amps. 6/11
New 21/- Glare Brass Electric Tail Lamp 4/11
New 2 h.p. Gray Stationary Petrol Engine, electric ignition, 2 flywheels £10 0

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MOTOR CYCLES FOR SALE.

Bradbury.

BRADBURY 1911-12 Coach Combination, 4h.p. Bosch, 2 speeds; £29 10.—1, Ebner St., Wandsworth. [X0040

BRADBURY, 4h.p., 1912½, and sidecar; lot bargain, £26; any trial.—119, Radnor St., Hulme, Manchester. [X9640

1912 Bradbury, 3½h.p., 2-speed, wicker sidecar, £37/10; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. [0726

BRADBURY, 1911, single speed, T.T. bars; 20 gns.—Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green. [4080

BRADBURY, 4h.p., 2-speed, just overhauled by makers, with Varley sidecar, splendid condition; any trial; £35.—Griffiths, 40, Dudley Rd., Oldbury. [X9923

BRADBURY, 4h.p., 3-speed countershaft, chain drive, absolutely as new, mileage 300; £55.—Jones, Mandeville Dairy, Gray St., nr. Selfridge's, London. [4288

BRADBURY, 4h.p., 1913, 3-speed, speedometer, C.B. sidecar, excellent condition, done about 3,500; nearest to £40.—Eric Barton and Co., Shepperton-on-Thames. [4215

BRADBURY Combination, 4h.p., 1914, 3-speed, and clutch, B.S.A. carburetter, kick starter, lamps, horn, speedometer, splendid machine, climb anything, £50.—Cliff and Sons, Eltham. [4228

BRADBURY, 3½h.p., h.b.c., F.E., speedometer, Lucas lamp, new tyres and belt, plating, enamelling, excellent condition; £25.—Apply after 6, Jocland, 23, Wisham Grove, Clapham Common, S.W. [4212

Brown.

BROWN, 6h.p., coachbuilt sidecar, F.E., Bosch, Druids, B.B., speedometer; £33.—99, Culford Rd., Southgate Rd., N. [4141

BROWN, 1914, twin 3½h.p., Stanmey-Archer 3-speed gear, Millford coachbuilt sidecar, Palmer cord tyres as new, electric rear light, lamp, horn, tools, and new spare Pedley belt; £55.—Pugh Bros., 97, Holloway Rd., London, N. [4287

B.S.A.

1915 4h.p. 3-speed B.S.A., model K, just delivered; £63.—Parkers' Garage, St. Ives, Hunts. [4274

B.S.A., the very latest model just arrived from works; immediate delivery.—Timberlake's Garage, Wigan. [X9800

1914 B.S.A., 4¼h.p., chain drive, 3-speed; £45; new last November.—Poose, Commercial Rd., Bournemouth. [4016

1912 B.S.A., 2-speed, free engine, in good condition, and sidecar; £35, or near offer.—H. Barnwell, Fleet, Hants. [4113

B.S.A., 4¼h.p. (1915), £52 model K, speedometer, lamp, etc., scarcely ridden.—B., Ravenscroft, South Nutfield, Surrey. [4205

1913 B.S.A., 3½h.p., 2-speed, and sidecar; cheap, £40; perfect; easy payments arranged.—Jones, The Broadway, Muswell Hill. [2873

B.S.A., 1915 model K, 4h.p., 3-speed countershaft, one just received, immediate delivery, £59/15.—Laytons' Garage, Bicester, Oxon. [X9868

B.S.A., 1916 model K, 3-speed, just arrived; liberal exchanges.—Lamb's, 151, High St., Walthamstow. 'Phone: 169 Walthamstow. [4067

B.S.A., 1916 model H, all chain drive, 3 speeds, B.S.A. sidecar, wind screen, just delivered; £84/8.—Bond, 245, Euston Rd., London. [X9688

B.S.A., countershaft, 2-speed gear, clutch, all accessories, £34; exchange, with cash, for twin combination.—44, Holden Rd., N. Finchley. [4308

1913½ 3½h.p. B.S.A. and 2-seated sidecar, 2 speeds, free engine, chain drive, spares, in good condition; £50.—Bugg, 80, Wolfington Rd., West Norwood. [X9838

LATE 1912 B.S.A., 3½h.p., 2-speed, clutch, horn, lamps, splendid condition, ready for road now; £36, or nearest.—J. Sard, Ingram House, Stockwell, S.W. [4115

B.S.A. 4¼h.p. Combination, 1915½, B.S.A. sidecar, as new, not done 800 miles, lamps, and extras. 2 spare tubes; bargain, £67.—Smith, Ivydene, Clive, near Shrewsbury. [X9839

B.S.A., 1915, 4¼h.p., model K, A.J.S. coachbuilt sidecar, wind screen, speedometer, lamps, all new Whitsuntide, absolutely genuine.—Eyre, 28, Newport Rd., Reading. [X9388

B.S.A., late 1913, 3½h.p., 2-speed, F.E., kick, chain drive, lamps, horn, tools, coach sidecar, new tyres, good condition, the most reliable turnout on the road; sacrifice £48.—Chard, 9, Christchurch Rd., Newport, Mon. [X9785

B.S.A., late 1912, Mabon 8-speed F.E. gear, P.H. lamps, speedometer, watch, spare valves, sidecar, new Palmers all round, tools, good overalls, spare; must not ride; clear lot £35.—Stephens, 57, Hatherley Rd., Walthamstow. [4040

1915½ B.S.A., 4¼h.p., chain and belt, and Mills-Fulford Corvette sidecar, with mat and apron, not done more than 1,500 miles, absolutely as new, and only wants inspecting; £68.—Ravenscroft, 126, Divinity Rd., Oxford. [X9947

All letters relating to advertisements should quote the number at the end of each advertisement, and the date of the issue. A29

MOTOR CYCLES FOR SALE.

B.S.A.

1913 B.S.A., 2-speed, free engine, 30 gns., very big bargain. We allowed considerably more for this machine; exchanges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X9191

B.S.A., K, 1915, July, 4½h.p., Watsonian coachbuilt sidecar, speedometer, little used, in perfect condition, running diary kept, Palmer tyres, spare belts; £65.—Box 9,401, *The Motor Cycle* Offices, Coventry. [X9694

Calthorpe.

CALTHORPE-J.A.P.'s.—Latest models in stock at Alexander's, 115, Lothian Rd., Edinburgh. [4123

2h.p. 2-speed 1914 Calthorpe, in nice condition; price £17/10.—Wauchope's, 9, Shoe Lane, London. [X9908

1915 Calthorpe 2-stroke, 2-speed, new June, perfect, spares; £23.—Leyson, Jun., Penscynor, Neath. [4175

CALTHORPE, 1915, 2¼h.p., 2-speed, in excellent condition; bargain, £25.—92, Brownhill Rd., Catford. [4383

CALTHORPE, 1914, 2h.p., 2 speeds, lamp, horn; £18/10.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [4292

CALTHORPE, 1914, 2-speed model, nice condition, reliable lightweight; 20 gns.—Wauchope's, 9, Shoe Lane, London. [X9899

CALTHORPE-J.A.P., 1915, 2¾h.p., 2-speed, all accessories; £28.—E. Hillier, 60, Wallingford Av., North Kensington. [4065

CALTHORPE-J.A.P., 2¾h.p., Enfield 2-speed, free engine, new May, good condition; £26.—6, Manchester Rd., Thornton Heath. [4338

CALTHORPE 1915 latest 2-speed lightweight models in stock; cash or exchange; no waiting.—Eagles and Co., High St., Acton, W. [X9835

1915 Calthorpe-J.A.P., 2-speed; 35 gns.; delivery from stock; exchanges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X9190

CALTHORPE Motor Cycles, J.A.P.'s and 2-strokes, from £27/14; send for list and easy payment terms.—Storey's, 118, Gt. Portland St., W. [0647

CALTHORPE, 1915, 2-stroke, 2-speed, just arrived from works; immediate delivery; £31/7.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [4063

CALTHORPE, 1915, J.A.P., Enfield 2-speed, just arrived from works; immediate delivery; £36/15.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [4061

1914 Calthorpe Junior, 2-speed free engine, first-class order and condition; £18, or near offer.—Cambridge Garage, Frances St., Woolwich. 'Phone: 108 Woolwich. [4263

CALTHORPE-J.A.P., 1915, 2¾h.p., 2-speed, delivered few weeks ago, unscratched, lamp, horn, spares, brand new Moseley tyres; £32.—Lieut. Winter, 10th Norfolks, Colchester. [4204

CALTHORPE Junior, 2-speed, in nearly new condition; £18, or near offer.—Tuke and Bell, Ltd., Motor Engineering Department, Carlton Engineering Works, High Rd., Tottenham, N. [4139

CALTHORPE-J.A.P., 2-speed, £36/15; 2-stroke, £31/7; 2-stroke, single speed, £27/14; deferred terms if desired.—Lamb's, 151, High St., Walthamstow. Depot, 60, High Rd., Wood Green. [4079

CALTHORPE Junior, late 1914, Precision engine, 2½h.p., good climber, head and rear lamps, accessories, tyres as new, splendid condition throughout; any trial; £22.—Puddy, St. Michael's Av., Yeovil. [X9987

Campion.

1914¾ Campion-Precision, 4½h.p., Jardine 3-speed countershaft, all chain drive, Bosch, B. and B., new condition, climb anything, handsome cane sidecar, latest shape; combination £58; machine only, £52.—Rev. Hughes, Cavendish Rd., Leicester. [X0039

Chater-Lea.

CHATER-LEA No. 7 8h.p. J.A.P., 1914½, and £15 Chater-Lea art cane sidecar, with luggage grid and wind screen; cost £110, not ridden since October, 1914; owner at Front; £80, or near offer.—129, Dill Hall Lane, Church, Lancs. [X8972

CHATER-LEA No. 7, 8h.p. J.A.P. engine, condition as new, coachbuilt sidecar, hood, screen, speedometer, watch, X'all saddle, 3 Lucas lamps, and horn, 3in. Palmer cord back tyre, insurance; cost £120, bargain, £72/10.—Toulson, 14, Ashchurch Terrace, Shepherd's Bush, W. [4033

Chater-Lea-Fafnir.

CHATER-LEA-FAFNIR, 3½h.p., B.B., waterproof mag., good condition; £18.—Wicks, 7, Merchants' Place, Reading. [4116

Chater-Peugeot.

CHATER-LEA-PEUGEOT, 3h.p., fine order, new tyres, accessories; £20.—Trotman, 74, East Hill, Wandsworth. [4331

CHATER-PEUGEOT (1915 engine), B. and B., Bosch, Hutchinsons, cylinders, pistons new, re-bushed, tank wants repairing; £25, or offer.—E., 236, Southampton St., Camberwell. [4355

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NEW MODELS.

REX, 6 h.p., 1914, Combination, 2-sp., new **£70 0**
JAMES, 3½ h.p., twin, 3-sp., all chain **£66 6**
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JAMES, 4½ h.p., 3-speed, Combination **£80 0**
BLACKBURNE, 3½ h.p., 3-sp. countershaft gear, footboards **£67 9**
ROYAL RUBY, 2½ h.p. J.A.P., 2-speed **£39 10**
LEA-FRANCIS, 3½ h.p., 3-speed .. **£72 19 6**
ZENITH, 8 h.p., clutch **£81 18**
J.K., 6 h.p., 3 speeds, countershaft .. **£73 10**
B.S.A., 4½ h.p., 3 speeds, and Sidecar **£75 11**

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£33.	**B.S.A.,** 3½h.p., 2-speed, cane Sidecar	£41
£50.	**REX,** 1914, 8h.p., Spacke eng., 3-sp.	£58
£44.	**REX,** 1914, 6h.p., hood and screen.	£50
£64.	**ZENITH,** 1914, 8 h.p., red, Montgomery 20 guinea Sidecar to match.	£68
£71.	**HARLEY-DAVIDSON,** 1915, 3-sp., Millford Sidecar.	£74
£50.	**REX,** 1914, 6h.p., 3-speed, coach Sc.	£55
£47.	**BAT,** 1913, 6h.p., 3-speed, coach Sc.	£53
£50.	**REX,** 1914, coach Car, 8 h.p., 2-sp.	£58
£60.	**REX,** 1914, 6h.p., 2-sp., brand new	£70

SOLO MOUNTS.

£50. **INDIAN,** 1914, 7 h.p., dynamo mod. £54
£43. **P. & M.,** 1913, 3½h.p., 2-speed.... £45
£14. **HUMBER,** 1912, 2h.p., lightweight £18
£47. **BROUGH,** 3½h.p., 1914, 2-speed £52
TORPEDO, 2½h.p., 1914, 2-stroke.. £24
£43. **DOUGLAS,** 1914, T.T., 2-speed ... £46
£26. **O.K.,** 1915, 2½h.p., 2-sp., accessories £29
£48. **TRIUMPH,** 1914, 4 h.p., 3-speed, T.T. bars. £52
£47. **TRIUMPH,** 1914, 4 h.p., 3-speed £52
£49. **BROUGH,** 1915, 3½h.p., 3-speed ... £54
£18. **F.N.,** 1912, 2¼h.p., 2-sp., shaft drive £24
£42. **ROVER,** 1914, 3½h.p., 3-speed, T.T., as new. £49
REX, 3h.p., good tyres, suit amateur £10
£12. **DOUGLAS,** 1910, 2¾h.p., just overhauled. £18
£30. **VELOCETTE,** 1915, 2½h.p., 2-speed, chain drive. £33
£31. **RUDGE,** 1913, 3½h.p, Multi, as new £35
£46. **DOUGLAS,** 1914 W, 2¾h.p., as new.
£23. **ALLDAYS Matchless,** 3 h.p., 1914 2-speed. £26
£42. **RUDGE,** 1915, 3½h.p., I. of M. Multi £48
£14. **REX,** 1909, 3½h.p., 2-speed £20
£4. **ARIEL,** 2½h.p., coil and accumulator £8

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Chater-Precision.

8h.p. Chater-Precision and Coach Sidecar, all accessories, car tyres, hood, screen, electric horn; a splendid turnout; £67/10; easy payments arranged.—Jones, Broadway, Muswell Hill. [3990

Chater-Lea-Stevens.

CHATER-LEA-STEVENS, 4½h.p., new 1915 sidecar, Saturday; £19.—105, Malta Rd., Leyton. [4245

Clyno.

CLYNO, July, 1914, 2-stroke, lamp, horn; £22.—Robinson, 57, East Hill, Wandsworth. [4053

CLYNO 1912 Combination, under 5,000; bargain, £42.—Holden, West Wickham, Beckenham. [4178

CLYNO 2-stroke, 1914, 2 speeds, clutch, accessories, like new; £32.—Auto Mart, 133, Hammersmith Rd., W. [4003

CLYNO 1912 Combination, cost over £100; trial; best offer secures it.—29, Wandle Rd., Wandsworth Common. [4203

CLYNO, 1914, 2-stroke, 2-speed, clutch, Jones, Lucas accessories, overhauled; bargain, £32.—Ellis, 102, Warner Rd., Camberwell. [4189

CLYNO Coachbuilt Combination, 1912-13, 6h.p., twin, fully equipped, smart turnout; £35; exchanges.—Speechley, 45, Church Rd., Acton. [X0015

LATE 1913 6h.p. Clyno Twin Combination, 3 speeds, clutch, kick-starter, detachable wheels, perfect condition; £49.—15, Warwick Court, Holborn. [4285

CLYNO, 1914 (August), 2-stroke, 2-speed, clutch, all accessories, not done 500 miles, as new; bought cycle car; £32.—20, Canonbury Grove, London, N. [4352

CLYNO 1913-14 Coachbuilt Combination, 3-speed countershaft, spare wheel, speedometer, lamp, horn, kit, condition almost as new, perfect order, done 3,000 miles; £60, or offer.—Thos. Batey, Gt. Clarence St., Dublin. [X9683

CLYNO, 1913, 5-6h.p., 3-speed gear, clutch, chain drive, kick-starter, detachable wheels, aluminium footboards, car tyre on rear wheel, Clyno coachbuilt sidecar, lamp, generator, and gong; £47/10.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [4290

Condor.

5-6h.p. Condor, coachbuilt Limoulette sidecar, Sturmey 3-speed, little used, complete with speedometer, lamps, horn, tools, and spares; £50.—576, Foleshill Rd., Coventry. [X9780

Connaught.

CONNAUGHT, 2-stroke, 1915, 2¾h.p., 2-speed, in stock; £35/8.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [4317

CONNAUGHTS in Stock for immediate delivery at the Birmingham and district agent's depot. P. J. Evans, John Bright St. [4358

CONNAUGHT, 2¾h.p., 3-speed, free engine, perfect condition; bargain, £35.—F. Brown, The Grove, Reddicap Hill, Sutton Coldfield. [X9718

Diamond.

DIAMOND, Villiers engine, 1915 model, in stock, 27 gns.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [4319

Douglas.

DOUGLAS V 1915, 2-speed, in stock.

DOUGLAS U, 1915, 2-speed, in stock.

DOUGLAS W, 1915, 3-speed, in stock.

IMMEDIATE delivery on receipt of cash. Tel.: 388. 'Grams: Bicycles.—Robinson's Garage, Green St., Cambridge. [6865

1914 model V Douglas, good condition; £37.—Parkers' Garage, St. Ives, Hunts. [4275

1910 Douglas, just overhauled; £14; seen any time.—18, Galesbury Rd., Wandsworth. [X9878

DOUGLAS, 1911, good order, accessories; £17.—Apply, 188, High St., Teddington. [X9874

1911 Douglas, engine recently overhauled; £18, real bargain.—305, Broad St., Birmingham. [X9719

DOUGLAS, 1913¾, 2 speeds, run 4,000, splendid condition; £35.—66, Hooley Rd., Catford. [4143

1913 Douglas, single speed model, climb anywhere; £22.—Cross, Effingham Sq., Rotherham. [X9971

1914½ 2¾h.p. Douglas, 2-speed, kick start, perfect order; £41.—A. Moses, 119, Earle St., Crewe. [X9921

DOUGLAS, 1914, 2-speed, clutch, kick start; bargain, £39/10.—Layhouru, Wolsingham, S.O., Co. Durham. [X9946

DOUGLAS, 2¾h.p., fixed engine, recently overhauled; bargain, £18; first cheque secures.—Cameron, Tickhill. [4012

1915 2¾h.p. Douglas, 3-speed, new May, perfect order; £45, quick sale.—23, The Vale, Golder's Green. [4066

DOUGLAS, 1914, 2¾h.p., 2-speed, lamp, horn; £40.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [4315

MOTOR CYCLES FOR SALE.

Enfield.

ENFIELD Combination, 1914, hood, wind screen, 3 lamps, horn, Jones speedometer, 2 spare tubes, valves, chain, perfect condition guaranteed, thoroughly overhauled at works last week; £63. Please note Sunbeam column. Dealers note, I require a double purpose mount to save keeping two.—Morrey, Dental Surgery, Crewe. Exchange considered. [X9812

Excelsior.

EXCELSIOR, 4h.p., Hellesen ignition, new tyres and belt, good running order, powerful; £9; with side-car £10.—Sparkes, 5, Foster Hill Rd., Bedford. [X9391

EXCELSIOR (American), 1915, 7-9h.p., 3-speed, clutch model, the very best value; we can deliver from stock; £62.—Laytons' Garage, Bicester, Oxon. [X9870

EXCELSIOR (American), 7h.p., 3-speed; new prices, standard £80, electrically equipped £90; exchanges quoted. Yorkshire dealers supplied. Motor Exchange, Horton St., Halifax. [0380

EXCELSIOR, 7-9h.p., and sidecar to match (American), new October, 1914, only done 500 miles; nav trial £59, or exchange lower power.—A.S., 7, Sunnybill Rd., Streatham, S.W. [4234

Fafnir.

FAFNIR, just thoroughly overhauled, good tyres; £7.—Oki, 63, Hemstal Rd., Kilburn, N.W. [X9750

F.N.

F.N., 4-cyl., 2 speeds, F.E., Bosch; seen running; £15/10.—Speechley, 45, Church Rd., Acton. [X0016

F.N., single-cyl., first-class order, good tyres, reliable, fast; £7/10.—Serase, 381, Battersea Park Rd., S.W. [4024

£18.—F.N., 5-6h.p., 4-cycle, mag., Binks, P. and H. lighting, spares, tools, new tube, splendid order; owner riding every day, but wants sidecar outfit.—W. Spooner, Avondale, Send, Woking. [4084

F.N., 1914, 7h.p., 4-cyl., 2-seater coach combination, D.A. lighting outfit, 5 gn. speedometer, 3 lamps, and many other accessories; £75, or £26 down and £4/11/8 monthly.—Lamb's, 151, High St., Walthamstow. [4070

Harley-Davidson.

HARLEY-DAVIDSON.—Latest models in stock.—Timberlake's Garage, Wigan. [X9802

HARLEY-DAVIDSON 7-9h.p. Twin and 4h.p. in stock.—Turpins, 29, Preston Rd., Brighton. [0713

HARLEY-DAVIDSON Combinations in stock; exchanges.—Middleton, 27, Stroud Green Rd., N. [3106

HARLEY-DAVIDSON 11F, brand new, unridden; best offer secures.—19, Village Rd., Finchley, N. [4354

HARLEY-DAVIDSON 7-9h.p. Electric Combination, new in June, perfect order; £75, quick sale.—23, The Vale, Golder's Green. [4066a

1915 4h.p. Harley-Davidson, single, as new, 2-speed, fast, guaranteed faultless; 48 gns.—Railway Garage, Staines. 'Phone: 46. [4375

HARLEY-DAVIDSON Sidecar Combinations in stock for immediate delivery.—The Premier Motor Co., Aston Rd., Birmingham. [2800

HARLEY-DAVIDSON, 1915 11J, electrically equipped, 5 weeks old, only done 1,000 miles; 60 gns.—2nd Lieut. N. Lee, Holm Place, Sheerness. [X9779

HARLEY-DAVIDSONS, all models in stock; sidecars to suit.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. 'Phone: 6365. T.A.: Straight. [4314

HARLEY-DAVIDSON, 1915, 3-speed, one month old, with Millford coachbuilt sidecar, all accessories; £75.—Captain Stafford, c/o 30, Harriet Mews, Sloane St., Knightsbridge. [4109

HARLEY-DAVIDSON, 1915 model 11F, 7-9h.p., 3-speed, and special Canoelet sidecar, all grey finish, equal to new, 9 months' guarantee; £72.—The Premier Motor Co., Aston Rd., Birmingham. [4394

HARLEY-DAVIDSON, 1915, 7-9h.p. twin, model 11F, only 6 weeks old, done 500 miles, perfect condition; £58 or with boat cane sidecar, screen, £62; owner awaiting orders to proceed overseas.—Lieut. Hay, Solefields Camp, Sevenoaks. [4324

HARLEY-DAVIDSON Model 11L, electrically equipped, with Bramble sidecar, spare tubes, valves, Stewart speedometer, not ridden 800 miles; £85, or £22/5 down and £5/8/4 monthly; bargain.—Lamb's, 151, High St., Walthamstow. [4076

HARLEY-DAVIDSON, 1915, 8h.p., Canoelet sidecar, enamelled grey to match, lamps, horn, speedometer, etc., special 3in. tyre on sidecar, new turnout a month ago; cost £91/10, take 66 gns. for quick sale.—Seen at Finsbury Park Garage, London, N. [4030

HARLEY-DAVIDSON, model 11 J, 7-9h.p., 3-speed, with electric dynamo lighting outfit and electric horn, fitted with special Gloria sidecar, the finest combination on the road; £97/13 complete; immediate delivery.—The Premier Motor Co., Aston Rd., Birmingham. [1922

HARLEY-DAVIDSON Models F. and J. (no advance in price), complete with their own 20 gn. sidecar, or Montgomery Canoelet, Millford, Bramble or Phœnix, delivered from stock; deferred payments quarter down and 12 instalments; discount for quicker payments.—Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green. [4071

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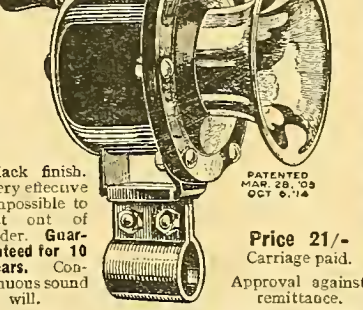

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HARLEY-DAVIDSONS, the machines with the 12 months' guarantee, which have forced their way right to the front by sheer merit. We have all the popular models in stock for immediate delivery, with a large selection of sidecars to match. Send us your requirements; we can fill them. Extended payments and exchanges arranged.—The Colmore Depot, 31, Renshaw St., Liverpool, and 261, Deansgate, Manchester. [4010

Hobart.

HOBART, 2-strokes.—Immediate delivery from stock.—Alexander's, 115, Lothian Rd., Edinburgh, and 272, Gt. Western Rd., Glasgow. [4126

Humber.

HUMBER 1912 Combination, 3½-4h.p., mag., 2 speeds; £30.—1, Ebor St., Wandsworth. [X0047

2h.p. Humber, 1912, excellent condition, recently overhauled; £15.—19, Hatfield Rd., Gloucester. [X9952

3½h.p. 2-speed Humber, free engine, tyres excellent, mag.; £22, or offers.—A. Cniger, Borsted, Bognor [4255

HUMBER, 2h.p., perfect, late model; £19/19; accessories.—Write, 8, Pollards Hill North, Norbury, Surrey. [4018

3½h.p. Humber, late 1912, 2-speed, excellent condition, all spares; any trial; £28.—14, Homend, Ledbury. [X9399

HUMBER, late 1911, 3½h.p., 2-speed, sidecar, spares, good condition; £25.—Nobbs, Saadleford, Bramber Rd., N. Finchley. [X9763

2¾h.p. 1912 Humber, free engine, in perfect order; a real bargain; £23; easy payments arranged.—Jones, The Broadway, Muswell Hill. [3190

HUMBER, 3½h.p., 1911-12, 2-speed, F.E., handle starting, new back tyre and tube, spare belt and tube in case, horn; £24.—G. Smith, 38, Sydenham Hill, London. [4027

HUMBER, 3½h.p., 3-speed gear, coach sidecar, underslung, like new, speedometer and lamps; a real bargain, £48.—Sherwood, Fraserburgh, Cambridge Park, Wanstead. [X9671

1911 2-speed Humber, handle starting, wicker sidecar, in excellent condition; price £21.—Tuke and Bell, Ltd., Motor Engineering Department, Carlton Engineering Works, High Rd., Tottenham, N. [3998

HUMBER, 1911, 3½h.p., 2-speed, F.E., handle starting, excellent condition, P. and H. lamp, rear lamp, spare belt, 1914 Watsonian light sidecar, recently overhauled; £27.—W.D., 10, Hart Gardens, Dorking, Surrey. [4236

Indian.

1915 Indians.—Immediate delivery of model C from stock.—Alexander's, 115, Lothian Rd., Edinburgh. [4121

1915 3-speed 5h.p. Indian, as new, used 7 days; sell for £60.—Parkers' Garage, St. Ives, Hunts. [4272

INDIAN 1915 T.T. and Sporting Sidecar, 3 speeds, kick starter, almost new; £50.—326, Euston Rd., London. [4261

INDIAN, 1914½, coach combination, 7-9h.p., 2 speeds; £60; solo mount part exchange.—Sinclair, East Molesey. [X9861

5h.p. 1915 Indian, 3 speeds, kick starter, done 300 to 400 miles, practically new.—Shaw, Gertrude St., Sunderland. [X9398

1915 Indian, 7-9h.p., 3 speeds, electric lighting set, T.T. handle-bars; £60.—De Salis, Grange Rd., Sutton, Surrey. [4168

INDIAN 1914 7h.p. Combination, electric lighting set, excellent condition; £58.—The Morris Garages, Oxford. [X9928

INDIAN, 7-9h.p., 3-speed, with Bramble sidecar, new August; £75.—Apply, The Bramble Manufacturing Co., Ltd., Coventry. [X9754

INDIAN, 1915, 5h.p., T.T., 3-speed, accessories, new in July, had little use; £49.—4, Thornton St., Kempston, Bedford. [X9806

INDIAN, late 1914, 7-9h.p., and Mills-Fulford sidecar, electric equipment, in perfect condition, as new.—Silver Lion, Pennyfields, Poplar. [X9721

INDIAN, 1914, 7-9h.p., 2-speed, red, and coachbuilt sidecar, electric lamp and horn, in good condition throughout; £60.—See below.

INDIAN, 1914, 7-9h.p., 2-speed, clutch, electric lamp and horn, speedometer, in perfect condition throughout; £47/10.—See below.

INDIAN, 7-9h.p., clutch model, 1915, complete with all fittings, had very little use; £45.—Dominy, Jewry St., Winchester. [4216

INDIAN (Blue), 5h.p. twin, just overhauled, repainted, with Gloria cane sidecar, complete, with lamp, horn, etc.; £35.—Willways, Ltd., Bristol. [X9815

1914 Hendee Special, in perfect order, electric lamps, horn, and starter, speedometer, done 1,900, coachbuilt sidecar, and wind screen; £60.—Stovell, Hall St., Stockport. [X0043

7-9h.p. Indian and Wolbrown sidecar, late 1912, 2-speed, kick starter, overhauled last month; cost £13, guaranteed perfect; any trial; £39.—Bon Marche, Chesterfield. [X9975

MOTOR CYCLES FOR SALE.

Indian.

INDIAN 7h.p. 3-speed Combination, like new, taken out in May, 1915, only done 2,000 miles; £74, a bargain.—Kirkby's, The Studio, Woodhall Spa. [X9886

INDIAN, 1915, 5h.p., 3-speed model; £63; delivery from stock—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0717

1915 Indian 7h.p. Twin, 3-speed, F.E., Corbin-Brown front-drive speedometer, spring frame, specification as list; £55.—Robinson's Garage, Green St., Cambridge. [0613

INDIAN, late 1913, 7-9h.p., Mills-Fulford sidecar, clutch, and 2-speed, speedometer, whole outfit as new; bargain, £45.—Mebes, 156, Gt. Portland St., W. Tel.: 3426 Mayfair. [3428

INDIAN 7-9h.p. Combination, electrically equipped, speedometer, new June, 1915; cost £93; run 2,022; price £70; too powerful for owner.—Crawford, Muirpark, Eskbank, N.B. [X9402

1914 Hendee Special Indian, 7-9h.p., electric lighting and starter, Millford sidecar, as new, done 2,000 miles; cost £100, bargain, £60.—2a, Fountayne Rd., Stoke Newington, N. [4190

INDIAN 1915 7-9h.p. Road Racer, Model D, P. and H. lamp set, done about 500 miles, condition as new; £52.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0481

1914¾ 7-9h.p. Indian and 16 gn. Gloria Sidecar, 2-speed, F.E., kick-starter, electric equipment, 4,000 miles, £10 spares; 60 gns. — Humphrey, Stow Hill Pavilion, Newport, Mon. [4185

1913 Indian, 7h.p., 2-speed, spring frame, Canoelet de Luxe sidecar, spring wheel, new tyres, and all accessories; £60.—H. Farrington, 1, Highfield Rd., Chorlton-cum-Hardy, Manchester. [X9751

INDIAN 1914 7h.p. Coachbuilt Combination, 2-speed, clutch and starter, electric lamps, horn, also speedometer, thoroughly sound; £60.—P. J. Evans, John Bright St., Birmingham. [4364

INDIANS B, Indians C, and Indians D, all in stock ready to drive away, red sidecars to match.—Birmingham and Midland distributing agent, P. J. Evans, John Bright St., Birmingham. [4363

7h.p. T.T. Indian, late 1914, Lucas lamp and generator, horn, speedometer, spares, and tools, complete, tyres good, condition excellent; £48, offers.—Lieut. Casper, Springfield, Darlington. [X9693

INDIAN, 1914, 7-9h.p., clutch model, new Dunlop tyres, speedometer, large Miller, Lucas horn, Pillion seat; 50 gns., or £13/10 down and £3/5 monthly.—Lamb's, 151, High St., Walthamstow. [4077

INDIAN, 1915 (July), 5h.p., 3-speed, kick start, Stewart speedometer, P. and H. head lamp and generator, Lucas rear lamp, Lucas horn, in perfect condition; £56.—Utting, Burnham Market, Norfolk. [4171

INDIAN, 1914, 7h.p., kick starter, 2 speeds, spring frame, electric lamp, etc., T.T. bars, rear speedometer, not done 4,000, splendid, fast, and sporty mount; £52.—Newlands, Arboretum Rd., Walsall. [4202

7-9h.p. Indian 1913-14 Combination, 2 speeds, clutch, kick start, Gloria coachbuilt £23 sidecar, beautiful turnout, fully equipped, speedometer, etc.; £48; exchanges.—Speechley, 45, Church Rd., Acton. [X0018

7h.p. Indian 1915 New Combination, complete with de luxe sidecar, electric lighting set; £94/10; immediate delivery from stock; cash, exchange, or extended payments arranged.—Wauchope's, 9, Shoe Lane, London. [X9898

1915 7h.p. Indian, Millford sidecar, makers' standard combination, special mudguards, and many spares, new last July, scarcely ridden; owner ordered abroad; £80.—Lieut. X., Box 9,388, *The Motor Cycle* Offices, Coventry. [X9396

INDIANS in stock for immediate delivery; 7h.p. 3-speed coachbuilt combinations, 7h.p. road racers, 5h.p. 3-speed double purpose mount.—P. J. Evans, 87, John Bright St., Birmingham, sole Midland distributing agent. [4361

INDIAN, late 1913, 7-9h.p., with Cowey speedometer and Mills-Fulford Radio spring wheel sidecar, whole outfit in perfect order; £55.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0569

BLUE 3½h.p. Indian, Feb., 1913, 2-speed, new gears, just overhauled, engine, gears, and clutch perfect, tyres good, 2 spare tubes and tyre, spare sprocket for solo, many spares, cane canoe sidecar, 4-point attachment, ample room for child; £42.—Brown, 48, Colchester Terrace, Sunderland. [4132

1915 Indian Combination, 3-speed, magnificent Mills-Fulford sidecar, only 2 weeks old, electric head, side, and tail lamps, speedometer, electric horn, one of the smartest outfits on the road, indistinguishable from new; cost over £94; 69 gns.; a good opportunity to secure a first-class combination, as new, at a considerable reduction off list price; exchanges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X0041

Ixion.

IXION, 1914½, 2½h.p., 2-speed, splendid condition; £23/10.—76, Kimbolton Av., Nottingham. [X9689

IXION-VILLIERS, 1914½, 2½h.p., 2-stroke, 2-speed, runs as well, all accessories, only £26; any trial; bought combination.—Norfolk Villa, Joseph's Rd., Guildford. [4021

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Ivy.

4h.p. Twin Ivy-Jap, T.T., 3 speeds, clutch, lamp, horn, very fast; bargain, £45.—Moore, Castle Rd., Wellingborough. [4179

James.

1915 4¼h.p. 3-speed James, just delivered; 63 gns.—Parkers' Garage, St. Ives, Hunts. [4273

JAMES Combination, 3-speed, just arrived; £76/13—Lamb's, 151, High St., Walthamstow. [4078

1912 4h.p. James, Armstrong 3-speed, perfect order, offers.—5, Cheltenham Parade, Harrogate. [X9969

JAMES Sidecar Combination, late 1914, splendid condition; £49, lowest.—Hall, West Coort, Purley. [4091

JAMES Big Single Sidecar Outfit, 3-speed countershaft, excellent condition; £60.—45, London Rd., Redhill. [4298

1915½ James, 2-stroke, 2-speed, hardly scratched, perfect, lamps, horn, accessories; bargain, £32—Kelham, Bourne. [X9911

JAMES 4¼h.p. Models, complete with sidecar or without, Lucas electric lighting set; delivery from stock; cash, easy terms, or exchange.—Wauchope's, 9, Shoe Lane, London. [X9903

JAMES, 1915, 2¼h.p., 2-stroke, 2-speed, lightweight, used once only, Lucas horn, guaranteed sound, as new; £33/10.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0480

JAMES, 1915, 4½h.p., 3-speed countershaft gear, clutch and kick starter, chain drive, Canoelet sidecar, with Lucas electric lighting outfit, Lucas electric horn; £90/15.—Colmore Depot, 261, Deansgate, Manchester. [0674

J.A.P.

J.A.P., 1912, 6h.p., 2-speed, free engine; £25.—57, Lamont Rd., Chelsea. [4020

J.A.P., 2½h.p., U.H. mag., Amac, Dunlops, lamps; wonderful bargain, £14/14.—10, Windermere Rd., Ealing. [4286

J.A.P., 4h.p., overhead valves, Simms mag., B.B., ball bearing engine; too fast for owner; £20.—Valleos, 29, Canterbury Rd., S.E. [4207

J.A.P., 5-6h.p., handle starter, F.E., Roc clutch, B. and B., Bosch, Druids, wicker sidecar, 2 new tyres, thoroughly overhauled; £20.—Reid, 41, Grove Vale, East Dulwich, S.E. [3661

1915½ 4h.p. J.A.P. Twin Lea-Francis 3-speed Combination, Lucas lamps, horn, perfect condition; £70, or offers; appointment.—Cpl. Donaston, 107, Penny Lane, Wavertree, Liverpool. [X9912

J.A.P., 4h.p., new last July, 3-speed Sturmey hub, 2½in. Dunlops and Stelastic, Splitdorf mag., F.R.S. lamp set, Stewart speedometer, Lucas horn, Montgomery 14 gn. sidecar, perfect order; £47.—On view, Stag Motor Works, Bald Faced Stag, East Finchley. [4337

Juno.

JUNO V.T.S., 2-stroke, 2¼h.p., condition as new; £25, or gradual payments.—Seen at 248, Bishopsgate, London. [4393

Kerry.

3½h.p. Kerry-Abingdon, 1910, all accessories, perfect order.—Wheeler, Victoria Hotel, Cheshunt, Herts. £14/10. [4099

KERRY, 2¾h.p., spring forks, B. and B., Hellesen, running order; £8.—S.J.A., 23, Port Hall Rd., Brighton. [4036

3½h.p. Kerry-Abingdon, with Roc 2-speed, Rest and Lloyd, in good order; £27; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0723

Lea-Francis.

1913 Lea-Francis, 3½h.p., twin-cyl., 2 speeds, free engine; £48.—Pooss, Commercial Rd., Bournemouth. [4017

1914 3½h.p. Lea-Francis and Henderson light sidecar; £54.—T. Jerrison, "Moscar," Millhouses, Sheffield. [X9237

1914 Lea-Francis, with Leeds sidecar, splendid condition, 2 new heavy Dunlop tyres; £60, bargain.—Crook, Church St. West, Macclesfield, Cheshire. [X9633

LEA-FRANCIS, 1913, run 5,650 miles, perfect order, new back tyre, Lucas lamp, generator, horn, speedometer, back-rest; must sell within a week; best offer over £35.—72, St. Augustine Rd., Southsea. [4346

Levis.

LEVIS No. 1, just arrived from works; £37/15.—F. Lycett, Bursiem. [X9654

BROOK, Motor Cycle Specialist, Burnham, Som., can supply from stock No. 1 model Levis. [3602

NEW Levis in stock, standard model.—W. Paull and Co., 6, 8, and 10, Barrack St., Colchester. [4250

LEVIS.—Immediate delivery from stock 1915 models.—Alexander's, 115, Lothian Rd., Edinburgh. [4125

LEVIS, Baby model, good condition; £22, or exchange 3½h.p.—H. Butcher, Wellesbourne, Warwick. [4019

LEVIS New 1915 Models, 2¼h.p. Popular, delivery from stock; £28/1 cash, or easy terms.—Wauchope's, 9, Shoe Lane, London. [X9897

1915 Levis, 2¼h.p., Popular model, absolutely in stock; £28/1; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6410

MOTOR CYCLES FOR SALE.

Levis.

LEVIS 1915 Popular Model, just arrived from works; immediate delivery; £28/1.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [4062

LEVIS 2-stroke Motor Cycles, latest 1915 models.—Sole London and district agents, Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent. [0711

LEVIS No. 1 in stock, £36/17, or £10/13/6 down and 12 payments £2/6/8; special discount for 3, 6, or 9 instalments; also Popular, £28/1, just arrived. —Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green. [4075

LEVIS 1915 2¾h.p. De Luxe Sidecaretto, 2-speed, electric lamps, 6 volt accumulator, lightweight sidecar, really comfortable, done 600 miles, whole good as new, numerous spares; £45, or near offer; see week-end.—Voss, Halstein, Silver Lane, Purley. [4357

Lincoln-Elk.

1914 Lincoln-Elk, 3½h.p., T.T., or ordinary bars, countershaft 2-speed gear, and clutch, tyres excellent, lamps, horo; £25.—Horner, 43, Alexandra Rd., Bedford. [X9978

L.M.C.

L.M.C., 1914, 4½h.p., 3-speed, kick-starter, free engine, and sidecar; £45.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [4310

L.M.C., 4h.p., 2-speed, free engine, Mills-Fulford cane sidecar; £28; 5-6h.p. combination wanted.—W.S.B., Box L1,561, *The Motor Cycle* Offices, 20, Tudor St., E.C. [4136

Lugton.

3½h.p. Lugton-Minerva, Bosch mag., h.b.c., fast, and reliable; £15.—Scrase, 381, Battersea Park Rd., S.W. [4023

M.A.G.

M.A.G., 1915, 3½h.p. twin, T.T., in splendid order, F.R.S. lamp set, horn and tools, very fast and reliable; £35.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0491

Matchless.

MATCHLESS, 8h.p. (1913), 2-speed; £52, with sidecar.—5, Park Av., Palmer's Green. [4325

MATCHLESS 1914 6h.p. Twin, and coachbuilt sidecar, 2-speed, free engine, etc.; £35.—25, Station Rd., Willesden Junction. [4063

IRELAND.—8h.p., 1914 Matchless and sidecar, M.A.G. engine, chain drive, perfect order; £60.—G. Doran, Clonard, Kimmage Rd., Terenure, Dublin. [X9877

8h.p. Matchless Combination, J.A.P. 2-speed free engine, 1913¾, all on, first class condition.—Pritchard, Dynea Rd., Upper Boat, Pontypridd. [X9938

MATCHLESS and sidecar, 1912, 8h.p., 2-speed, kick start, and accessories, excellent condition; £45, or offer.—K. Mackay, 5, Trafalgar Terrace, Redcar. [X9764

1913 Matchless Combination, 8h.p. twin, chain drive, recently overhauled, good condition.—Apply by appointment, Tassel, 1a, Bloomfield Rd., Plumstead. [4095

MATCHLESS 1912-13 Combination, 6h.p., 3 speeds, lamps, speedometer, luggage carrier; £48; fine turnout.—3, Wynnstay Grove, Fallowfield, Manchester. [X9944

3½h.p. Matchless-Jap, 1913, fine condition, £27/10; 2h.p. Singer Moto-Velo, overhauled, £12/10; £13 cane sidecar, fitted with Palmer tyre, £7/10.—Dakin's Garage, Wombwell. [X9768

1913 7-8h.p. Matchless, with Canoelet sidecar, lamp, speedometer, etc., in very good condition; £60; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0721

MATCHLESS, 1914, 8h.p., free engine, kick-starter, wicker sidecar, speedometer, lamp, and horn; £45, genuine bargain.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [4311

MATCHLESS-J.A.P., 4h.p., N.S.U. 2-speed and free, Bosch, new John Bull belt, Premier wicker sidecar, new drop chassis, spares, overalls, etc.; £30.—69, Lyndhurst Rd., Thornton Heath, Surrey. [4304

LATE 1913 Matchless Combination, model 8, 2-speed, twin chain drive (new), kick starter, Hutchinson front, Avon combination (new) back, security bolts, lamps, horn, speedometer, mirror, tools, spares, Matchless Canoelet sidecar, with luggage grid, interchangeable tyres; £55, cost £95; exchange 2-seater car.—Robinson, Engineer, Braunstone Gate, Leicester. [X9832

Minerva.

3½h.p. Minerva, mechanical, perfect, ready to ride; £8/10.—39, Belmont Park Rd., Leyton. [4224

MINERVA, 2¾h.p., running order, B.B., accumulator; £5/15.—87, New Park Rd., Brixton. [4176

MINERVA, 3½h.p., Bosch, B. and B., new tyres, belt; £12; very fast.—Dobson, Ellison St., Wolstanton. [X9387

MINERVA and sidecar, 3½in., B. and B., all accessories, spendid condition; £15/10.—19, Balmoral Rd., Cricklewood. [4034

MINERVA, 2¾h.p., good order, Amac, h.b.c., battery ignition, lamp, etc., complete; £6, or offer.—Scovell, Yateley, Hants. [4306

MINERVAS, 2¾h.p. £6/10, 3½h.p. £6, m.o.v., Hellesen ignition, spring forks, good condition.—58, Laburnum Rd., Wimbledon. [4213

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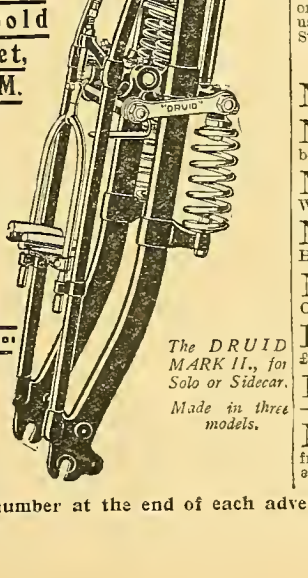

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MOTOR CYCLES FOR SALE.

Minerva.

MINERVA, 3½h.p., Bosch mag., B and B. carburetter, belt drive, new tyre on back wheel; room wanted; cheap, £8/10.—Baxter, Chislehurst. [4097

4½h.p. Minerva and Sidecar, m.o.v., Roc 2-speed, free engine, handle start, Bosch, h.b.c., tyres good; £23.—8, Stuart St., Avon Valo Rd., Barton Hill, Bristol. (D) [X9959

Moto Reve.

MOTO-REVE Twin Lightweight, mag., Druids, any trial; sacrifice £10/10.—Speechley, 45, Church Rd., Acton. [X0017

2½h.p. Twin Moto-Reve, splendid condition, new tyre, belt, etc., engine and magneto just overhauled, climbs any hill; £15.—Hooker, Cuckfield, Sussex. [4233

Motosacoche.

MOTOSACOCHE, good running order; must sacrifice, £10.—G., Beechlands, Brooklyn Rd., Woking. [X9983

MOTOSACOCHE, 1912, 2¼h.p., mag., spring forks, splendid order; £12/10.—Chase, Music Stores, Epping. [4111

2½h.p. Magneto Motosacoche, fine order, and good tyres; bargain, £9/10.—Fearn, Nottingham Rd., Alfreton. [4013

MOTOSACOCHE, 2½h.p., F.E., new condition, very little used; £14.—89, Boundary Rd., Wood Green, London, N. [4153

MOTOSACOCHE, 1913¾, 2½h.p., variable speed, F.E., Druids, Bosch, Whittle, etc., fully equipped, new condition; £16/10.—54, Seymour Rd., Leyton. [4194

New Hudson.

NEW Hudson, 1913-14, 3h.p., 3-speed, lamp, horn, accessories.—Nesma, 7, Exhibition Rd., South Kensington. [X9792

3½h.p. New Hudson, 1914, 3 speeds, speedometer, fully equipped; £33.—Percy and Co., 337, Euston Rd., London. [4258

NEW Hudson, 1912, and sidecar, 3-speed, clutch, excellent running order; trial; £34.—Rev. C. H. Luckman, Grassington. [X9794

2¼h.p. New Hudson, 2-stroke, 2-speed model, in extra good condition and running order; price £32/10. —Wauchope's, 9, Shoe Lane, London. [X9907

NEW Hudson Big Six Coachbuilt Combination de Luxe, speedometer, Palmer tyres, new condition; £62/10.—B.R., 27, Crescent Grove, Clapham Common, S.W. [4187

NEW Hudson, 2-stroke, from £36; all models from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0503

NEW Hudson, 1915, 2-stroke, single gear; cost £29 with accessories, not run 1,000 miles, perfect condition, good as new; sell £20.—Davies, Westmount, The Crescent, Belmont, Surrey. [X9848

NEW Hudson, 3½h.p., countershaft 3-speed gear; £63; delivery from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0570

NEW Hudson, 1914, 3½h.p., 3-speed, kick-starter, Kempshall and Clipper non-skid tyres, lamp, horn, and tail lamp, coachbuilt sidecar; £28.—The Premier Motor Co., Aston Rd., Birmingham. [4395

6h.p. New Hudson, 3-speed, and free engine model, fitted with a 2-seat coachbuilt Bowser sidecar, speedometer, lamp, Lucas rear light; the complete turnout, £57/10.—Wauchope's, 9, Shoe Lane, London. [X9902

NEW Hudson Combination, 6h.p. twin, 3-speed gear, clutch, kick starter, new car outer cover back wheel, with new Dunlop inner tube, everything in thorough good order, lamp, horn, etc., 1914 model, put into use March this year; accept £58/10.—Arthur Bell, High St., Marlborough. [4025

New Imperial.

NEW Imperial, 1913, 2½h.p.; £17.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [4316

NEW Imperial, 1915, 2-speed model, in stock; 35 gns.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [4318

NEW Imperial-Jap, 1915, 2-speed countershaft gear; trial; £27.—Harris, Norbury Farm, Inkberrow, Worcester. [X9951

NEW Imperial-Japs, 1915, in stock for immediate delivery, 2 speeds; 35 gns.—Colmore Depot, 62, High St., Leicester. [4387

NEW Imperial Lightweights, 2 speeds, actually in stock; £36/15; exchanges considered.—City Motor Co., 125, London Rd., Manchester. [0718

1915 2½h.p. 2-speed T.T. New Imperial-Jap, specially tuned, fast, perfect condition, lamps, horn, etc.; £27.—Flat No. 2, 206, Hammersmith Rd., W. [4246

1915 2¾h.p. New Imperial J.A.P., 2-speed, actually in stock; price 35 gns.; exchanges; easy terms. —Julian, Broad St., Reading. 'Phone: 1024. [X6408

NEW Imperials in Stock for immediate delivery, light tourist, kick-starter, and ladies models; prices from 35 gns.—P. J. Evans, Birmingham and district agent, 87-91, John Bright St. [4365

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NEW Imperials.—The finest value in the world, and of guaranteed reliability, fitted with J.A.P. engines and countershaft gears built on car lines; prices from 35 gns., and delivery from stock.—The Colmore Depot, 31, Renshaw St., Liverpool. [4009

Norton.

1915 Nortons.—Immediate delivery from stock of the Big Four, chain drive.—Alexander's, 115, Lothian Rd., Edinburgh. [4120

NORTON, 1915, just received one 3½h.p. 3-speed model; £59/17/6; don't wait; exchanges arranged. —Laytons' Garage, Bicester, Oxon. [X9871

1915 Brooklands Special Norton, with Sturmey hub, 3 speeds and hand clutch, Binks and B. and B. carburetters, horn, Watford speedometer and watch, plating, enamel, and tyres good; cost £80; very fast and sporting mount; long plated exhaust pipe, and T.T. bars; £52.—Lieut. Pilkinson, 16th D.A.P., Bedford. [X9403

N.S.U.

N.S.U. 3h.p. Twin, Bosch mag., automatic carburetter, m.o.i.v., good tyres, new belt, undergeared pulley; £15, or near offer.—Cambridge Garage, Frances St., Woolwich. 'Phone: 108 Woolwich. [4265

N.S.U., 6-8h.. twin, 2-speed gear, large coachbuilt sidecar, car size tyres, full equipment, an exceptional outfit, in new condition; £45.—Tuke and Bell, Ltd., Motor Department, Carlton Engineering Works, High Rd., Tottenham, N. [4140

N.U.T.

N.U.T., 6h.p., overhead J.A.P., T.T., accessories, very fast.—Lieut. Tait, Durham Light Infantry, Fovant. [4037

N.U.T., 2¾h.p., late 1914, T.T. model, twin J.A.P., 3-speed Armstrong gear, very fast; accept £48, cost £63.—Box L1,558, *The Motor Cycle* Offices, 20, Tudor St., E.C. [4138

N.U.T., 3½h.p. twin, J.A.P. engine, 1914, bought March this year, 3-speed, speedometer, lamps, horn, tools, good as new; £48; ride 50 miles.—Breeze, 103, Victoria Rd., Aldershot. [4210

O.K.

O.K. Juniors, actually in stock, 2-stroke and 2h.p.—Meeten, Motors, Dorking. [4196

1915 O.K. Junior, 2h.p.; price £33/1/6; actually in stock.—Julian, Broad St., Reading. 'Phone: 1024. [X3123

O.K. Juniors.—Immediate delivery from stock Mark III. 2-speed, £33/1/6.—Alexander's, 115, Lothian Rd., Edinburgh. [4127

1915 O.K. Junior, 2-speed, countershaft gear box, only a few weeks old, looks and runs like new; £27/10, or near offer.—Cambridge Garage, Frances St., Woolwich. 'Phone: 108 Woolwich. [4266

Omega.

OMEGA, 3h.p., 2-stroke, 2-speed, all accessories, cost £40 September, very fast, climb anything; sacrifice, nearest £30.—Elliott, 19, Shakespeare Rd., Hanwell. 'Phone: Paddington 4193. [4294

P. and M.

P. and M., 1913, equal to new, excellent running order, all accessories; £48.—Cripsey, Newsagent, Pasture St., Grimsby. [X9973

PHELON and Moore Combination, 1914, 2-speed gear, in tip-top trim, and excellent condition; 60 gns. —Calvert, 53, Castle St., Carlisle. [X9862

1911 (late) P. and M. and sidecar, 2 speeds, perfect condition; £32; would sell sidecar separately.—Sergt. Pine, Farm Camp, Epsom. [X9787

1909 P. and M., 2-speed, free engine, good tyres, excellent running order, £20; with coachbuilt sidecar £25.—Dosser, Slingsby, Malton. [X9990

P. and M., 1911, 2-speed, F.E., and sidecar, Senspray, Kempshalls, lamps, horn, and accessories; £29/10; owner enlisted.—Bradley, 322, Fore St., Edmonton. [4101

P. and M., 1913, 3½h.p., 2-speed, Ivy sidecar, with hood, lamps, horn, mirror, all spares, perfect condition; £45.—1, Campbell House Chambers, Campbell St., Leicester. [X9842

P. and M., 1914, coachbuilt sidecar, hood, screen, lamps, horn, speedometer, spare cover, tubes, chains, fine condition, not done 3,500; £55, no offers.—7, Parliament St., Morley. [X9982

P. and M. and sidecar, P. and H. head light, mirror, spares, tools, etc., £40, lowest cash, or exchange 6h.p. 1914 combination, cash adjustment if necessary. —Tetley, Grocer, Horbury, Yorks. [X9915

P. and M., 3½h.p., 2-speed, 1913, overhauled and enamelled, with several 1915 improvements, £3/3 Autoclipse head light, accessories, like new; £37; owner under orders; deposit.—Lieut. Gill, Dorsets, Upwey, Weymouth. [X9827

Precision.

TORPEDO Precision, 2¾h.p., nearly new; £25; deposit.—Box 9,410, *The Motor Cycle* Offices, Coventry. [X9765

PRECISION, 1913, 3½h.p., 2-speed, free engine, Senspray carburetter, T.T. bars, sidecar; £28, or nearest offer.—Green, 24, High St., Tettenhall, Wolverhampton [X0042

We have a GOOD STOCK of NEW MACHINES, all LATEST MODELS, and can give IMMEDIATE DELIVERY of the following:

BROUGH, 3½ h.p., horizontal, twin, H.T.T. model	£60	0*
CONNAUGHT Miniature, 2½ h.p., 2-stroke	£26	6*
CONNAUGHT, Standard, 2-speed	£38	10*
ENFIELD, 3 h.p., twin	£52	10
ENFIELD, 6 h.p., Combination	£84	0
ENFIELD, 2-stroke, 2-speed	£39	18
AMERICAN EXCELSIOR, 7-9 h.p., 3-sp., clutch, and kick starter	£80	0
JAMES, 3½ h.p., twin, 2-speed	£63	0
JAMES, 4½ h.p., 3-sp., Combination	£76	13
IVY, 2½ h.p., 2-stroke, 2-speed	£35 3	6*
AMERICAN EXCELSIOR, 7-9 h.p., 3-sp., clutch and kick starter, with dynamo lighting set, electric horn, and speedometer	£90	0
WOLF, 2¾ h.p., 2-stroke, 2-speed, clutch, and kick starter	£33	12*
WOLF-J.A.P., 2¾ h.p., 2-speed, clutch, and kick starter	£39	5
HARLEY-DAVIDSON, Model J, with lighting set and horn		
HARLEY-DAVIDSON, Model F		
O.K. JUNIOR, Mark III., 2-speed	£31	10*
J.H., 2½ h.p., 2-stroke, 2-speed	£35	14*
PREMIER, 3½ h.p., 3-speed countershaft, hand-controlled clutch, new model just out	£60	0*
INDIAN, 7-9 h.p., Model D	£57	0
MOTOSACOCHE, 3½ h.p., twin, 2-speed, with De Lissa valves	£62	0
BLACKBURNE, 3½ h.p., 3-speed, Sturmey-Archer countershaft gear, with footboards		
SERVICE, 2½ h.p., Peco engine, 2-speed	£34	13
SERVICE, 2-speed, Sidecarette	£50	0*
SUN-V.T.S., 2-stroke	£28	0*

* Subject to maker's surcharge of 5%.

A liberal allowance made on your present motor cycle in part exchange for any of the above, and EXTENDED PAYMENTS arranged.

MILLFORD, EMPIRE, WATSONIAN, HERCULES, and SERVICE Sidecars in STOCK.

SECOND-HAND MOTOR CYCLES.

Every motor cycle is overhauled before being sent out. Selection below. Full list post free.

Stock No.	Specification.	Price.	
134.	**MOTO-REVE,** 2h.p., twin-cylinder, magneto, spring forks, etc.	£15	0
493.	**MOTOSACOCHE,** 1913, 2½ h.p., variable gear, and free engine	£17	0
537.	**SERVICE,** 2-stroke, 1915, 2¾-3 h.p. countershaft, like new, only used for 2 or 3 demonstrations	£37	10
587.	3½ h.p. 1912 **PREMIER,** with 2-speed gear and clutch	£25	0
621.	**CALTHORPE** Junior, 2 h.p., 2-sp., 1914 model, excellent condition	£20	0
598.	**HUMBER,** 2¾ h.p., twin-cylinder, 1913, 3-speed, and clutch	£25	0
608.	**INDIAN,** 7 h.p., 1913, 2-speed clutch, and kick starter	£43	0
629.	**ZENITH-GRADUA,** 1912, and cane side-entrance Sidecar, new Kempshalls	£38	0
664.	**PREMIER,** 2½ h.p., with Grado variable gear, very fine order indeed	£20	0
671.	**SINGER,** 3½ h.p., 1912 model, magneto, Druids, 2-speed gear, and free engine	£25	0
566.	**P. & M.,** 1914, 3½ h.p., with P. & M. coach-built Sidecar, luggage grid, lamps, horn, etc.	£60	0
672.	**CHATER LEA,** 1914, 8 h.p., 3-sp., clutch, and kick starter, with Chater Lea cane canoe Sidecar, brand new Stepney Road Grip tyre on driving wheel	£57	10
641.	**INDIAN,** 1915, 7 h.p., 3 speeds, with electric light and handsome coach-built Sidecar, only run 700 miles	£75	0

EXTENDED PAYMENTS arranged.

Sole London Agents for **BROUGH, CLYNO, CONNAUGHT,** and **METRO** Motor Cycles. **EMPIRE** and **HERCULES** Sidecars.

The Service Company Ltd
(LONDON)

289-292-293, HIGH HOLBORN, LONDON, W.C.
'Phone: 260 Central. Wires: "Admittedly."
Goods and Repairs: 1 and 2, Harpur Mews, Theobald's Road, W.C.

MOTOR CYCLES FOR SALE.

Precision.

PRECISION Lightweight, 1915 (June), 2½h.p., 2 speeds, U.H. mag., Dunlop tyres, aluminium footboards, a little beauty; great bargain, £23. — 104, Palace Gardens Terrace, W. [4283

Premier.

3½h.p. Premier, 2-speed, free engine, perfect condition; £27.—Whitlam, 66, Boothferry Rd., Goole. [X9393

1914 Premier, 3½h.p., 3-speed, clutch, and Millford cane sidecar; £35.—19, Wood Lane, Shepherd's Bush. [X9383

1913 3½h.p. Premier, Armstrong 3-speed, hardly used, perfect condition; offers.—5, Cheltenham Parade, Harrogate. [X9968

PREMIER, 3½h.p., 1911½, Sturmey-Archer 3 speeds, 1914 coachbuilt sidecar; £35.—Bamford, 21, Park Vale Rd., Leicester. [X9846

PREMIER, 1916, 7-9h.p., with coachbuilt sidecar, all new last July; owner buying car; £75.—G. Tricker, Hatfield Heath, Harlow, Essex. [4045

PREMIER, 3½h.p., 1913, free engine, 3-speed Armstrong gear, coachbuilt sidecar, spares; any trial; £34.—L., 7, Tivoli Rd., West Norwood. [4100

1913 2½h.p. Premier, 3-speed hub, clutch, good tyres, tubes, lamp, horn, perfect running condition, appearance; £25/10.—Canada Works, Chesham. [X9924

3½h.p. 3-speed Countershaft Competition Premier and beautiful sidecar, gold medal winner, all new; cost £85; bargain, £63.—H. Finch, 55, Nicholls St., Coventry. [X0038

PREMIER, late 1913, 2-speed countershaft, free engine, clutch, complete equipment of accessories; any reasonable offer accepted.—Collet, 10, Solna Rd., Winchmore Hill, N. [X9997

PREMIER, 1911, T.T., 3½h.p., adjustable pulley, P. and H. lamp, horn, speedometer, very fast, powerful, good condition; £23.—J. Perish, Welford Hill Cottage, Stratford-on-Avon. [X9725

3½h.p. Premier, 1913¾, fixed gear, tyres unpunctured, lamp, horn, mirror, cost £50, in brand new condition; sell £35, or part exchange.—Jefferies, Pondcroft Rd., Knebworth, Herts. [4299

P.V.

P.V. 6h.p. Jap, 3 speeds, F.E., clutch, coachbuilt sidecar; £36.—66, Honley Rd., Catford. [4144

P.V., 1914, 6h.p. J.A.P., twin, spring frame, coachbuilt sidecar to match, 2-speed, perfect, new condition; inspection by appointment evenings; £54.—27, Dukesthorpe Rd., Sydenham. [4038

Quadrant.

QUADRANT, 4½h.p., 1915, 3-speed, free engine, kick starter, Canoelet sidecar, coachbuilt, horn, speedometer, mirror, done 1,800 only, smart lot; 50 gns.—Hodges, Belmont, Surrey. [4345

Radco.

RADCO, 1915, 2¼h.p., new in June, all accessories; £19.—Collier, 190, Common Rd., Earlestown. [X9805

RADCO, 2-stroke.—Immediate delivery from stock. £25/5 model.—Alexander's, 115, Lothian Rd., Edinburgh. [4129

Revere.

BROOK, Motor Cycle Specialist, Burnham, Som., can give immediate delivery of Revere 2 strokes. [3603

Rex.

5-6h.p. Rex Combination, good puller; £18/10, offers.—Grant, 24, Milford Place, Bradford. [X9692

£10.—Rex, 3½h.p., mag., Whittle belt, good order, tyres perfect.—27, Stanley Rd., Woking. [X9788

REX Combination, 6h.p., brand new; will accept low price.—F. Timothy, 232, Gulson Rd., Coventry. [X9696

3¼h.p. Rex, Bosch mag., Binks carburetter, good tyres; £5.—Sidgwick, 17, Sedgwick St., Darlington. [X9953

LATE 1913 Rex, 4h.p., 2-speed, F.E., and sidecar, in perfect condition; £33.—Clark, 48, Burke St., Scunthorpe. [X9809

REX, 6h.p., Mahon clutch, just overhauled; bargain, £16/16, or nearest offer. — Butt, Chapel Av., Bourton, Dorset. [4161

6h.p. Rex Combination, 2-speed, F.E., overhauled; £17 quick sale.—L/c. Muller, 108, Provisional Battalion, Frinton. [4098

6h.p. New 1914 Twin Rex Motor Cycle, 3-speed countershaft and chain drive; £59.—Wauchope's, 9, Shoe Lane, London. [X9896

1912 Rex, 4h.p., 2-speed, with 1914 coachbuilt sidecar; £33.—Chuck, c/o Mr. Pateman, 98, Ridge Rd., Letchworth, Herts. [X9202

REX.—1912 6h.p. 2-speed Rex de Luxe and coach sidecar; splendid value; £31/10. — Collier's Motories, Deal St., Halifax. [0707

6h.p. Twin Rex, accumulator, Mahon free engine clutch, tyres almost new, all perfect; only £10.—40, Station Rd., Barnes, S.W. [4056

3½h.p. Rex, 2-speed, handle-starter, Bosch, Amac, Whittle, lamp, perfect order; £16; exchanges entertained.—Railway Garage, Staines. [4273

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

Advertising and Publishing Offices:
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New Zealand.—Gordon and Gotch, Ltd., Wellington, Auckland, Christchurch, and Dunedin. India.—A. H. Wheeler & Co., Bombay, Allahabad, and Calcutta.
South Africa.—Central News Agency, Ltd. Paris.—Smith's English Library, 248, Rue Rivoli.

1916 Models.

ON the question of 1916 models and improvements, it is as well, perhaps, that a halt has been called for one year, at any rate, in the constant changing of designs which had become almost the recognised practice in the motor cycle world. Year after year manufacturers have racked their brains with the object of introducing something which would attract and appeal to the fancies of the buying public, but in the opinion of many this ruthless changing of design has been overdone. It has been only too palpable that there has been a great deal of changing for changing sake. There is an old adage that "There is a soul of goodness in things evil," and this expression seems very applicable at the moment, as manufacturers are, by reason of the great war in which we are involved, unable to branch out with entirely new models, and have to be content to eliminate those little weaknesses which may have manifested themselves in their 1915 models, and to effect improvements of a minor order.

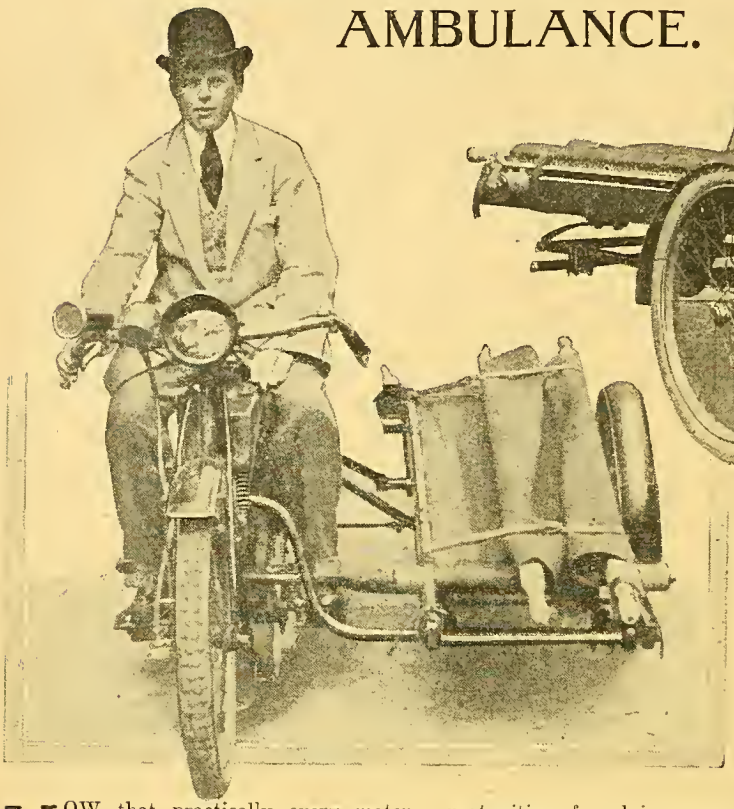
After all, this is to the good. The average motor cycle of 1914-15 is by no means an experiment: in ninety per cent. of cases the machines are such that would tour the world over, though admittedly sundry details might develop trouble, or at any rate recommend themselves for improvement in the light of long experience. This opportunity is being, as it were, thrust upon the manufacturer, and consequently we see good rather than evil in makers having to confine their attention solely to the improvement of details or the cancellation of minor weaknesses which may have developed after a twelve month. To particularise, 1916 may produce no entirely new British design of motor cycle; instead we shall see machines which, to all outward appearances are of 1914-15 design, but which are nevertheless different in reality, and this becomes quickly apparent if one troubles to examine them closely. And, in passing, it may be said that there are few, if any, machines which have yet reached that state of perfection that every detail is beyond criticism.

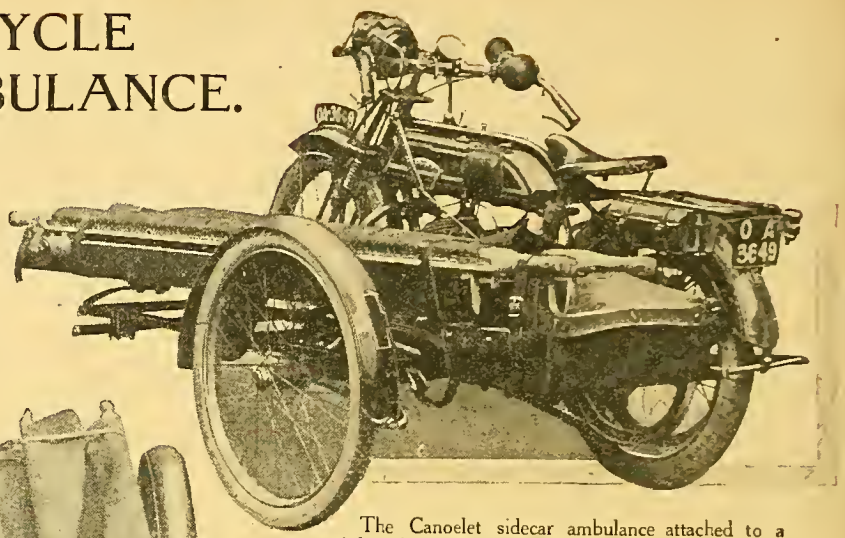
Sidecarriers Exempted from Duty.

THREE weeks ago, in commenting upon the Budget and its possible effects upon the motor cycle industry, we referred to desirable exemptions from the Import Duty. We instanced the fact that, owing to the extensive commandeering of horses used by tradesmen at the commencement of the war, the economical and light motor cycle sidecarrier had, of late, been pressed into an important service. Many of these sidecarriers come from Overseas, and it was plain that a duty of 33⅓ per cent. might have been the means of restricting the growth of the sidecarrier on account of its prohibitive cost. The motor cycle sidecarrier, or parcel-carrier, is unquestionably the most economical form of motor transport, and in the interests of the smaller tradesman who may be using or considering the adoption of a sidecarrier as well as the manufacturers concerned, we appealed to the Chancellor of the Exchequer to include the business sidecarrier in the exemptions he proposed from the 1916 Budget. We are gratified to be able to state officially this week that our recommendation has been considered favourably, and an announcement is forthcoming to the effect that motor cycle carriers intended for use solely for business purposes will be exempt from the new tariff of 33⅓ per cent., which is charged on all pleasure type motor cars, motor cycles, and parts. Though it will be seen from the communication published in another part of this issue that the Treasury has adopted the term "sidecarrier" which we gave to the business sidecar, it may be taken that business tricars such as are commonly seen in the streets of our large cities and all types of "carriers" will also be exempt from the duty.

An index to the advertisements in this issue will be found on the page facing the back cover.

A MOTOR CYCLE AMBULANCE.





The Canoelet sidecar ambulance attached to a 6 h.p. New Hudson bicycle. Mr. R. W. Vaughan, sales representative for Great Britain for Messrs. Mead and Deakin, is driving.

NOW that practically every motor cycle maker is busy with war work in one form or another, it is interesting to find that those making sidecars are not neglecting opportunities of evolving some form of war machine other than the gun-carrying sidecars so well known in connection with the Motor Machine Gun Service.

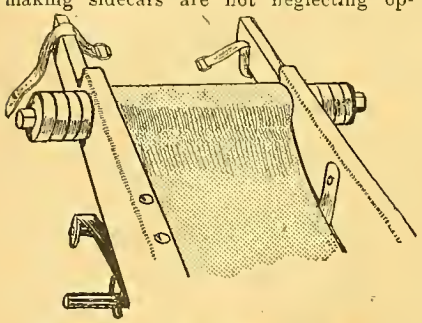
The Canoelet Ambulance sidecar, manufactured by Mead and Deakin, which we illustrate on this page attached to a 6 h.p. New Hudson motor bicycle, is not the makers' first attempt to provide a light handy vehicle for the requirements of the Red Cross. Though not intended for use in Flanders, as the road surfaces preclude such a combination, it is felt that the sidecar ambulance has great possibilities for home use.

Sidecar is really a misnomer, as there is but a tubular frame mounted on a sidecar axle, while above this frame is one of stout wood, and attached to this is a strong fabric sheet.

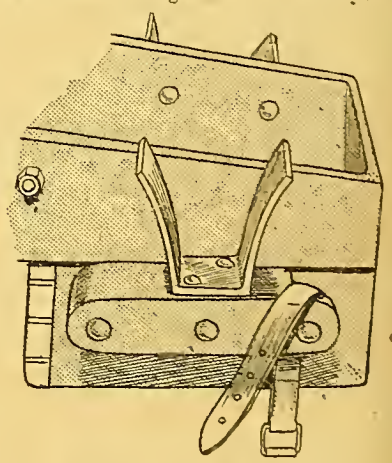
At the head is a box for the man's kit or ambulance stores, while the regulation stretcher fits into special brackets at the head and over rubber buffers at the tail, straps being used to secure the stretcher in place.

When folded both bars of the stretcher are strapped to the wooden frame and cannot rattle.

The illustration shows the rigidity of the whole, no fewer than four tubes tying the stretcher carriage to the motor bicycle.



Rubber buffers on Canoelet ambulance frame. On these buffers the stretcher rests at the front.



Rear spring steel clip for rest of standard stretchers on Canoelet motor cycle ambulance.

DESPATCH RIDERS ATTACHED TO AN R.E. SIGNAL COMPANY WITH THE CANADIAN FORCES IN FRANCE

Sergt. E. T. Cousins, in sending us the photograph, says a gramophone and a few records would be very much appreciated by these men for the coming winter months.

OCCASIONAL COMMENTS.

By "IXION."

Electric Lamps for Lightweights.

Not long ago a courtesy trial of an electric dry battery lighting set on a "baby" two-stroke set my pen wagging rosily in praise of the combination: and, being a consistent man, I specified an outfit of the type for my winter pottering. I have now enquired into prices, and, though they do not tot up so alarmingly as a dynamo might, they are a little steep in proportion to the cost of the two-stroke they are desired to adorn. For example, one maker charges £2 13s. 6d. for the set I deem sufficient, and another quotes £3 1s. 6d. for a similar outfit, each set including, of course, a substantial tail lamp with a separate battery. Even at these figures the outfits strike me as desirable, and I am purchasing. But I wish to correct my former paragraph in so far as it may have implied that these sets should have the preference over light and cheap acetylene outfits, which are procurable at about half the cost of these electric equipments. While I am on the subject of lights, I may add that the Low generator is now being commercially manufactured in the motor cycle size, and that it has been improved by the substitution of stronger metal for the top compartment, and by the removal of the water filler from the inside to the outside of the device.

The Four-cylinder Henderson.

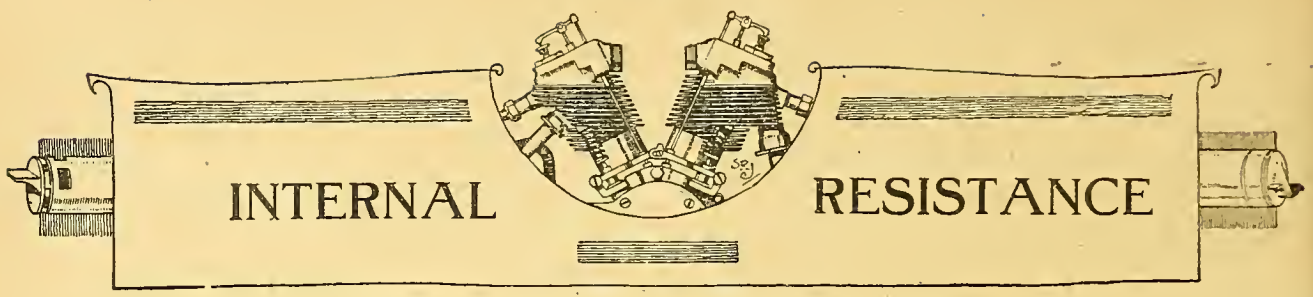
In common with other members of the staff I have been sampling the paces of the four-cylinder Henderson, which has provided me with quite a new sensation. True, I had ridden many miles on a four-cylinder F.N., but it was disfigured at that date by automatic inlet valves, and by a transmission (the shaft drive) which impressed one overmuch with its rigidity whenever the four little valves chose to function irregularly. By contrast, the Henderson has mechanical inlets and a chain drive, with a fine clutch interposed between itself and the engine. In brief, I can only compare the experience with that of handling a leviathan Grand Prix racing car, for the powerful engine never asks for its emergency gear, and accelerates from an inaudible crawl to a thunderous roar in response to the movements of the single carburetter lever. Also, it can behave like a docile baby two-stroke in thick traffic, for it can be throttled down to seven or eight miles an hour on top gear, and to three or four miles an hour on bottom, and will accept its clutch on either gear without further throttle opening, so sweet is the pick-up of its clutch. If your riding companion's tank is empty, you need not trouble to stop your engine outside a petrol store; the engine will tick over silently in neutral at a paltry rate of revolution, and does not get hot in the process. The acceleration is absolutely terrific—there is no other word for it; and the gamut of the engine is surprising, for whether you elect to drive at 10, 20, 30, 40, or 50 m.p.h., the engine responds cheerfully.

The Control of a Four-cylinder.

I believe that the four-cylinder engine will have a big future on two-wheelers (still more so on three-wheelers, perhaps), but its progress will be hampered unless its designers sympathise with the conservatism of motor cyclists, and supply a control with which we are familiar. For example, the vital items of the Henderson control consist of (a) a throttle adjusted just *not* to shut, as all good throttles should be; (b) a switch half-way back along the top tube; and (c) a handle-bar clutch lever (though, I fancy, the standard machine has a side lever clutch control only). Years of practice have accustomed us all to a machine which can be stopped "from the handle-bars" by means of a valve-lifter, and I confess to some exciting moments in the thick Coventry dinner-hour traffic, until I had realised where everything was. It is never easy to operate handle-bar clutch controls in a jiffy—they are necessarily short of leverage, and require a lot of muscular effort. A valve-lifter is not easily arranged where four valves have to be lifted, though one would think that a pedal exhaust valve lifter would be just the goods for a machine of this type. In its absence, the designers would do well to adjust the throttle to the stopping point, or, alternately, to fit a handle-bar switch of a substantial character.

The Grease is Coming.

One feels almost ashamed of mentioning the troubles of a motor cyclist on grease when one thinks of the mud in Flanders. Still, we are dealing with a national industry, and with riders less practised and heroic than the "D.R.," so a reference is pardonable. When I reflect how many riders funk greasy roads so completely that they lay up their machines for the winter, I feel sure it will pay the trade to work on the lines of the Carden and Aviette light, cheap, motor cycle four-wheelers; there are thousands who want a non-skid winter mount who will never be able to afford a car, and who eternally lack the nerve to straddle a two-wheeler. "There's nowt so queer as foak!" they say up north, and I remembered the adage recently when a wild youth drove me at thrice legal limit in a ricketty 8 h.p. sidecar outfit, and then refused to try my two-stroke on the ground that two wheels are always dangerous! Between the "tinker" who sticks to three and four wheels and the despatch rider who holds a two-wheeler up in the equivalent of six inches of soft soap there exists an intermediate class who want the steadiest two-wheelers in existence for their winter work. The vital factors distinguishing for this purpose machines equal in all other respects are the elasticity of the drive and the evenness of the torque. A single-cylinder with a rigid drive is the worst skidder of all, though a clever rider may scorch through a Devon winter on one without fear or fall. A multi-cylinder with a non-rigid drive is the steadiest winter mount of all with one exception, namely, the belt-driven baby two-stroke, which adds extremely light weight to the other desiderata of even torque and elastic drive. I grow more timid with advancing years, and I have got to the point when I can just hold up a chain-driven single-cylinder when there's no alternative; but I always pick a belt-driven "baby" for a greasy run, supposing my stable contains an example. To this judgment I append a note in favour of the four-cylinder; its length and weight are unpromising, but the complete absence of all snatch in the grip of the back tyre on the road results in most steady travel over slippery roads.



INTERNAL RESISTANCE

HOW CAM DESIGN AFFECTS POWER.

MOST motor cyclists are aware that the power developed by an engine is lost in several ways. Power, for instance, is absorbed in the transmission, a considerable amount being taken up by such fittings as countershafts, chains, and belts. Power also is absorbed by wind resistance, by up grades, and rough surfaces, but few riders have any idea of the amount of power taken up by what is known as internal resistance. Curiously enough, the very medium which we use to eliminate friction causes friction and loss of power on its own account. We all know that when the oil is poured out of the tin into the tank on a winter's morning it is thick and of the consistency of treacle; it stands to reason, therefore, that its effect upon the flywheels, bearings, and piston is of a most distinctly retarding nature. The same oil which has been poured in, after a few minutes' running becomes rapidly liquid, and is of just the right consistency to allow the moving parts to revolve freely.

Fluid Friction.

Some interesting experiments have been carried out by Messrs. J. A. Prestwich and Co., which show how the viscosity of the oil influences the h.p. absorbed by internal resistance. The experiments were carried out by driving an 8 h.p. side valve twin J.A.P. engine at 1,000 r.p.m. by means of a belt from the shafting. The normal quality of Vacuum B oil was put into the crank case, and the horse-power absorbed was read off by means of a dynamometer. When cold the viscous condition of the oil resulted in 1.3 h.p. being absorbed, while after eight minutes the actual friction set up by the moving parts raised the temperature to 85° Fahr., and the horse-power dropped to .907. This test was carried out with the valve caps removed. The next test was with the valve caps in place, and the throttle fully open, and the reading was then taken under the following conditions, and the following figures were shown:

Two compression taps closed	1.3 h.p.
One compression tap open	1.42 h.p.
Two compression taps open	1.58 h.p.
Throttle closed	1.52 h.p.

It is interesting to note that the greatest amount of horse-power was absorbed when both compression taps were open, which goes to prove that, as we have previously pointed out in these pages, over a certain engine speed compression has no retarding effect upon the engine; in fact, the power necessary to overcome the compression is always partially given back on the rebound—that is to say, that once the compression has been overcome, the expanding air helps the piston to descend. With the compression taps open, on the other hand, the assistance of the compression is not obtained, and we merely get the power taken up by the actual friction of the moving parts and of the air which is forced through the small tap.

Another interesting experiment was to record the amount of power absorbed by the oil only at varying temperature. It will be seen from the table below that the pull in pounds decreases, and the horse-power also decreases as the temperature of the oil rises, the temperature being taken from an oil well drilled in the crank case lug.

Temperature.	Pull. lb. oz.	H.P.
60°	7 0	1.84
62°	6 0	1.57
64°	5 0	1.31
74°	4 12	1.25
76°	4 8	1.18
78°	4 4	1.11
82°	4 0	1.05
84°	3 14	1.0
88°	3 12	.98
92°	3 10	.95
100°	3 8	.915
108°	3 6	.87
110°	3 4	.85
118°	3 3	.83
122°	3 2	.82
128°	3 0	.785
130°	3 0	.785
140°	3 0	.785
180°	3 0	.785

H.P. = Pull × .262.

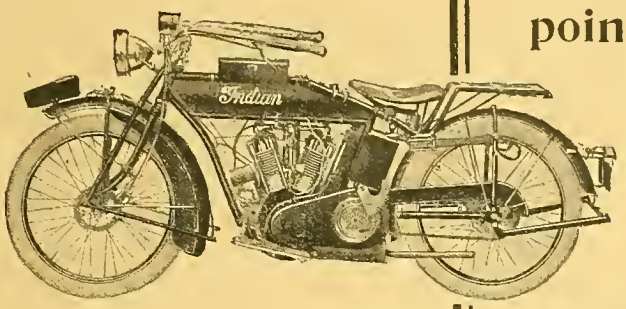
The curve showing the variation of internal resistance with the rise in temperature is also most interesting.

Another source of internal resistance is in the magneto. The actual transmission losses in driving the magneto are quite small, but considerable effort is required to overcome the pull of the magnets. Years ago, when magnetos were first placed upon the market, it was thought that about ¼ h.p. was actually taken up by the magneto. After various careful tests had been made, it was found, however, that .03 or $\frac{1}{32}$ h.p. was absorbed by the average magneto, though one showed .05 or $\frac{1}{20}$ h.p.

Resistance of the Timing Gear.

Having considered the internal resistance set up by the oil and the magneto, we will now turn to that absorbed by the most important moving parts of the engine. These are in the timing gear. First of all it is necessary to consider the various types of cams used, and their approximate contour is shown in the accompanying drawing. Before dealing with the cam gear losses, it is necessary first of all to say a few

Specialisation :



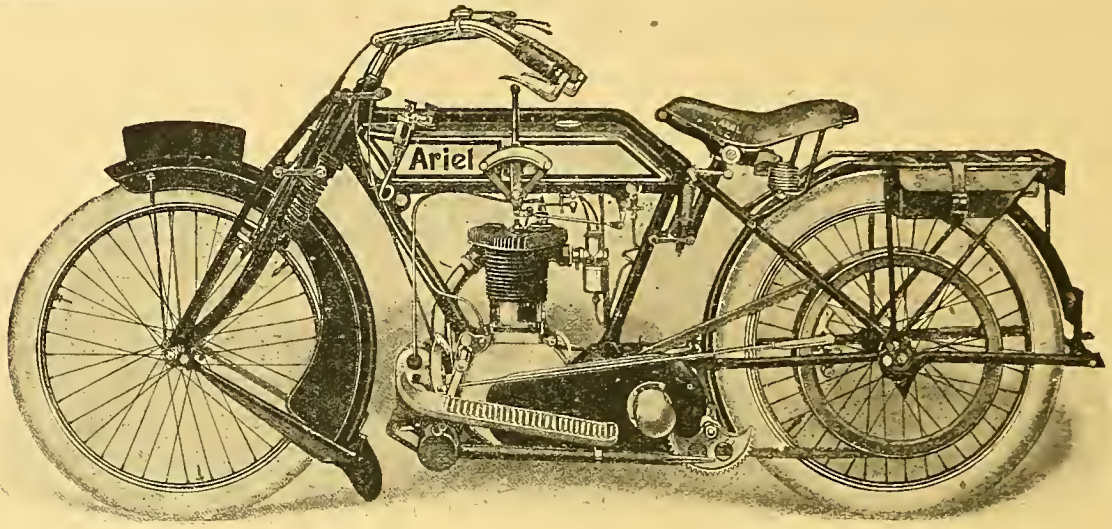
One of the cardinal points of efficiency in motocycle construction is specialisation

—and that is the secret of the high pitch of perfection to which Indian motocycles have been brought.

We do not manufacture cars, all our resources, our ingenuity and energy are concentrated upon the evolution of the World's Best Motocycle. That we have been highly successful is evinced by the amazing popularity of the silent Indian.

Indian

THE HENDEE MANUFACTURING COMPANY,
"Indian House," 366-368, Euston Road, - - - - LONDON, N.W.
Telephone : Museum 1643.
Telegrams : "Hendian, Eusroad, London."
Irish Branch—10, Wicklow Street, DUBLIN.
Australasian Depot—109-111, Russell Street, MELBOURNE.
Canadian Works—12-14, Mercer St., TORONTO.



RIDE an Ariel and you ride the best. It is the supreme British motor cycle. A long unbroken chain of successes in reliability trials—enduring road service—and entire satisfaction given to thousands of owners, have established its bull-dog-like supremacy.

ARIEL Motor Cycles are made in three models—3½ h.p. Single-cylinder and 5-6 h.p. Twin-cylinder with countershaft 3-speed gears for solo or sidecar work, and Two-stroke Two-speed for solo riding

List gratis on request.

ARIEL WORKS, LTD.
(Dept. A),
BOURNBROOK, BIRMINGHAM.

Ariel

In answering this advertisement it is desirable to mention "The Motor Cycle."

Internal Resistance.—

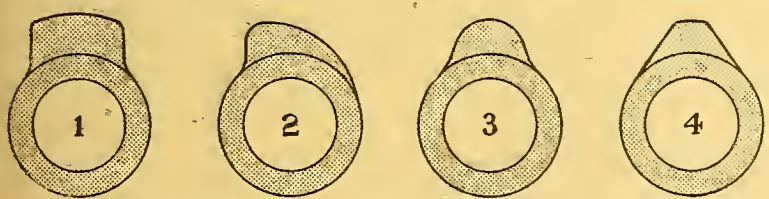
words about the four different cams illustrated. No. 1, it will be seen, is a cam which permits the valve to be quickly lifted, and also allows it to fall away with equal rapidity. We therefore get rapid opening and rapid closing, and a fairly long dwell. This type of cam puts an immense strain upon the valve, and is also extremely noisy, as the rapid fall of the valve head brings it into violent contact with the seating, consequently a loud clatter is set up. This cam involves the use of abnormally strong springs, but it is efficient, as to get speed it is necessary for the valve to open quickly. No. 2, it will be noticed, affords this rapid lift, but as the back of the cam is gradually sloped away the fall is comparatively slow; there is consequently less strain on the valve gear, and it is much quieter. There is a possibility, however, of the valve bouncing at very high speeds, and under a 40 lb. spring the valve has been known to jump as high as $\frac{3}{16}$in. Dr. A. M. Low has made some interesting experiments in observing the action of valves by means of a cinematograph with a synchronised shutter. No. 3, a round-nosed cam, is a compromise, giving a more gradual opening, and equally gradual closing. With this type of cam not quite so much speed is obtained, but for road use it gives a more modified opening and sufficient power. No. 4 is a very good shape, known as the tangent cam, and is one of the oldest designs of cams in the history of the internal combustion engine. It is one of the most silent, but does not lend itself to giving the maximum amount of power.

The Effect of Different Cams.

The following table, which shows the results of tests with an 8 h.p. s.v. engine running at 2,000 r.p.m., gives a clear idea of the amount of power absorbed by the four different cams referred to, with plain lever and with roller lever.

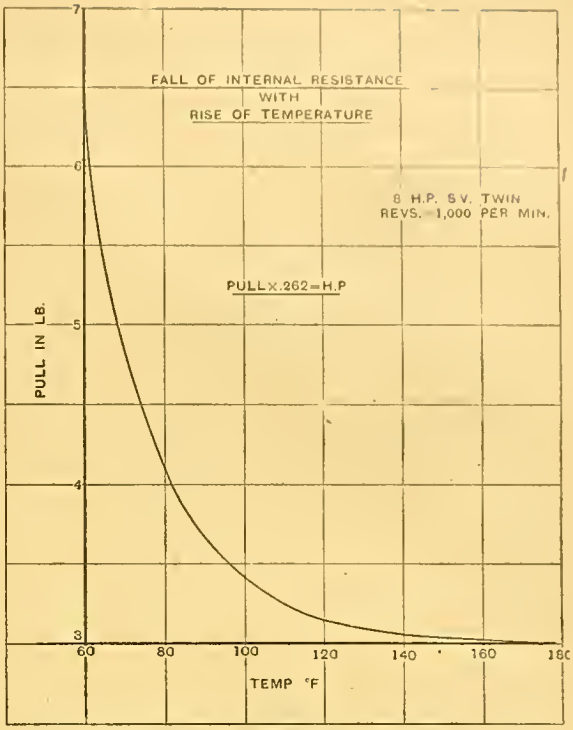
	Cam			
	1	2	3	4
H.P. (plain lever) ...	.238	.183	.151	.123
H.P. (roller lever) ...	.214	.174	.143	.095

The introduction of rollers on the cam levers reduces the loss of power, but this is more noticeable in the case of the tangent cam. The fact that the loss is not so marked with the quick lift cams is due to the bouncing action which this type gives to the lever, and this also accounts for the extra noise in the gear. The greater part of the noise, however, is due to the quick drop of the valves on their seats, and the bouncing of the cam lever and tappet at the normal of the cam when using the racing type.



A diagrammatic drawing of four types of cams. The contours have been exaggerated so as to give a clearer idea of the different styles mentioned in the letterpress. The cams revolve anti-clockwise.

The present design of the valve gear in the J.A.P. engine is the result of much experimenting on the part of Messrs. J. A. Prestwich and Co., who now have a combination under test which is almost noiseless, and will allow an 8 h.p. twin engine to run freely at 250 r.p.m., while, at the same time, it can be made to accelerate to over 4,000 r.p.m. under load.



Graph showing how the internal resistance falls when the temperature rises, and so causes the lubricating oil to become more volatile.

Cooling.

Some interesting experiments have been made to test the efficiency of various cooling arrangements. It is well-known that the larger the amount of surface presented to the air, the more rapid is the cooling, and designers, to obtain the best results, have placed on the market extra aluminium fins to interpose between the existing radiator fins, and these certainly have a most excellent effect. Aluminium, being a light metal, does not increase the weight to any appreciable extent, and is also an excellent radiator of heat. Curiously enough, practically the same results can be got by interposing coiled wire between the radiating fins. If this is carefully and intelligently done the cooling is greatly assisted. Tests of both methods were made by volatilising a small quantity of oil placed in a well made in the top fin of the cylinder, and taking the time occupied by the oil in evaporating.

THURSDAY, NOVEMBER 25th!

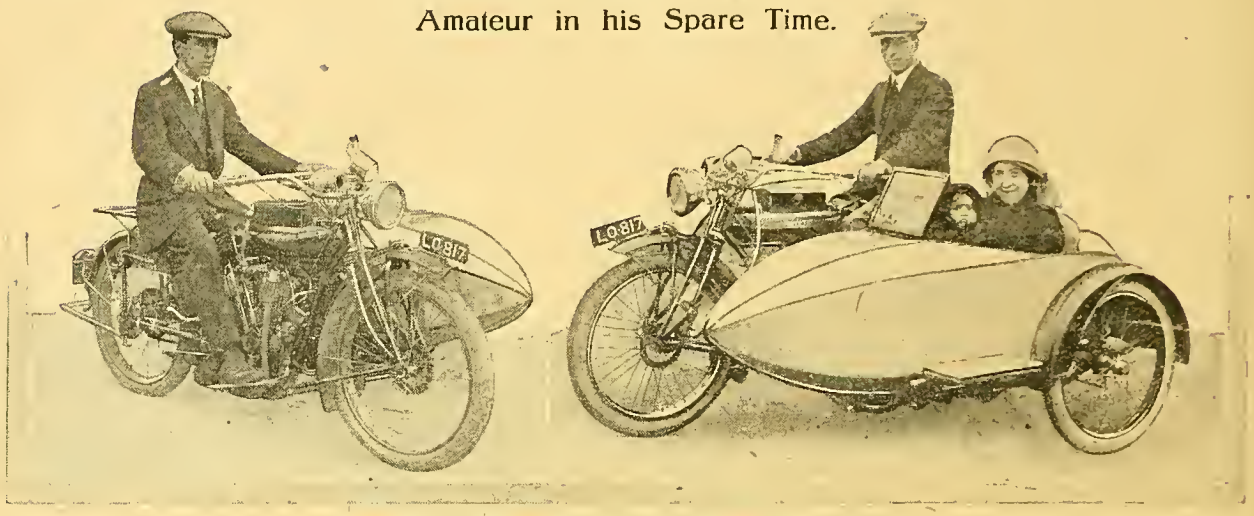
THE MOTOR CYCLE

BUYERS' GUIDE OF 1916 MODELS.

This issue will be considerably enlarged and will contain an illustrated review of the various new pattern motor cycles.

The Cult of the Home-built Sidecar.

An Attractive Body made by an Amateur in his Spare Time.



AN ATTRACTIVE ALUMINIUM SIDECAR BODY.

Mr. and Mrs. F. T. White and their Indian sidecar outfit. The fine aluminium sidecar body was designed and built by Mr. White himself.

THE plan of building one's own sidecar appears to be spreading among keen amateurs lucky enough to possess small workshops. Some of these home-made affairs bear a distinct "home-made" stamp about them, whilst others are indistinguishable from the factory article. In the latter category must be placed the sidecar built by Mr. F. T. White, of Burghill Road, Sydenham, and illustrated on this page. Not only is Mr. White's sidecar pleasing to the eye, but the design is good and the fittings embody interesting features. It is fitted to a 1915 Indian, and Mr. White built it during his leisure hours last winter.

Details of the Body.

The body is 6ft. overall, and is built up on an elm framework, covered with three-ply wood (⅛in.), and then polished aluminium. The seams are of angle aluminium painted Indian red. Rear springing is internal and adjustable to suit weight of passenger. A good point is that it is so arranged to permit slight rolling of the body, thus the passenger is enabled to cause the body to lean the correct way when cornering.

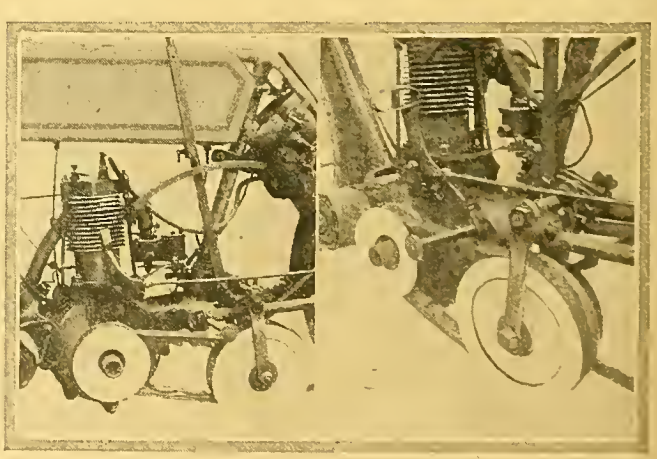
The front is supported on three coil springs; the weight of the passenger is *not* carried by the body itself, but by two specially-shaped ⊥ iron members, to which the front and rear springs are attached. In the body is fitted a speedometer, which is illuminated by a small electric lamp. The inside of the body is illuminated in the same manner as well as by reflected light.

The woodwork inside the body is varnished with the exception of the roof, which is white enamelled and serves as a reflector for a small lamp.

At present only a temporary windscreen is fitted, in order to provide a little protection for Mr. White's baby girl (one year), who enjoys a ride sitting on her mother's lap.

The chassis is by the Phœnix Co. A grey cloth upholstery is used, and the seat and back cushions are loose.

Since last June Mr. White has covered 3,000 miles, including a tour of the Lakes and Yorkshire moors. During this distance the body has given every satisfaction, and has proved most comfortable over the worst roads. At the same time Mr. White pays a tribute to the 7 h.p. Indian bicycle, which has given as much satisfaction in its sphere as the sidecar, and he says that he is afraid he cannot go back to a rigid frame, after having once tasted the delights of rear-springing.



A DOUBLE EXPANDING PULLEY GEAR IN USE.

Double expanding countershaft pulley gear fitted to an early pattern machine. The owner is Mr. Louis Dugdale, a letter from whom on the subject appeared in our correspondence pages in the issue of September 16th. The left-hand view shows the top gear of 4½ to 1 engaged, while the right view shows the 12 to 1 bottom gear engaged. The belts are of chrome leather, and the pulleys run on Hoffmann journal bearings fitted with dust caps.

The men in Khaki and — THE CLYNO.

That they need it, the Government demands—insistent and continuous—are ample evidence—

To fill their need is the one and only purpose on which we concentrate to-day.

Every nerve, every energy, every man, every machine, every tool, every facility — all are working to produce the CLYNO MILITARY COMBINATION as rapidly as possible for—

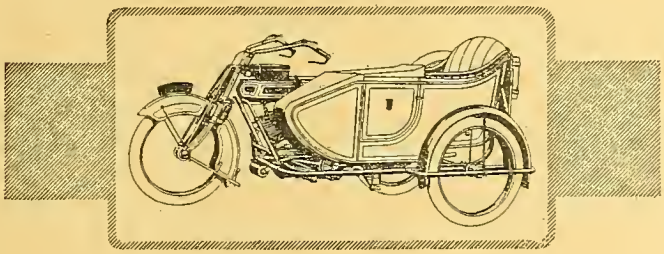
We must not fail "the men in Kkaki" while they fight our battles.

In the meantime the Clyno is proving, under tests more arduous than any peace-days could provide, its merit and efficiency—adding to its reputation daily—proving beyond dispute that even if you have to wait it is indeed worth waiting for!

So keep in touch.

The CLYNO ENGINEERING Co., WOLVERHAMPTON.

TELEPHONE—992, Wolverhampton. TELEGRAMS—"Clyno, Wolverhampton."



REGISTERED TRADE-MARK.

NEW-HUDSON

MOTOR CYCLES.

Enduring Satisfaction is only derived from the Motor Cycle which is produced in a factory where expert knowledge, thoroughness, and perfect organisation prevail.

Comfort, Convenience, and restful enjoyment of Motor Cycling depend upon the skill of the designer and the scientific selection of material no less than on the care of the builder.

The New-Hudson combines these qualities in a degree unequalled. Once you own a New-Hudson Motor Cycle, you will not be satisfied with any other.

The name is a guarantee of that reliability for which New-Hudsons are famous both in peace and war.

New Models and Catalogue for 1916 will be ready in January next, and we invite enquiries for next season's deliveries.

ELOQUENT TESTIMONY.

Grenville House, Blackpool.
April 29th, 1915.

Dear Sirs,—I have now run your 6 h.p. sidecar combination IX.B about 600 miles and am even more pleased with it now than I was on delivery. I do not consider your advertisements and catalogues quite do the outfit justice. Advertisers quite commonly exaggerate a little, whereas careful examination proves your machine is better than its specification. I find little improvements, refinements, even luxuries have been added for which no extra payment has been demanded. The engine is a most flexible one, it accelerates on the level or on hills very smoothly, yet quickly, and its slow quiet running on top gear in traffic is a remarkable feature. I have tested it for speed on quiet moorland roads and for power over the Lake District hills with most satisfactory results. I want nothing better and I doubt if there is a better engine for one who must have power and reliability combined with low running cost. The sidecar is the best I have had so far, and I have owned eight combinations, while my wife's opinion of its comfort is emphatic. The fittings are very strong and its alignment perfect. My satisfaction is so great I felt bound to write you.

Yours truly, WALTER HOWARTH.

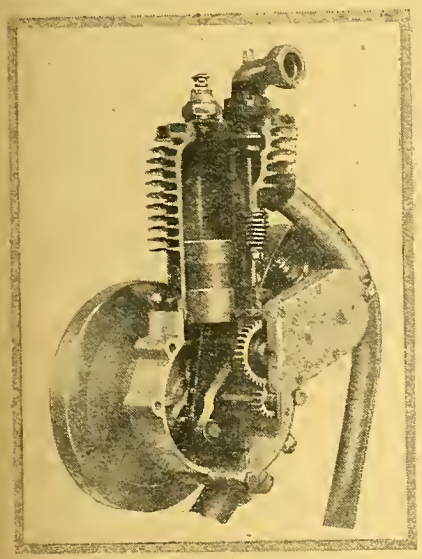
THE NEW-HUDSON CYCLE CO., LTD., Parade Mills, Birmingham.
London - - - - 43-45, Gray's Inn Road, Holborn.

NEW MODELS

· MANUFACTURERS' PROGRAMMES FOR 1916 ·

THE J.E.S., A TRUE LIGHTWEIGHT.

THE J.E.S. motor assisted pedal bicycle is sold as a complete machine. The engine, which is rated at 1 h.p., has a bore and stroke of 51 × 57 mm. (116 c.c.), and has



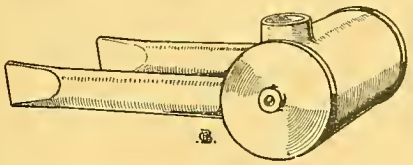
Section of the J.E.S. miniature engine, which has an automatic inlet valve.

an automatic inlet valve. The gas is supplied by a J.E.S. automatic carburetter and ignited by a Dixie magneto. The tank capacity is threequarters of a gallon, which with so small a motor should suffice for upwards of 100 miles. The drive is direct, and through a ½in. belt. The machine is fitted with Dunlop 26 × 1¾ tyres, and weighs 73 lb. complete.

The J.E.S. is probably the lightest machine in existence. The maker has improvements on the *tapis*, but Government work has delayed their appearance.

NEW RYDER TWO AND FOUR STROKES.

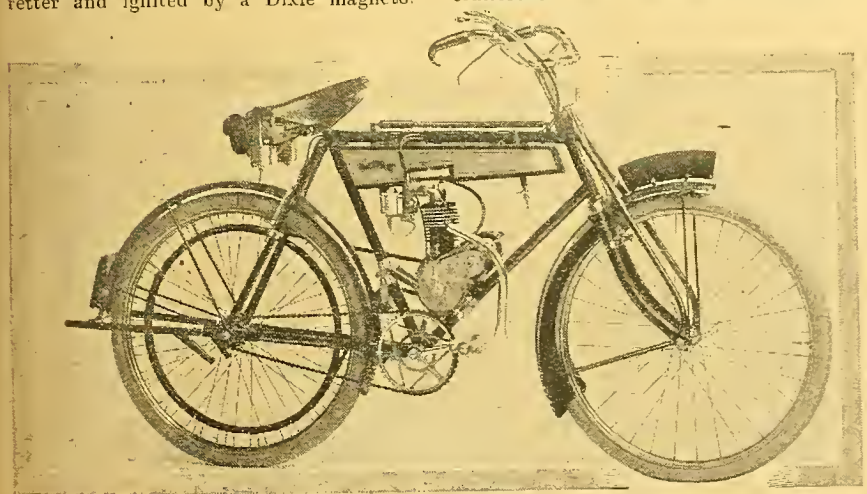
THE New Ryder programme for 1916 is to remain unaltered. Ladies' and men's models will be listed, each of these being obtainable with either a single or two-speed gear. There will also be a four-stroke model with a 2½ h.p. J.A.P. engine and



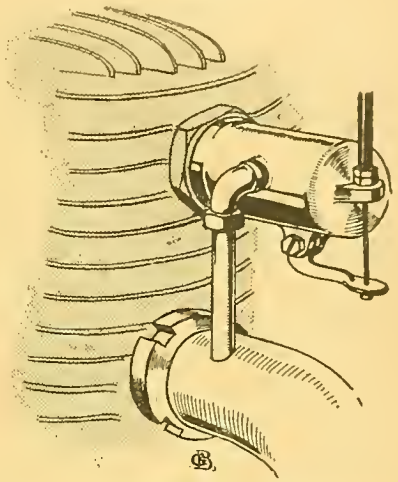
Silencer of the two-stroke New Ryder.

two-speed countershaft gear. The latest model two-stroke engine is fitted with a release valve, which has a connection to the exhaust pipe, as illustrated. The piston is provided with oil grooves, and two rings are placed at the top.

A short run on the single-geared model showed that the machine was distinctly comfortable and free from vibration.



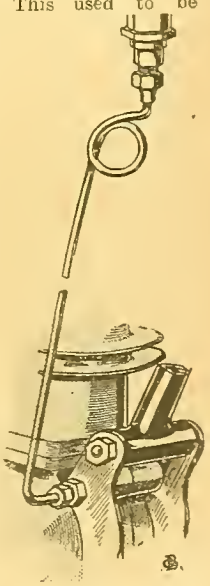
The 1 h.p. J.E.S. lightweight motor cycle



The New Ryder covered in release valve with pipe to exhaust.

REVERE IMPROVEMENTS FOR 1916.

TWO models of the Revere two-stroke machine will be marketed next year, a single and a two-speed model. The general design will be as before, though a few details have received attention; among them is the oiling system. This used to be carried out from a pump to the inlet pipe. On referring to the sketch of the new system, it will be seen that a pipe leads from the pump to the crank case, the bolt for the engine hanger being drilled out to receive it. To improve the weatherproofing of the machine it has been decided to introduce black enamelled rims in lieu of the usual plated ones. A point about the single-speed model is that no alteration is required if it is desired to fit a two-speed gear box, ample accommodation for which is provided

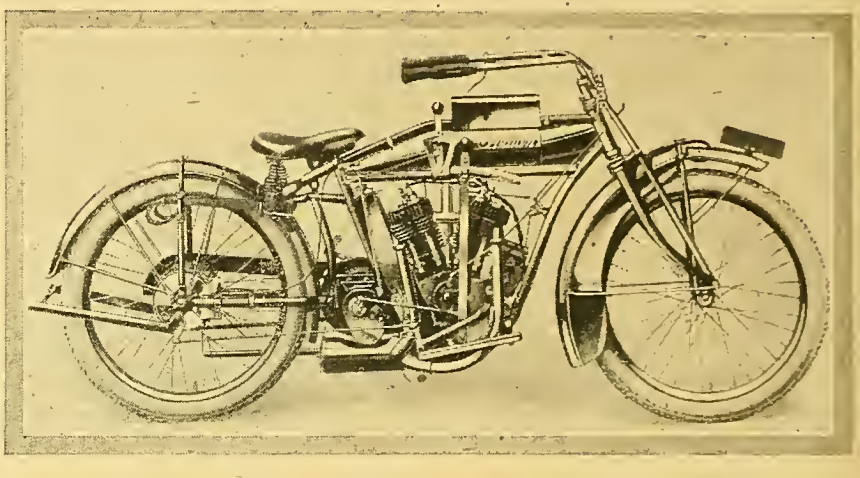


The new oil inlet on the two-stroke Revere;

Side-by-side Valves on 7 h.p. Indian.

PRACTICAL TEST OF THE NEW LONG STROKE, SPRING FRAME MODEL.

IN our last week's issue we described in detail the new Indian lightweight, which is, perhaps, the greatest innovation introduced by the Hendee Mfg. Co. for the coming year. There are, however, several improvements in the firm's other models to be dealt with. The most important of these is the introduction of the 7 h.p. side-by-side valve engine, which is fitted to models G and F. Although only just placed on the market, it is an engine with which the Hendee Mfg. Co. have been experimenting for the last three years, during which time it has received testing for some 50,000 miles, so that intending purchasers may now be certain that it is a thoroughly well tried article. This year the bore and stroke have been altered. Formerly the 7 h.p. engine had a bore of 82.5 mm. and a stroke of 93 mm., whereas the 1916 engine is a real long stroke model with a bore of 79 mm. and a stroke of 101 mm. This gives a smaller capacity, being 990 c.c., as against 994 c.c. last year.



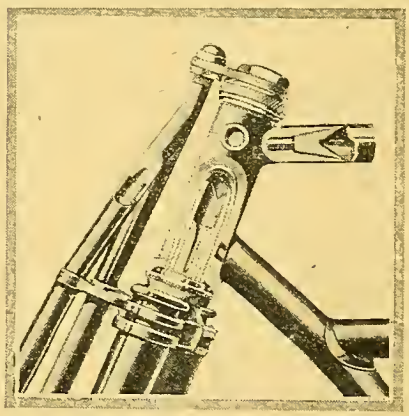
The new 7 h.p. long-stroke three-speed Indian, the equipment of which includes spring frame, magneto generator, and lighting set.

A Novel Compression Release.

The timing gear is now carried in a separate casing forming part of the crank case casting, and a clear idea of the arrangement of the distribution gear wheels is shown in the accompanying photograph. A small pinion driven off the crankshaft drives by means of helical gearing the tiny plunger pump at the base of the crank case, which serves to maintain constant level of oil therein, thus taking the lubrication out of the hands of the driver. The method of releasing the crank case compression is distinctly novel. The air passes through a rotary valve contained in the shaft of the first of the train of pinions, which drive the magneto, into the timing gear case, thence it emerges through an ample breather pipe which carries any surplus oil away to fulfil a useful purpose—the lubrication of the front chain.

The tappets and springs are protected by means of telescopic sheaths, which effectually exclude dust from the tappets, and, consequently, these should last very much longer in the new models.

To remove the valve, it is only necessary to release the bottom nut from the sheath and push up the lower portion.



Section of the reinforced steering head lug used on the 1916 Indians.

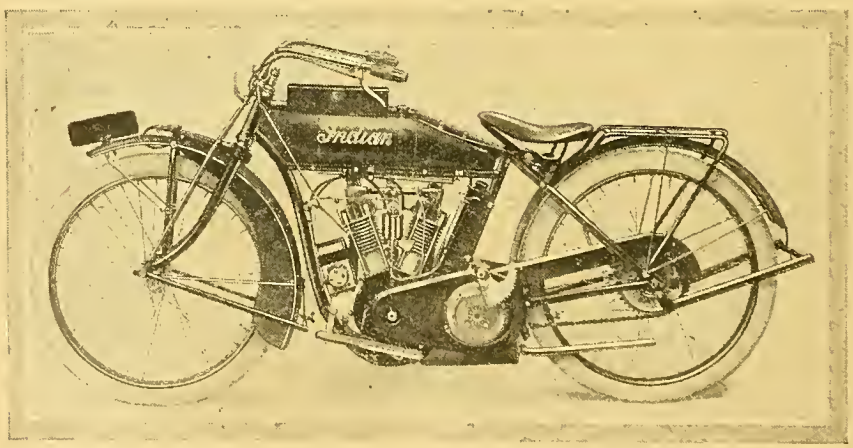
This exposes the valve collar, and if this latter is raised a small crescent-shaped disc can be removed, and the valve can be then withdrawn. This crescent-shaped disc takes the place of the ordinary cotter, and, as the washer is recessed to take it, it is perfectly secure. The valve sheaths do not extend for the whole length of the valve stem, but reach as far as a separator in which slots are cut, which serves to cool the valve stem and allows sufficient air to reach the spring. The valves this year are of ample dimensions, and the washer underneath the valve cap is recessed in the cylinder casting; consequently there should be no difficulty whatever about keeping the joints gastight. To revert again to the new arrangement of the valve gear. This, we may mention, is a radical departure from former Indian practice, and, beyond allowing the timing gear to be easily accessible, it allows for wide roller bearings for the connecting rod big ends, while the gudgeon pin and crankshafts are larger than ever before. The mainshaft bearing on the off side of the engine is of the roller type.

The "Powerplus" Engine.

The new L head engine with one piece cylinder is exceptionally efficient for its size, and, although it is rated nominally at 7 h.p., on an actual brake test it has shown from 15 to 18 h.p.

The new gear box, which we described on the occasion of our reference to the lightweight model, will be embodied in this and the other Indian machines. Other excellent features of the model F, such as the spring frame, spring forks, and disc clutch, which can be operated by hand or foot, are retained. The photograph showing the construction of the front fork is worth careful examination, as it shows the laminated head stem, demonstrating the extraordinary strength of this important portion of the frame.

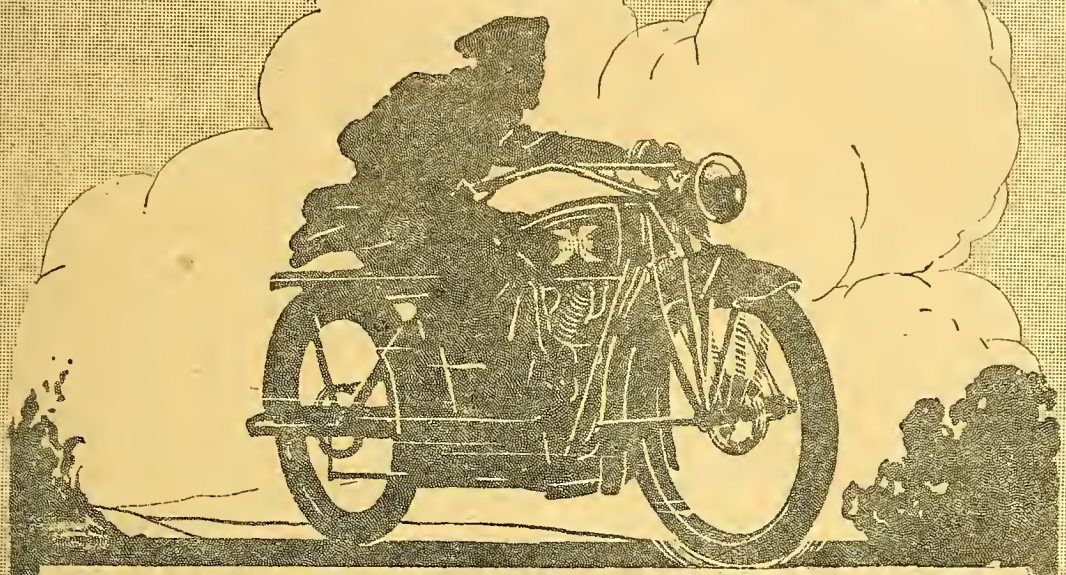
In writing this description we have had before us the model F, which is the type



1916 model 5 h.p. twin Indian, which has a rigid frame and overhead inlet valves.

The AMERICAN EXCELSIOR

America's Best Auto-Cycle



"Some" Speed!

IN a 300 mile race at Chicago last month, the American "Excelsior"—"The Good Old X"—beat all other makes, and won in 3 hrs. 29 mins. 51⅖ secs. —a speed of 85.71 miles per hour.

Think of the strain on the machine! A sprint of 85 m.p.h. would be wonderful enough—but to keep it up for 300 miles . . . . . ! It shows what the "Good Old X" is made of.

You want a machine ready for anything—which revels in tough jobs—which will never let you down—which "always makes good." Come and inspect the "Good Old X"—the American Excelsior.

PRICES:

STANDARD MODEL.
7 h.p., 3-speed countershaft gear, multiple disc clutch, chain drive, kick starter, mechanical lubrication .. ..

£80

MODELE DE LUXE, as illustrated, complete with Splitdorf combination lighting and ignition system, powerful head and tail lamps, electric horn, and speedometer .. .. ..

£90

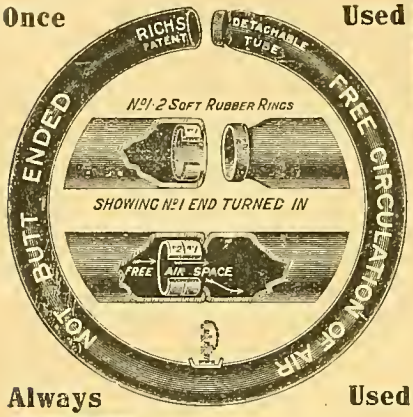
We can deliver the Modele de Luxe to-day.

Complete Details from Sole Concessionnaires:
HARRIS & SONS, 10-12, Great Chapel St., Oxford St., **LONDON, W.**
'Phone: Regent 3906.

AGENTS! We want live agents. The proposition is attractive—a splendid machine, a moderate price, and early delivery.

EXCELSIOR AUTO CYCLE MOTOR MFG. SUPPLY COMPANY — ALWAYS MAKES GOOD

Once Used



Always Used

PUNCTURES HAVE NO TERROR
when you use

THE RICH Detachable AIR-TUBES and COVERS.

ADVANTAGES. By carrying a spare tube you can—

Replace tube in five minutes without unscrewing a nut on the machine. Repair at your convenience. Put a patch on the inside with ordinary rubber and solution which never shifts or leaks; no expensive prepared patches required, thereby saving time, trouble, and expense, also prolonging the life of tube and cover. No friction of patch on canvas of cover. Take the valve out and replace from the inside without interfering with valve seating. (All tubes are valve seated on the inside). Turn tube inside out like a stocking by taking the valve out. Take tube to the water for testing without taking machine.

FIRST IN 1904, FIRST ever since. GUARANTEED AIR-TIGHT.

PRICE LIST.

	26in.	28in.
1¾in.	8/- ..	9/-
2in.	11/- ..	12/-
2¼in.	12/- ..	13/6
2⅜in.	13/- ..	14/6
2½in.	14/6 ..	16/6
3in.	20/- ..	23/-
3½in.	26/- ..	30/-

Pedal Cycle, 1¼, 1⅜, 1½in. .. 6/-

Don't go by the first cost, but by the money you save in using them.

WHY they are the BEST and CHEAPEST

BECAUSE—They are made of the **best** rubber and of substantial thickness. Have free passages of air, and **no** butt-ends to burst. Save you hotel and train expenses. Enable you to keep an appointment. No need to repair by the roadside and keep your friends waiting. Last longer than any other tube. Save your tyre bill.

Don't spoil your Tour by delay with punctures. Carry a Spare.

If you cannot obtain them from the Trade, write direct. Sent per return post.

Further particulars, write for booklet.

The Thames Rubber & Leather Co., 199, Upper Thames St., London, E.C.

How's this for Satisfaction.

Bristol.

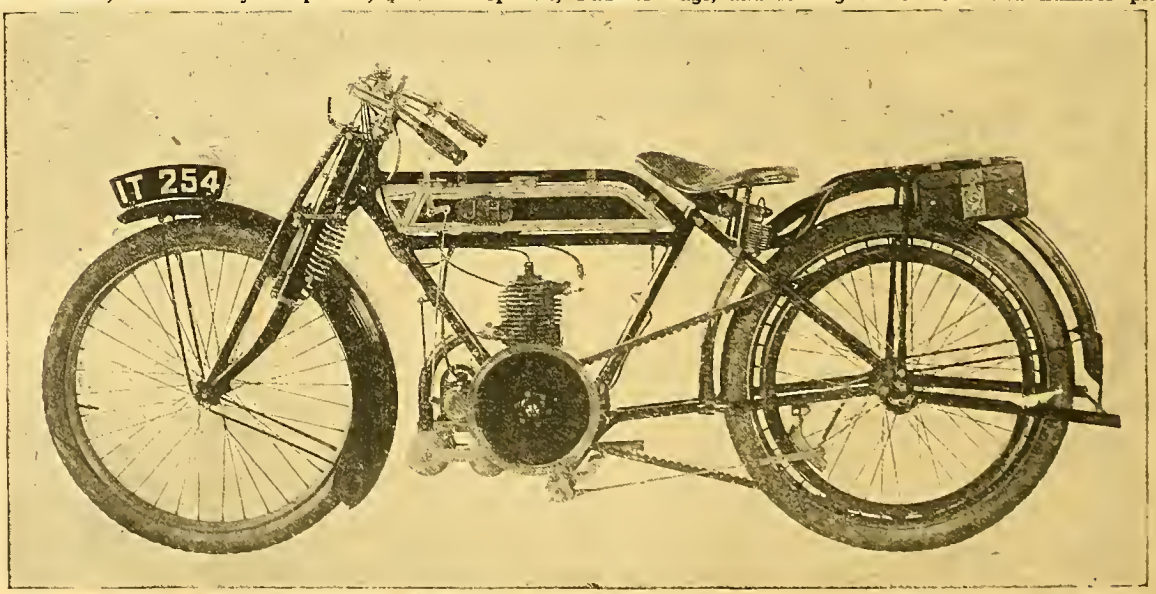
Dear Sirs,

Enclosed please find postal order in payment of Tubes. The ones I have now have been in since June, 1913, and seem as good as ever.

This is the J.H. Reliable 2½ h.p. Two-stroke Single Gear.

Supplied also with two-speed gear, chain-cum-belt drive, or three-speed Sturmey-Archer hub gear.

Villiers engine, 70 × 70 mm., 269 c.c. Druid forks, Bowden brakes, Palmer or Dunlop studded tyres 26in. × 2in., Lycett's saddle, Best & Lloyd drip feed, ⅜in. Dunlop belt, Pannier bags, and folding kit of tools and number plates.



THE IDEAL MOTOR FOR THE YOUNG OR OLD. Immediate Delivery.

SPECIAL ATTENTION GIVEN TO THE REQUIREMENTS FOR COLONIAL TRADE.

J.H. MOTOR ENGINEERING WORKS, Castle Mill Street, MUMPS, OLDHAM. JAMES HOWARTH, Proprietor. Write for Catalogue at once.

New Models.—

of machine fitted with a spring frame. This will be equipped with the Splitdorf magneto generator, which is a combined magneto and dynamo, while an electric horn and rear-driven Corbin-Brown speedometer also form part of the equipment. It will be noticed that in the illustration the kick starter is shown as being on the near side of the machine, but in the final model it will be on the off side, as before.

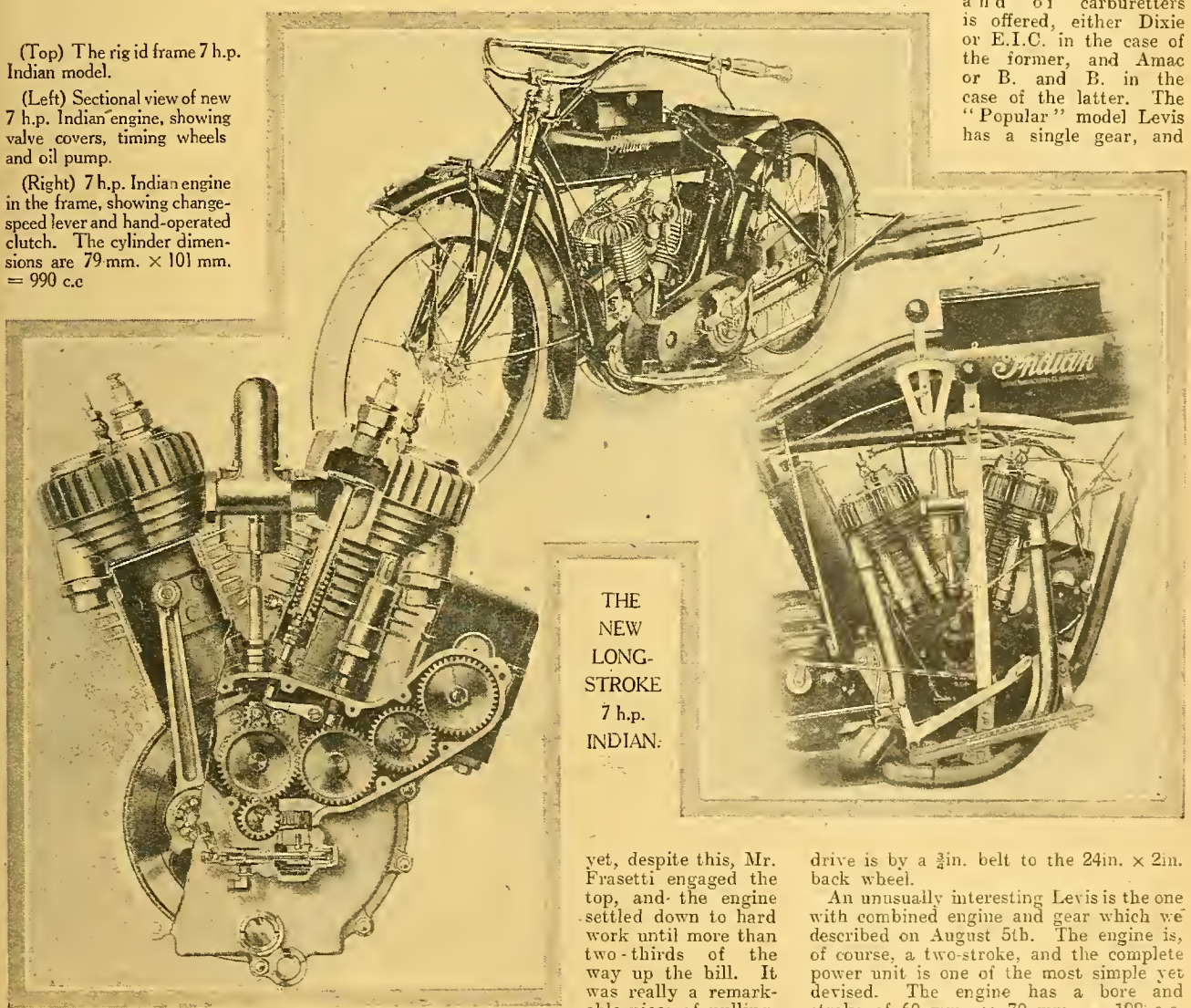
The model G, of which a threequarter view is shown, is exactly the same as the model F, except that it has a rigid frame, and is consequently what may be termed a T.T. type. The illustration shows a Schebler carburetter, but this machine will be fitted with the Indian automatic, which has been so satisfactory in the past. The kick starter will also be on the other side of the machine.

The popular model B, the 5 h.p. twin, 70 mm. × 89 mm. (684 c.c.), is practically unaltered for 1916. It, and the other models described, have 28in. wheels, while the 7 h.p.'s have 3in. tyres, and the smaller twin is fitted with 2½in. tyres.

A Run on the New 7 h.p. Model.

The only new Indian actually in London is one of the early type model F's, which does not represent the final type to be placed upon the English market, as many portions of it are hand made. It is, however, an interesting prototype of the new machines, and we were especially gratified when Mr. Wells was kind enough to send us out on a trial run in one of the luxuriously appointed Indian sidecars. Dexterously handled by Mr. Ernest Frasetti, we were soon skilfully threading our way through the traffic in Euston Road, and revelling in the silent running of the engine and the comfort of the sidecar. The traffic in Euston Road was fairly heavy, and we were much impressed by the excellent acceleration of the engine, its quiet running, and the power of the brakes.

Wending our way northwards we eventually came to Highgate Hill, the bottom of which was, of course, obstructed by a tramcar. Second speed was silently engaged, and the machine darted forward like a thing of life. We were now well on the gradient, and yet, despite this, Mr. Frasetti engaged the top, and the engine settled down to hard work until more than two-thirds of the way up the hill. It was really a remarkable piece of pulling, and by no means kind to the engine, as in the effort of demonstrating the pulling powers on top speed, which was really rather high for sidecar use, the second was not engaged until late. It was perfectly obvious that, with a reasonable gear, the engine would have surmounted the hill on top. Although we had eventually to come down to first, we were able to finish the climb on top gear. It was certainly a most interesting demonstration, and we returned to Euston Road full of enthusiasm for the new long stroke engine.



(Top) The rig id frame 7 h.p. Indian model.

(Left) Sectional view of new 7 h.p. Indian engine, showing valve covers, timing wheels and oil pump.

(Right) 7 h.p. Indian engine in the frame, showing change-speed lever and hand-operated clutch. The cylinder dimensions are 79 mm. × 101 mm. = 990 c.c

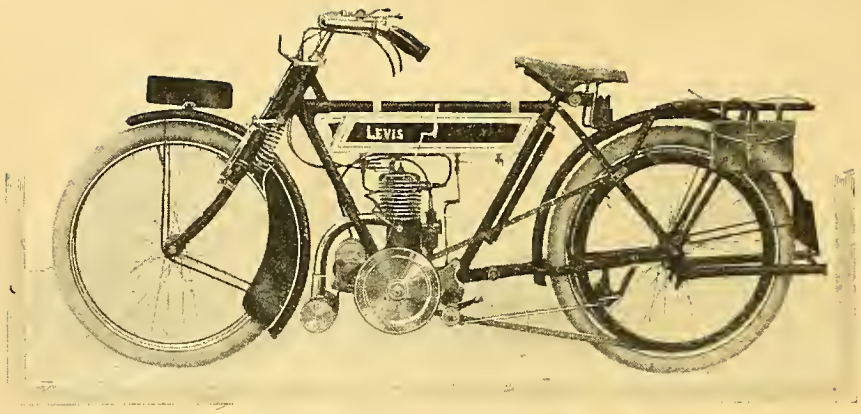
THE NEW LONG-STROKE 7 h.p. INDIAN.

THE LEVIS.

One Model decided upon, others still under test.

THE principal Levis model for 1916 will be the single-cylinder 2¼ h.p. machine, which is one of the most popular two-stroke lightweights on the market judging by the number seen on the road. The engine is of Messrs. Butterfield's own manufacture, and has a bore and stroke of 62 mm. × 70 mm. = 211 c.c. A choice of magnetos and of carburetters is offered, either Dixie or E.I.C. in the case of the former, and Amac or B. and B. in the case of the latter. The "Popular" model Levis has a single gear, and drive is by a ⅜in. belt to the 24in. × 2in. back wheel.

An unusually interesting Levis is the one with combined engine and gear which we described on August 5th. The engine is, of course, a two-stroke, and the complete power unit is one of the most simple yet devised. The engine has a bore and stroke of 60 mm. × 70 mm. = 198 c.c,



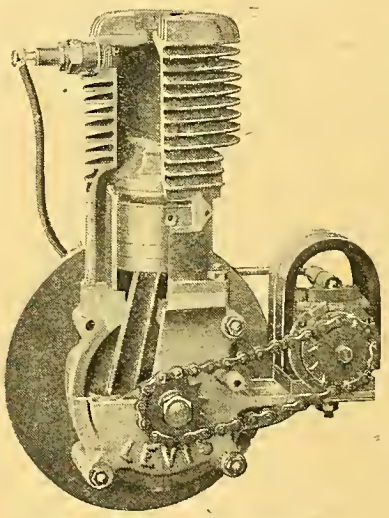
1916 edition of the 2¾ h.p. Levis Popular model.

and is rated as 2-3 h.p. The two-speed gear and clutch incorporated is the Enfield twin clutch and chain type, and is carried in a casing cast in one with the crank case. Another feature is the magneto drive. The magneto is mounted on a small platform at the side of the engine, and driven by means of a small dog lever connected to the crank pin inside the crank case.

Another Levis experimental model that may be marketed at a later date is an extremely interesting 5-6 h.p. two-stroke twin-cylinder machine, the engine of which we described in our issue of July 29th. It will be recalled that the cylinders are horizontally opposed and water-cooled, and in its air-cooled form made a very successful *début* at the Style Cop hill-climb.

An Interesting Frame Design.

A straight tube frame, too, which is somewhat of a departure, is also under test. It consists of a number of small tubes clipped in malleable iron brackets. The frame has been used before and, therefore, tested thoroughly; but the latest idea of Mr. Butterfield's is to clip the tubes in their sockets and not braze them. Although this idea is not new it has not been applied to a standard motor cycle frame before, and if the experiments are successful it will be used for the 1916 frames.



Sectional view of the Levis single-cylinder two-stroke engine, showing shape of piston head.

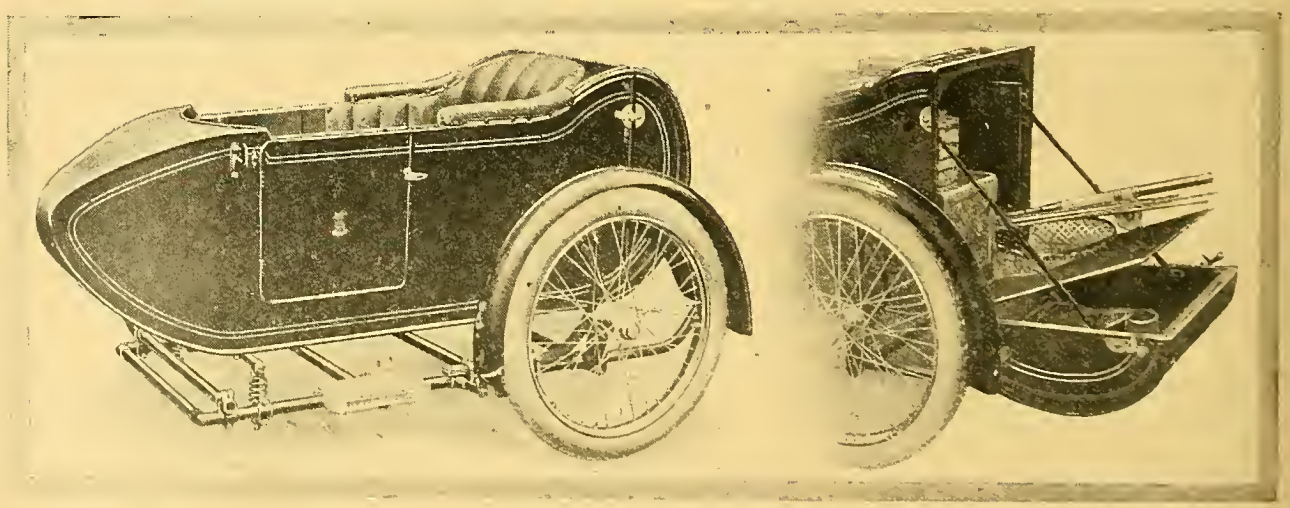
If success be achieved it will mean very much to the repair shop, as, by scrapping certain clipping bolts, the damaged tubes may be removed at once for others to be substituted. Brazing, always uncertain in unknown hands, is eliminated, costs of production reduced, and the steel tube crystals unaltered by intense local heating during brazing. Obviously, the securing bolts when home must be beyond suspicion of moving; but this is a problem not really difficult to solve, and there remains only the enthusiast who may bring disaster on himself by interfering with the bolts.

NORTON SIDECARS.

To be Supplied Apart from the Norton Bicycles.

THE makers of the Norton motor cycles have been supplying their own sidecars with their passenger outfits for some time past. They have now gone a step further, and will supply two of their sidecar models by themselves and ready to fit any make of motor cycle. This step has been taken as a result of the demand for the Norton *de luxe* and sporting type sidecars. Both models are illustrated herewith, and it will be gathered from the pictures and the following particulars that each is a fine specimen of its type.

The *de luxe* model is both attractive and serviceable. Interest centres in the bulbous rear of the body, which swings down at will so forming a table which may be used for *al fresco* meals. Under the table and in the bulbous part of the back is a compartment capacious enough to carry personal luggage for driver and passenger. The compartment immediately behind the seat can be used for spare petrol, oil, and tools, while fishing rods or a gun may be passed below the seat from this compartment and carried unobtrusively and without inconvenience. The upholstery and finish is all that one would expect in a high-class sidecar, and triple leaf C springs are a guarantee of comfortable riding over rough roads.



The Norton de luxe sidecar The capacious back compartment is worthy of note, and the neat manner in which it folds up. This sidecar attachment can be supplied apart from the firm's motor cycles.

Bates-built at the "Front."

MORE SPEED,
MORE SAFETY,
MOST MILEAGE.

W. & A. BATES, Ltd.,
Leicester. 21st June, 1915.

Gentlemen,

I feel that I must write to you and express my appreciation of your Motor Cycle Tyres as being second to none. Owing to the fact that I experienced no trouble from a Bates Tyre in civil life I fitted one to a Douglas before coming to the Front. Roughly, the tyre ran for about a month in England and six months with the B.E.F., on roads more fitted for a steam roller than a motor cycle, without a puncture or without once being deflated, and surprising as it may seem, the tyre was as good as new when evacuated with the machine. I don't know whether this constitutes a record or not, but I think it really marvellous.

Yours faithfully,
(Signed) G. S. GARRARD, L.-Cpl.,
Despatch Rider,
Leicester Yeomanry.
B.E.F.

P.S.—The Tyre I bought first from you is now at my home in England fitted to a Triumph M.C., and was, when I left, as good as new, although it had been run considerably.

W. & A. BATES, LTD.,
St. Mary's Mills, Leicester.

Depots—LONDON, GLASGOW. and NEWCASTLE.

Bates
SUPER RUBBER.
Tyres

"The tyre of no regrets."

Colonial Wholesale Stockholders:

Smith, Denham and Co., Henderson's Buildings, Von Brandis Street, Johannesburg, South Africa. Childs, Parr, and Joseph, Nairobi, British East Africa. David F. Long, 9, Weld Road, Kuala Lumpur, F.M.S. Cycles and Motor Supplies, Ltd., Farish Street, Wellington, New Zealand. Cornell, Ltd., 122, 124, Pirie Street, and 29, 31, and 33, Hyde Street, Adelaide, South Australia. A. G. Healing and Co., Ltd., 354-356, Post Office Place West, Melbourne, Australia. Bennett and Barkell, Castlereagh Street, Sydney, Australia.

PURE PARA JACKETS.

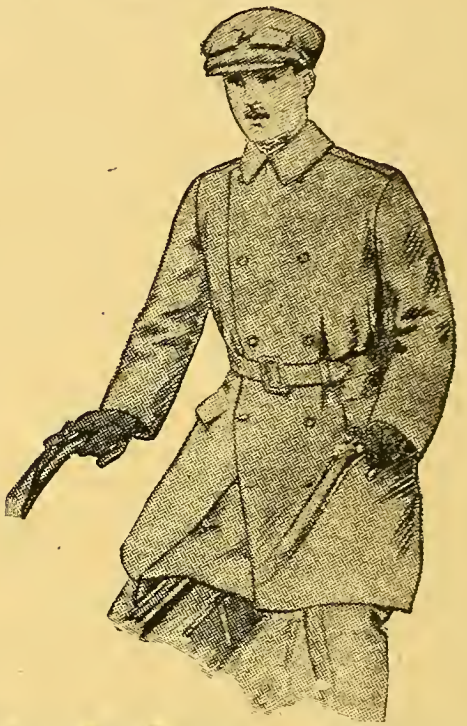
Pure Para Jacket - - - - - - Price 39/6
Trouser Overalls, of finest quality
Price (without seat) 22/- (with seat) 22/6

This Suit is made of the very best material, and the quality is unobtainable elsewhere.

Perfect comfort in winter riding can best be secured by lining your Overalls with **Camel Fleece** — it is extremely warm and cosy.

Price of Lining Jacket 15/-
Price of Lining Overalls 12/6

Send for fully illustrated list of Motor Cycle Clothing.



Dunhill's Ltd., 359-361, EUSTON RD., LONDON, N.W.
2, Conduit Street, W., 42, Lombard Street, E.C.
Manchester: 90-92, Cross St. Glasgow: 72, St. Vincent St.

Insurance

READERS of "The Motor Cycle" wishing to insure a motor cycle, sidecar, or light car, can obtain quotations for suitable policies by filling in the attached form and forwarding it to:

The Manager, Insurance Dept.,
"THE MOTOR CYCLE" Offices, Coventry.

SPECIAL ..NOTE...

A copy of

THE MOTOR CYCLE

is supplied by post each week for twelve months with all policies upon which the premium is not less than

£2 : 7s. : 6d.

ENQUIRY FORM

(To be sent to above address).

Make of Machine.	H.P.	Date of Manufacture.	Present Value.	Registered Number.

Will machine be driven solely by owner?.....
" " " " " for pleasure?.....
Will passenger be carried on luggage carrier or pillion of motor cycle?.....
Name .....
Address.....
.....

New Models.—

In the sporting model a successful attempt has been made to meet the demands of those riders who, whilst desirous of a light sidecar useful for occasional speed work, wish to possess a vehicle capable of serious touring. The extended rear forms a useful locker for petrol, spares, and small amount of luggage, and the body is roomy and comfortable. As its name implies, it is designed on low, fast lines, and altogether it is a body good to look at.

THE NEW "ALL BLACK" B.S.A.'s.

Powerful Single-cylinder Machines for Solo or Sidecar Work.

THE B.S.A. motor cycles, both solo and sidecar machines, have proved so successful in the past that no radical changes have been found necessary for 1916, but the machines have been improved in many minor details. Models H and K are both equipped with 4¼ h.p. engines, 85×98 mm. bore and stroke (556 c.c.). The former is chain-driven throughout, the chains being enclosed in cases, and a shock absorber is attached to the engine-shaft; the latter is fitted with chain-cum-belt transmission. Both models have a three-speed gear on the countershaft giving ratios of approximately 5, 8, and 12¾ to 1. The whole range of these gears can be raised or lowered by fitting sprockets of different sizes. A kick-starter is mounted on the gear box. The T.T. model has, of course, an engine under 500 c.c., the size being the popular 85×88 mm. This model is belt-driven and fitted with a variable pulley giving gears of 4¼ to 5¾ to 1.

A Semi-automatic Carburetter.

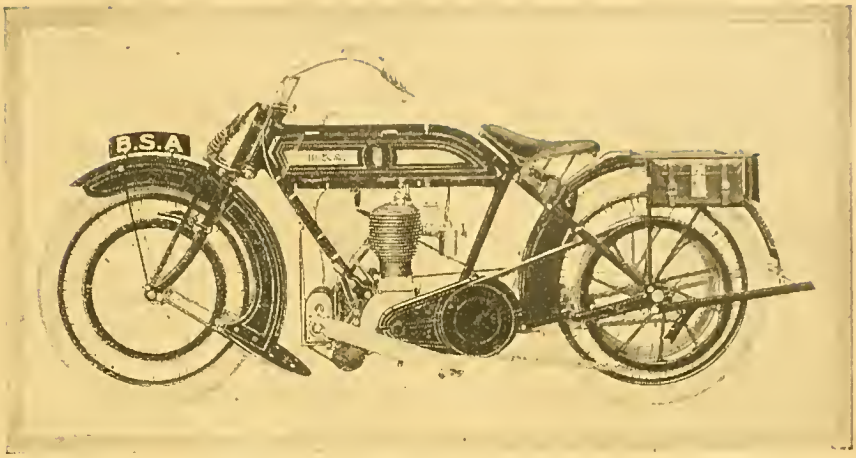
The B.S.A. carburetter with adjustable jet is fitted to all machines; this is fitted with an improved top feed, which is said to prevent flooding, and renders the machine very flexible. The number of nickel plated parts has been much reduced with the object of making the machines more weatherproof, and Pellolit enamel—a British invention—is used instead on the whole frame. This, as our readers know, has special virtues in appearance, durability, and power to prevent rust. No less than four coats are given. The frames are strengthened where necessary with steel liners, and the top tubes are butted at the head.

The B.S.A. front and rear brakes both operate on the inside of the V of special belt rims, the former being applied by the right hand and the latter by the left foot, and both wheels can be taken out without disturbing the brakes or connections—a very real advantage.

The tank holds 1¾ gallons of petrol and 2½ pints of oil, lubrication being by semi-automatic sight-feed drip.

B.S.A. Sidecars.

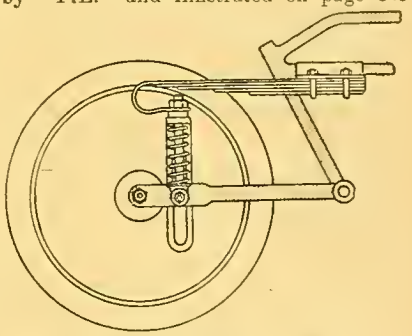
The B.S.A. machines, being strong and powerful, are largely used for passenger purposes, and two sidecars are constructed by the B.S.A. Co. Both are coachbuilt, and No. 2 is provided with special springing at the rear in the shape of helical springs enclosed in cylinders, the front being supported on leaf springs. The wheels of machines and sidecars are shod with Dunlop or Palmer cord 26×2½in. tyres, with the exception of the T.T. model, which has 2½in. tyres. Brooks or Xl'All saddles are fitted at the purchaser's option.



The 4¼ h.p. B.S.A. may also be obtained with chain-cum-belt transmission. B.S.A.'s are to have weatherproof finish in 1916.

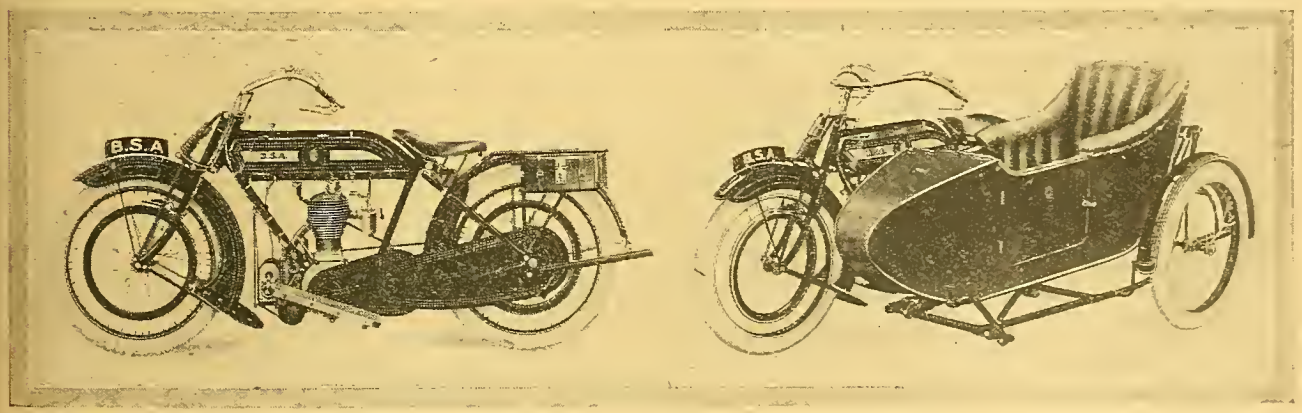
A REAR-SPRINGING DEVELOPMENT.

WE have received from a reader—"E.R.," of Liverpool—a suggestion for the further development of the rear springing device developed by "F.L." and illustrated on page 345



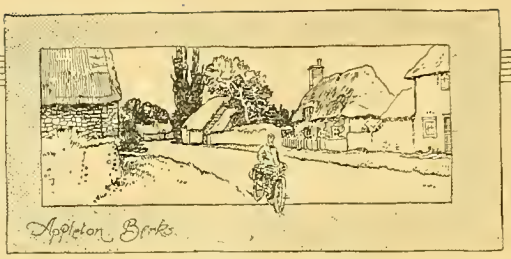
System of rear suspension suggested by E. R., of Liverpool,

of the issue of October 7th. The accompanying sketch shows "E.R.'s" scheme. In addition to the spiral spring employed by "F.L.," and which it is intended to enclose, there is a leaf spring attached to a plate secured to the bottom rail.



The 1916 model 4¼ h.p. B.S.A. with and without sidecar. This machine has a three-speed countershaft gear and all-chain drive. The single-cylinder engine is 85 mm. × 98 mm. bore and stroke.

CURRENT CHAT



SPECIAL FEATURES

SPRING FRAME DESIGN (Illustrated).
INTERNAL ENGINE RESISTANCE (Illustrated).
THE CULT OF THE HOME-MADE SIDECAR (Illustrated).

TIMES TO LIGHT LAMPS

Oct.	21st	5.56 p.m.
,,	23rd	5.51 ,,
,,	25th	5.46 ,,
,,	27th	5.43 ,,

In London half an hour earlier.

Main Roads in Kent.

A Folkestone correspondent has kindly supplemented the information given under the above heading in *The Motor Cycle* of a fortnight ago. He reports that the entire main road to Dover *via* Maidstone, Ashford, and Folkestone is now in good condition, with the exception of a short stretch near Harrietsham at present undergoing repair.

Trade with China.

British motor cycle manufacturers wishing to enquire into the possibilities of cultivating business in China will be interested in the Board of Trade announcement that one of their commissioners, Mr. T. M. Ainscough, has just returned after studying the conditions and prospects of British trade in China. Mr. Ainscough is prepared to see by appointment representatives of British firms at the offices of the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, E.C.

James Machine Stolen.

A twin-cylinder James, No. 65,302-5,390, registration No. LD 2,952, has been stolen from outside a restaurant in Oxford Street. The rightful owner, Mr. P. O. S. Nichols, 10, Stone Building, Lincoln's Inn, W.C., would be glad of any information leading to its recovery.

Duty Payable on Imports.

An arrangement in connection with the collection of duties on foreign imports of motor vehicles, which is likely to prove very awkward to importers, is the decision of the Excise and Customs authorities to collect the duty at the current rate of exchange from day to day. It would appear from this decision that importers will never know what their goods are costing, and therefore will be unable to make any fixed prices to their customers without risk. A certain large importer has called our attention to the matter, and stigmatises the rule as being most unbusinesslike and uncalled for. The writer points out that the Government would certainly not be the losers if it made a fixed rate of exchange to be in force for a period of six months or more. Importers would then know exactly what their goods were costing them for a reasonable length of time, and would fix their prices to customers and agents with a certainty of a profit.

A Standard of Lighting.

We should not be at all surprised if the authorities do not shortly come to some definite decision concerning a universal standard of lighting for all motor vehicles.

Motorised Perambulators.

As showing the influence of motoring, the latest in baby perambulators have disc wheels. Everything must be speedy nowadays! It has been suggested that Auto-wheels might be attached to perambulators, and, with suitable controls for the occupants, nurses could be dispensed with!

Beating the Mail Train in South Africa.

A 7 h.p. Indian and Gloria sidecar has recently been driven from Johannesburg to Durban, a distance of 420 miles, in 18h. 29m. P. E. Hunt, of Johannesburg, and R. H. Jordan, of Durban, rode the machine, and Messrs. Williams, Hunt and Co., of Johannesburg, who are the Indian agents for all South Africa except the Cape province, inform us that the time is record, and beat the mail train by no less than five hours and nine minutes. The average speed of 22.7 m.p.h. at first thought may not seem high, but to keep to this continually for eighteen and a half hours over South African roads (and all types are encountered between Johannesburg and Durban) is no mean achievement. We are told that not a single mechanical adjustment was necessary.

A Chaplain's Motor Cycle

A member of the M.M.G.S. in Flanders relates how he had an A.J.S. to tune up for the chaplain. A small nut fell into the crank case. Smearing some grease on the flywheel he slowly rotated the pulley, and the nut was picked up on the first revolution. The machine was soon in use again.

Lieut. C. E. Holaway, R.F.C., who is at present in France with the B.E.F. Mr. Holaway is the designer of the Edmund spring frame motor cycle, reference to which has on more than one occasion been made in *The Motor Cycle*

Motor Cyclists in the A.S.C.

We extract the following promotions of motor cyclist officers in the A.S.C. from the *London Gazette:*

To be temporary Captains—Guy Lee Evans, J. Gibson.

To be temporary Lieutenants—B. C. Barton, J. C. Chater-Lea, E. A. Colliver, S. A. Rowlandson, C. L. Scott.

Proposed Services Hill-climb in Scotland.

The suggestion to hold a competition in Scotland for motor cyclists attached to the Services is still being discussed in Scottish motor cycling circles. At the moment the trouble is to find a hill convenient for Glasgow, Stirling, and Edinburgh.

Average Prices

We give below the average prices of second-hand machines offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model, the average for the past week is quoted. Otherwise, the last average within the past month is given.

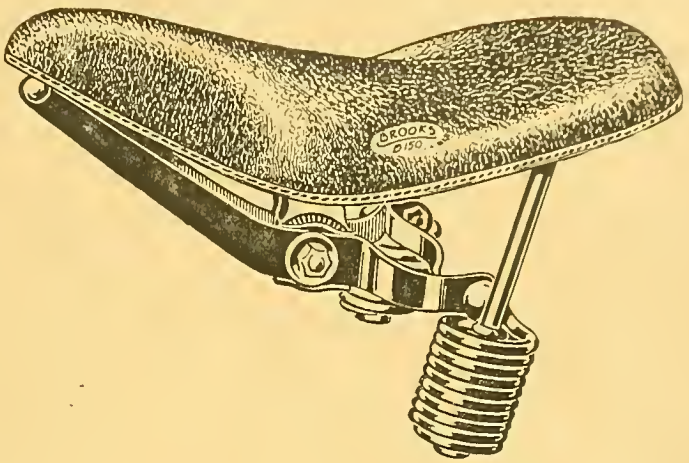
Make.	Year.	H.P.	Average for last week.	Latest weekly average obtainable
A.J.S.	1914	6 3-sp. sidecar	—	£72
,,	1913	6 3-sp. sidecar	£56	—
,,	1915	6 3-sp. sidecar	£81	—
,,	1914	2¾ 3-speed	—	£44
Allon	1915	2¾ 2-speed	—	£32
Ariel	1914	3½ 3-sp. sidecar	—	£65
,,	1913	3½ 3-sp. sidecar	£43	—
Bat	1914	6 3-sp. sidecar	£60	—
Bradbury	1914	6 3-sp. sidecar	—	£60
,,	1913	4 3-sp. sidecar	—	£40
B.S.A.	1915	4½ 3-sp. sidecar	£67	—
,,	1914	4 3-sp. sidecar	—	£59
,,	1913	3½ 2-sp. sidecar	£46	—
Calthorpe	1914	2 2-speed	£19	—
Clyno	1914	6 3-sp. sidecar	—	£73
,,	1913	6 3-sp. sidecar	£52	—
,,	1914	2¾ 2-speed	£32	—
Douglas	1914	2¾ 2-speed T.T.	£42	—
,,	1914	2¾ 2-sp. kick start	£43	—
Enfield	1914	6 2-sp. sidecar	£63	—
,,	1913	6 2-sp. sidecar	£51	—
,,	1914	3 2-speed	£41	—
,,	1915	3 2-speed	£45	—
Harley-Davidson	1915	7 3-sp. sidecar	£69	—
Humber	1913	3½ 3-sp. sidecar	—	£37
Indian	1914	7 2-sp. sidecar	£60	—
,,	1914	7 2-speed	£50	—
,,	1914	7 T.T. free engine	—	£46
,,	1915	7 3-sp. sidecar	£74	—
Ixion	1914	2½ 2-speed	£25	—
James	1915	4¼ 3-sp. sidecar	—	£65
,,	1914	4¼ 3-sp. sidecar	—	£53
Lea-Francis	1913	3½ 2-speed	£42	—
Levis	1914	2½ 2-speed	—	£30
Matchless	1914	8 3-sp. sidecar	—	£75
,,	1913	8 2-sp. sidecar	£58	—
New Hudson	1914	6 3-sp. sidecar	£59	—
New Imperial	1915	2½ 2-speed	£27	—
,,	1914	2½ 2-speed	—	£28
O.K.	1914	2 2-speed	—	£25
P. & M.	1914	3½ 2-sp. sidecar	£59	—
,,	1913	3½ 2-speed	£43	—
Premier	1914	3½ 3-sp. sidecar	£49	—
,,	1913	3½ 3-sp. sidecar	—	£41
Rex	1914	6 3-sp. sidecar	—	£60
Rover	1914	3½ 3-sp. sidecar	£58	—
,,	1913	3½ 3-sp. sidecar	£44	—
Rudge	1914	5 multi sidecar	—	£48
,,	1913	3½ multi sidecar	£40	—
,,	1913	3½ multi	—	£34
Scott	1914	3¾ 2-sp. sidecar	—	£52
,,	1914	3¾ 2-speed	£44	—
,,	1913	3¾ 2-sp. sidecar	—	£48
,,	1913	3¾ 2-speed	£38	—
Singer	1913	4½ 2-sp. sidecar	—	£43
Sunbeam	1914	6 3-sp. sidecar	—	£82
,,	1914	3½ 3-sp. sidecar	—	£73
,,	1914	3½ 3-speed	£59	—
,,	1915	3½ 3-speed	£65	—
Triumph	1914	4 3-sp. sidecar	£54	—
,,	1914	4 3-speed	£46	—
,,	1913	3½ 3-sp. sidecar	£45	—
Williamson	1914	8 2-sp. sidecar	—	£71
Zenith	1914	8 Gradua sidecar	—	£70
,,	1914	6 Gradua sidecar	—	£56

When we tell you that our B 150 is very much more comfortable than any other lightweight motor cycle saddle on the market, we state what we know to be a fact.

We designed B 150 with the firm intention of producing the best saddle we could possibly make, bearing in mind the special requirements of the lightweight rider, and we say quite definitely that we have done so.

Scientifically modelled and padded, and beautifully sprung on BROOKS patent compound springs, B 150 guarantees your perfect comfort.

J. B. BROOKS & CO., LTD.,
49, CRITERION WORKS,
- - BIRMINGHAM. - -



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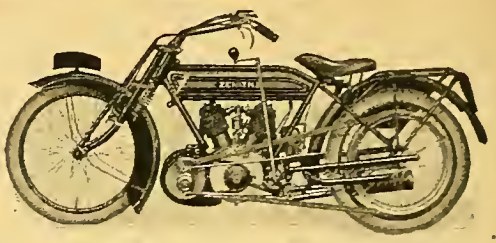

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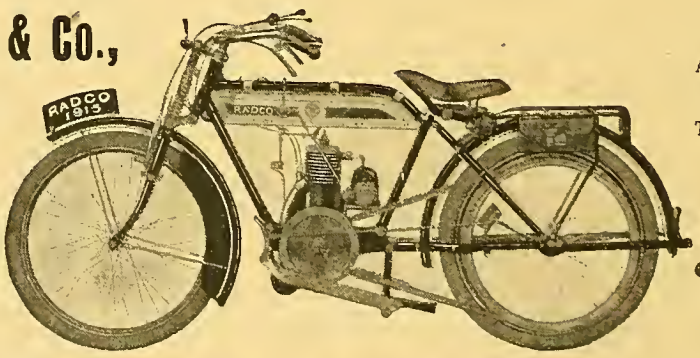

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A Sad Accident.

We regret to see that a lady motor cyclist was the victim of a fatal accident which occurred in North London on October 9th. The lady in question, Mrs. May Boulter, was travelling to Essex for the week-end with her husband, and both were mounted on motor cycles. Mrs. Boulter collided with a motor ambulance outside the Southgate Council Offices with the fatal result mentioned.

A Useful Book.

The third edition of "Tracing Troubles" is now to hand, and on sale everywhere, price 1s. It is a handy volume which deals with all the faults to which motor cycles are liable, showing how they can easily be discovered, and the best method of rectifying the trouble. To use the author's own words, "Its purpose is to educate the novice out of his normal 'Hit and Miss' method of tracing troubles, and afford to all a systematic means of diagnosing troublesome symptoms and of curing the faults they indicate." This new edition has been thoroughly revised and a considerable amount of new material added, especially in the section which deals with the two-stroke type of motor cycles, in view of the vastly increased number of two-stroke engines now in use.

New Models and "The Motor Cycle."

During the past few weeks quite a number of 1916 models have been described in *The Motor Cycle*, many of them exclusively, and for reference purposes these are outlined as follow :

A.B.C. 250 c.c. engine, September 30th.
Bramble sidecar, August 19th.
Brough 3½ h.p. twin, September 9th.
Calthorpe two-stroke and 4 h.p. twin, October 7th.
Connaught two-stroke, October 14th.
Douglas 4 h.p. twin, October 7th.
Dunkley two-stroke sidecar, October 14th.
Edmund-Jap 2½ h.p., with spring frame, October 14th.
Indian two-stroke lightweight, October 14th.
Ivy two and four-stroke, October 14th.
Low generator, July 8th.
New Imperial, October 14th.
O.K., October 14th.
Scarlet two-stroke, August 19th.
Service lightweight sidecar, September 2nd.
Ward two-stroke, September 30th.
Wulfruna, October 14th.
Yale 7 h.p., October 7th.

The current issue contains many more 1916 machines, thus showing that in spite of Government work some firms find time for improving existing models, if not turning out entirely new designs. The following machines are described :

B.S.A.
Indian 7 h.p.
J.E.S. lightweight.
Levis.
New Ryder two and four-stroke models.
Norton sidecars.
Revere.
Zenith.

No Import Duty on Sidecarriers.

As will be seen from one of the leading articles in this issue motor cycle sidecarriers are to be included in the commercial vehicle exemption from the 33⅓% import duty now in force on pleasure cars, motor cycles, and parts. We pointed out to Mr. McKenna the desirability of exempting these popular and useful business three-wheelers, and the following letter received in reply shows such will be the case :

Treasury Chambers, Whitehall, S.W.
October 14th, 1915.

Dear Sir,—In reply to your letter of the 4th inst., I am desired by the Chancellor of the Exchequer to inform you that motor cycle sidecarriers will be exempt from duty if the importer proves to the satisfaction of the Commissioners of Customs and Excise that they are constructed for use solely in the conveyance of goods in the course of trade, and are intended to be so used, and also undertakes to comply with any regulations as to marking which the Commissioners of Customs and Excise may make.

Yours faithfully,
ALAN PARSONS.

A Coast-to-coast Despatch Ride.

A VERY interesting experiment has been carried out by the motor cycle section of the Sheffield Volunteer Defence Corps in the form of a coast to coast and home despatch ride.

Three riders left Sheffield on Saturday last for Grimsby (seventy-eight miles) to be in readiness for an early start on Sunday morning.

These three riders (Sergeants Rathmell and Fletcher and Private Dover) duly presented themselves to the officer in charge at Grimsby Central Police Station armed with letters of authority from the Chief Constable of Sheffield (Major J. Hall Dalwood), who is Regimental Commandant of the Corps, to claim the despatches there awaiting them to be conveyed to the Officer Commanding Old Swan Police Station, Liverpool, a distance of 155 miles. The three riders then had to return to Sheffield, making a total distance of 312 miles.

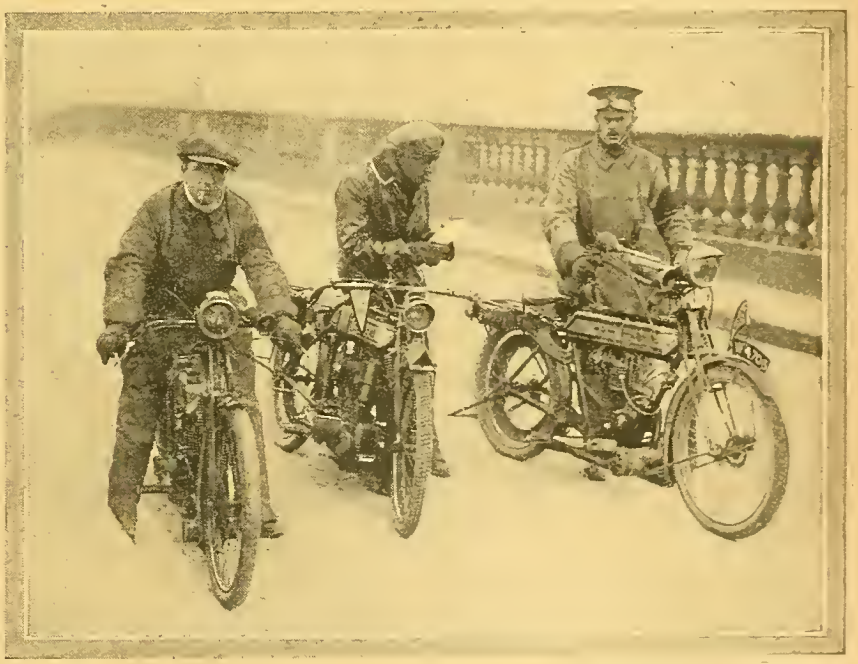
All were away at 7.5 a.m., and went well together for some distance. At Market Rasen Sergeant Rathmell was unfortunate in having the valve of the oil pump on his Rudge-Multi blocked, which caused trouble, but he made for Gainsborough, where Privates Haslam and Blake were to meet the riders. Here he handed over the despatch to Haslam and Blake for conveyance forward to Liverpool.

Sergeant Fletcher by this had taken the lead on his 6 h.p. A.J.S. and sidecar. At Sheffield he had twenty minutes' lead on Private Haslam, who had now made up time and got into second place. This was by no means an easy ride, the riders having to enter Sheffield between certain points and avoid being captured by a force of scouts, who were patrolling the high roads and byways in the hope of capturing the despatch riders.

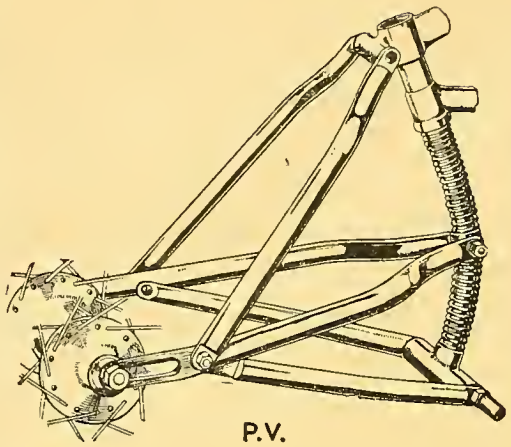
So far as we are aware, no captures were made, all the riders succeeding in getting through.

The first men to arrive at Old Swan, Liverpool, were Sergeant Fletcher and Private Haslam, who tied and share the honours. On handing in the despatch at Liverpool, they received a reply to be conveyed to the Chief Constable at Sheffield.

The following distances were covered by the respective competitors during the week-end : Sergt. Fletcher (6 h.p. A.J.S. and sidecar), 312 miles (the only man to complete the whole journey); Pte. Dover (7 h.p. Indian and sidecar), 300 miles; Sergt. Rathmell (3½ h.p. Rudge-Multi), 262 miles; Pte. Haslam (3½ h.p. Ariel), 220 miles; Pte. Blake (2½ h.p. Levis), 210 miles.



Members of the Sheffield Volunteers (Motor Cycle Section) in the coast-to-coast despatch ride. Pte. Haslam taking over despatch from Sergt. Rathmell at Gainsborough bridge



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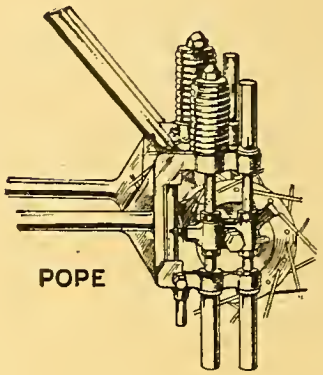
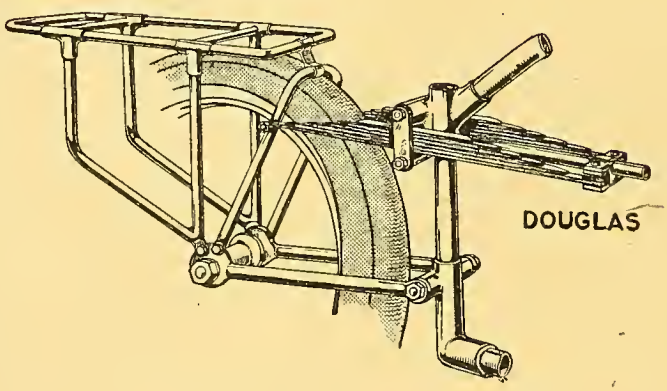


POPE

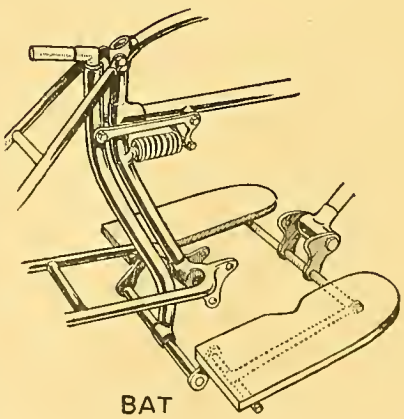
THE SPRING FR

A Selection of Char

OUR readers need no reminder of our firm belief that the motor cycle of the future will have a spring frame; for years past we have encouraged this by every possible means. More than usual attention has been focussed on the problem this year, and this may be put down to several causes, among them being the ever increasing demand for spring framed machines from Overseas and the deterioration of roads throughout Great Britain due to the excessive military transport occasioned by the war. A casual glance through issues of *The Motor Cycle* during the



DOUGLAS



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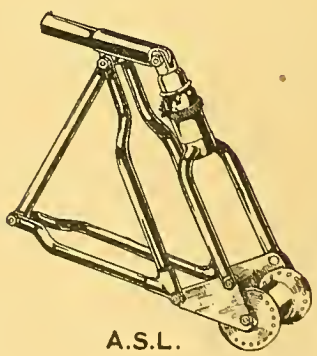

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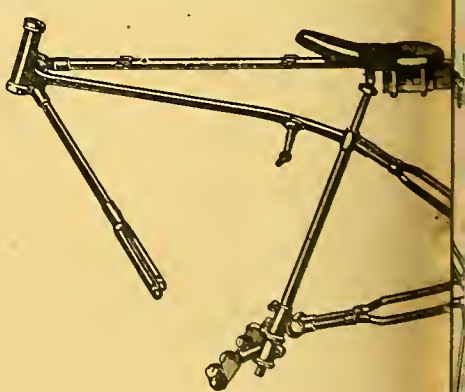

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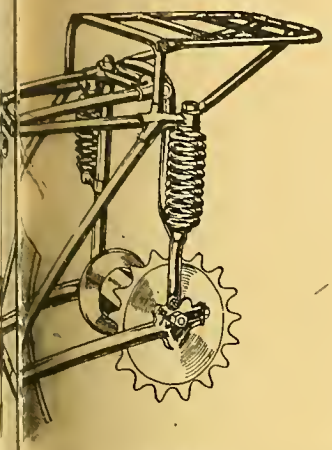
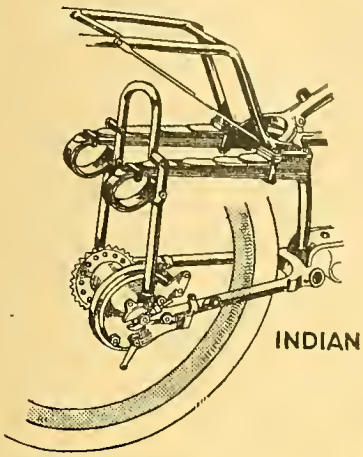


MATCHLESS.



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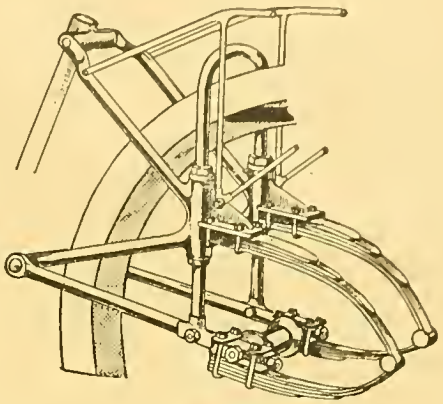
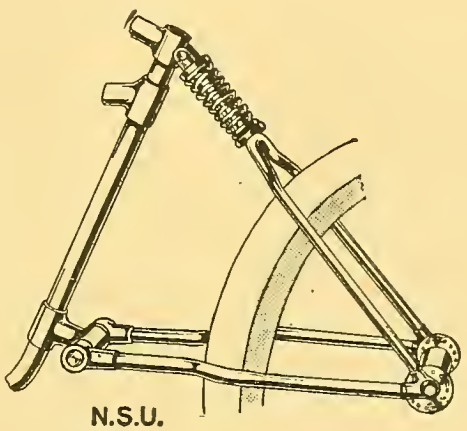


VAN GEERT

FRAME PROBLEM.

Characteristic Designs.

The past few months will show the activity being displayed in this direction by designers and makers, and it has been considered an opportune moment to place before our readers a collection of drawings showing some well known rear springing systems and other designs which have followed our campaign in favour of rear sprung motor cycles. The sketches are practically self-explanatory, but it should be added that the problem of satisfactorily springing the rear portion of a motor cycle is by no means an easy one; the difficulties to be overcome are more numerous than would appear at first sight.



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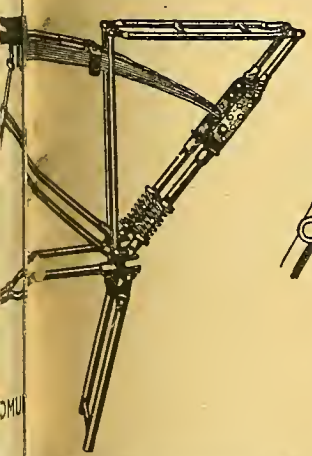
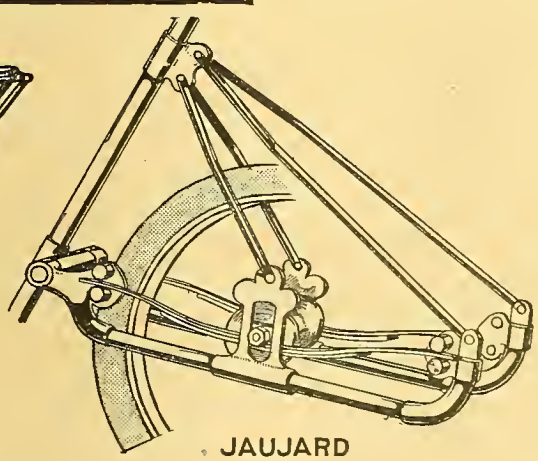
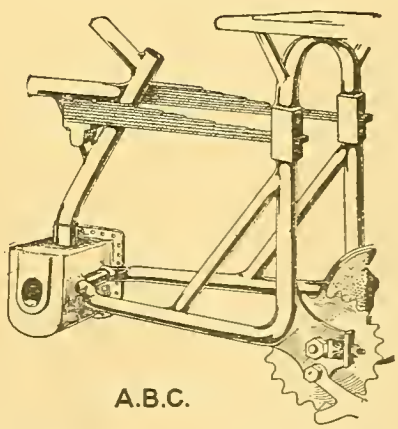




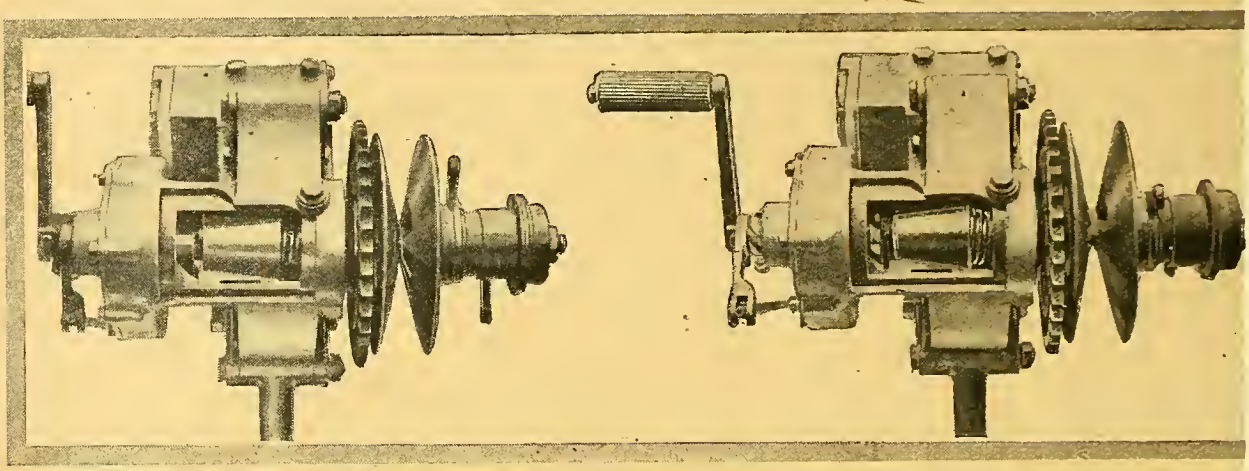
JAUJARD



A.B.C.

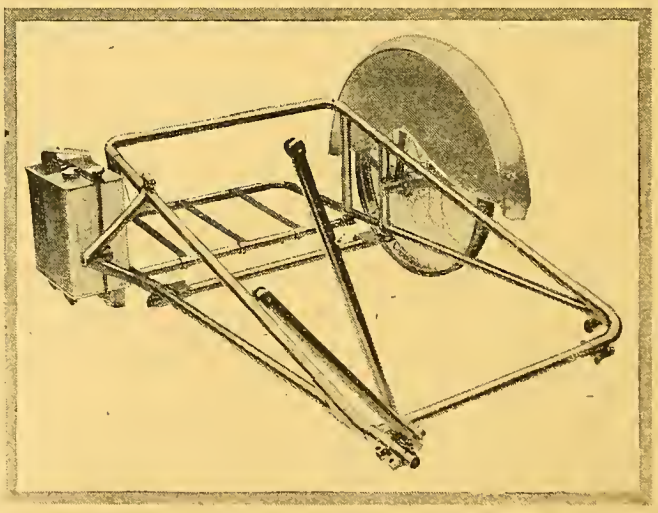
ZENITH 1916 IMPROVEMENTS.

Detail Modifications tending to Increased Simplicity—Good Sidecar Design.



Zenith clutch and kick starter. (Left) Clutch in engagement. (Right) Clutch out.

THERE are to be no drastic alterations in the 1916 Zenith models, but such alterations as there are show ingenuity and reflect great credit on the company's gifted engineer. In the accompanying illustrations we show some hitherto unpublished details in the countershaft clutch and gear. Of these one illustrates the clutch out of engagement. It will be noticed that it is of the cone pattern, the male portion being steel and the female portion phosphor - bronze. When the cone clutch is in, the engine will drive the machine, but on the slightest sign of slip the dog clutches (shown on the extreme left of the illustration) engage, and this operation is effected by means of a light spring. It will be seen, therefore, that all the smoothness of the usual cone clutch is preserved, but, notwithstanding, there can be no clutch slip, as the drive becomes entirely positive. The belt prevents the transmission from being in any way harsh. A groove in the male portion of the clutch collects any surplus of oil, which when the machine is running is thrown by centrifugal force through holes on to the female portion.



New Zenith sidecar chassis showing interesting frame design.

Easy Chain Adjustment.

The countershaft gear box, or rather clutch and kick starter casing, is pivoted at its base, and to adjust the chain it is only necessary to undo a nut and make use of a chain adjuster accessibly placed above it. A somewhat similar improvement is also carried out in the mounting of the magneto, the bracket of which is pivoted below its centre. A leg from the rearward end of the bracket has a slot in its extremity through which a bolt passing through a lug in the frame engages. If this bolt be unscrewed the bracket may be swung through a distance equal to one chain link. By this means the adjustment of the magneto chain may be effected in the simplest possible manner, and without any possibility of disturbing the alignment.

What is known as the "back section" in the Zenith frame has been considerably improved. It is what in other motor cycles would be called the chain stays, and its improvement consists in the simplification of its m facture. The forward end, instea consisting of five lugs, is now a s malleable steel casting. Yet an small innovation is the provision new clutch pedal giving increased l age, and a slower movement in eng or declutching.

The Zenith Sidecar.

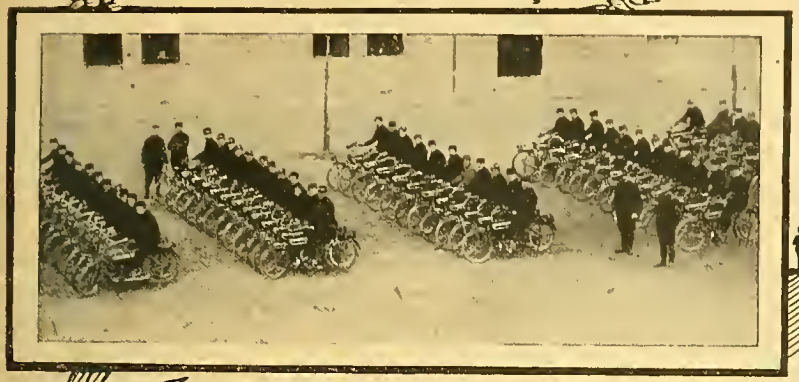
The chief novelty is the new Z sidecar, which is really an exc piece of work. Its chief features its triangular duplex side mem the rear member being also duplex has a spacious carrier at the rear, a simple and ingenious spare petrol carrier. It possesses also triangu stayed brackets to carry the whe one side and the chain stay attach on the other. It is altogether supp at four points, and possesses the fu advantage of being composed e sively of straight tubes.

Returning to the bicycle, we mention the excellent brackets or slightly offset secondary tube of frame. These are cast in one witl lugs, and after rubber buffers have placed on these the tank is screwed place. This is an excellent arr ment, and allows the tank to be f fixed in place.

BRADBURY PROGRAM

NO change is to be effected i specification of Bradbury mac for 1916, though two mode this popular make are to be drawn. The 4 h.p. single two- chain-cum-belt, or all chain to ord not to be supplied during the cc year, and the same applies to the 3½ three-speed horizontally-opposed These reductions are the result o Bradbury works being almost en taken up by the manufacture of a tions, and it is to be feared that d 1916 the Bradbury Co. will remain a the many leading makers whose o of machines will necessarily be limit

With the French Army at Montluçon



With the FRENCH ARMY against the common foe

Thousands of riders of "TRIUMPH" Motor Cycles have found Clinchers the perfect tyres. Triumphs and Clinchers hand in hand have given these motor cyclists nothing but pleasurable riding. Triumphs and Clinchers together have become a watchword of efficiency.

The French Army has added to its fighting force a very large number of Triumphs—a few of which, photographed at Montlucon Barracks, are shown above. That Triumphs and Clinchers will give the same service in the firing line as they have given on peaceful roads is certain. Our Gallant Allies will find Clinchers are ready for any demands upon their efficiency. Over the worst roads, under real war conditions, the lives of the men who ride them will be at the mercy of their tyres, and Clinchers will not fail them.

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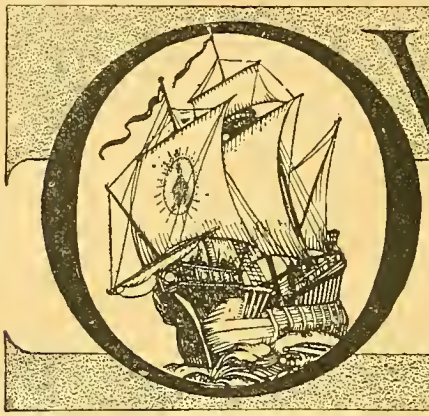

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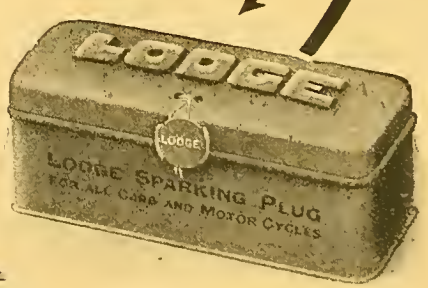

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NEW NON-FRAY SPIRAL (Patented)

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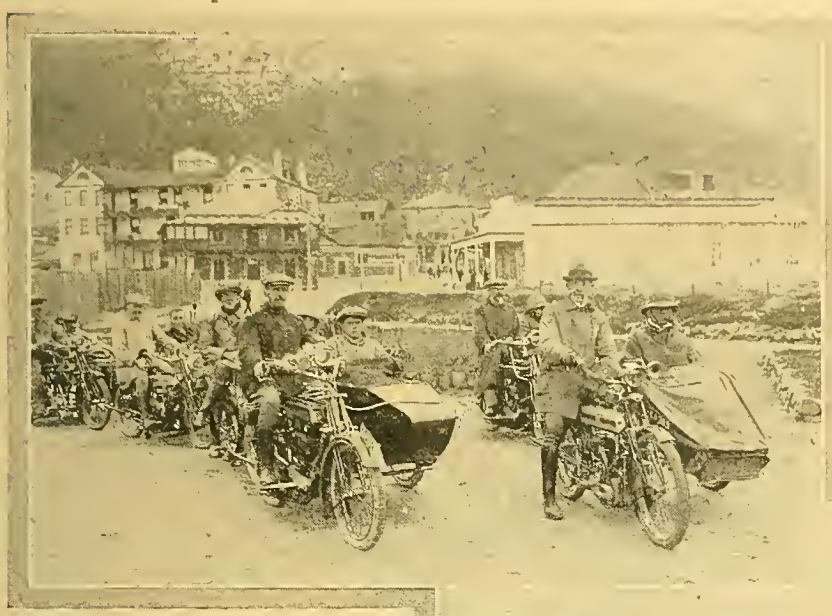
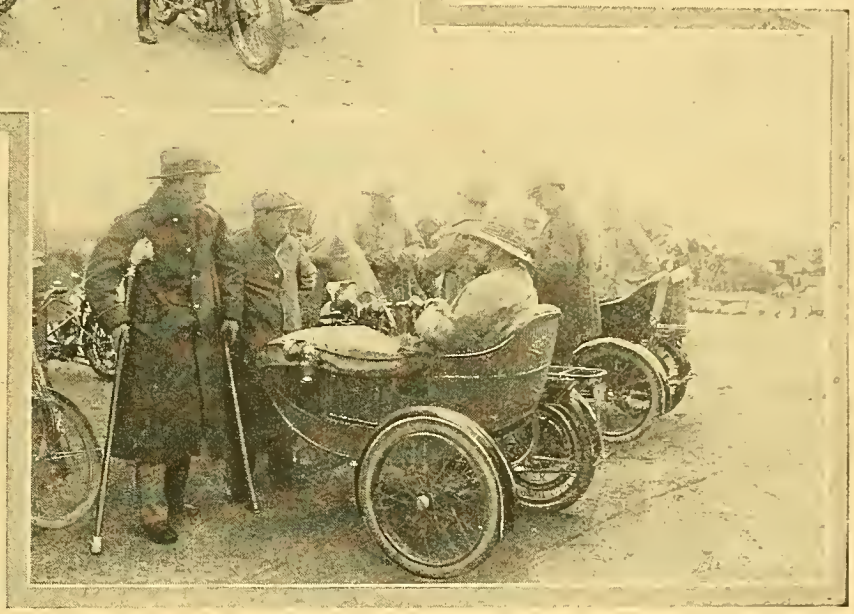
Sidecar Run for Wounded Soldiers at Cape Town.



A run organised by Cape Town motor cyclists for the benefit of wounded heroes.

CAPE TOWN motor cyclists, following the example set by English riders, have of late been organising sidecar outings for soldiers wounded in Botha's successful campaign in what was German South-West Africa. Many of the more badly wounded are now well on the way to recovery in the Cape Town hospitals, and the sidecar outings have undoubtedly quickened the convalescence and made the time more pleasant for the gallant men. Although winter in that part of the world, the runs have been very much appreciated by all, and Cape Town motor cyclists take it as an honour to be able to give some pleasure and assist in the complete recovery of their fellow countrymen.

The accompanying photographs were taken when a party was conveyed from the military hospital at Wynberg to the seaside resort of Minzenburg, which our Cape Town correspondent describes as the Brighton of South Africa. But, judging by the photographs of Minzenburg, we can only conclude that our correspondent has never seen Brighton or heard a true account of it.



A Petrol Consumption Test in Scotland.

THE Glasgow Club had a hill-climb on the card for the second Saturday of the month, but, owing to the new petrol duty, the fixture was changed to a petrol consumption test and postponed for a week. It was duly held on Saturday last over a triangular course, starting and finishing at Clarkston, one of the southern suburbs of Glasgow. The conditions of the contest were of the simplest nature. Competitors were required to furnish on their entry forms particulars of the weight of their machines and their cylinder capacity, and on arrival at the starting point were required to empty their tanks. Each man was then supplied with a measured quantity of fuel, and the rider who covered the greatest distance on his allowance was declared the winner. The competition was regarded purely as a sporting event, few, if any, of the entrants taking the trouble to tune their machines. There were nine starters, and the result was as follows:

	Rider and machine.	c.c.	Miles ridden.	m.p.g.
1.	D. Quinton Bell (6 A.J.S. sc.) ...	750	39	79½
2.	G. H. Cutbush (5-6 Ariel sc.) ...	700	26	63
3.	A. J. C. Lindsay (3½ Rover) ...	500	24	131

The winner used a Binks carburetter.

A Suggested Hill-climb.

It appears to be somewhat doubtful if the suggested service competition in Scotland will now take place. Owing to various circumstances the only possible form that the meeting could take would be a hill-climb, and it is difficult to find a suitable hill accessible to riders from both Edinburgh and Glasgow. It has been proposed to hold a separate competition in each district, and if anything at all is done it will probably be in this way. Mr. J. T. Fulton, the secretary of the Scottish A.C.U., states his willingness to bring the matter before the Competitions Committee of that body if any general desire for a contest is shown.

MILITARY NOTES.

MOTOR CYCLISTS IN THE RED CROSS.

MECHANIC FRANK BROWN, of the British Red Cross, in sending us the photograph reproduced on this page, says that they have a few motor cycles used for despatch carrying. These are mainly Douglas, Rudge, B.S.A., and Bradbury, and they are standing up remarkably well to the hard work. When the photograph was taken the men had just finished cricket practice, the wickets used being pieces of a mined boat washed ashore a few days previously. Brown says that a football would be welcomed if any reader would kindly send one.

A FORMER T.T. RIDER IN GALLIPOLI.

NOEL E. DRURY, the well-known Irish motor cyclist, who regularly figured in the early Tourist Trophy races, has written to the *Irish Cyclist* from Gallipoli. It is one of the most interesting letters from men on service we have read, the description of life on the Peninsula being vivid in the extreme. It is good to know that motor cycles are still being used out there, as Drury refers to a couple of Douglas-mounted despatch riders. "I nearly shouted for joy the other day. I heard what I thought was a tremendously fast machine gun, which I thought at first was moving. Imagine my surprise to find a despatch rider forging his way along on a Douglas! What a grand sound he made, and how it reminded me of less bloody battles fought in the Isle of Man."

Drury has a commission in the 6th Batt. Royal Dublin Fusiliers.

A few British Red Cross mechanics, all keen readers of *The Motor Cycle*, enjoy a game of cricket on the sands in Northern France. The little girl building sand castles, and the French officer sleeping in the deck chair in the background, make it difficult to realise that the photograph was taken within the war zone.

"THE MOTOR CYCLE" RECRUITING SECTION.

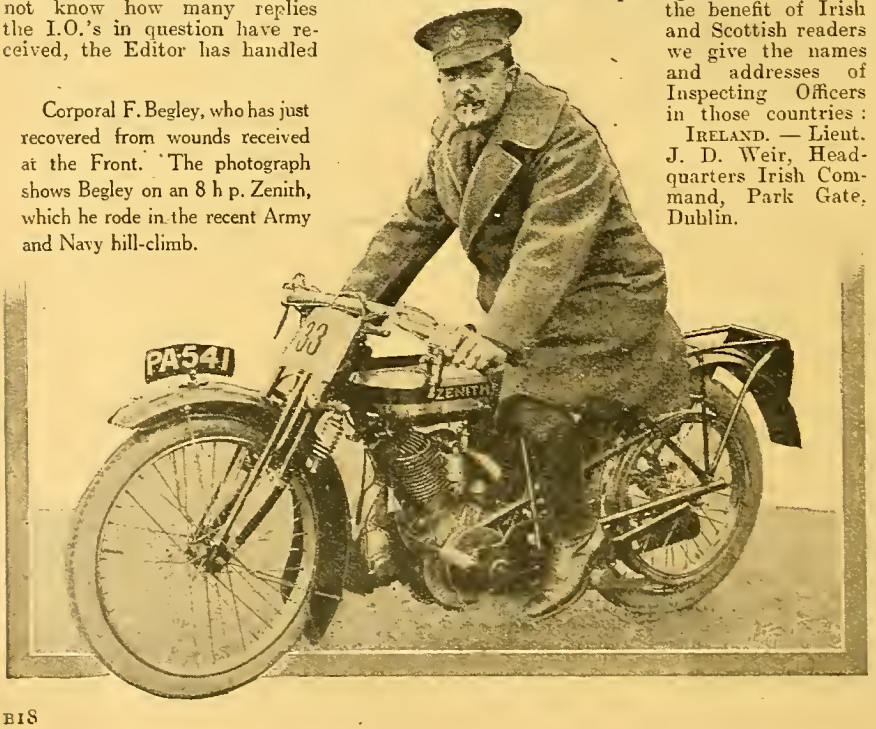
SPLENDID RESPONSE TO APPEAL FOR DESPATCH RIDERS.

THERE has been an excellent response to the appeal for despatch riders published in our last issue. It may be recalled that we gave the names and addresses of nine inspecting officers for different districts, and though we do not know how many replies the I.O.'s in question have received, the Editor has handled and dealt with fifty-three applications, many of them from Ireland and a number from Scotland. In each case full particulars of enlistment have been issued, and the applicants referred to the nearest Inspecting Officer, but for the benefit of Irish and Scottish readers we give the names and addresses of Inspecting Officers in those countries:

IRELAND. — Lieut. J. D. Weir, Headquarters Irish Command, Park Gate, Dublin.

SCOTLAND.—Highland Divisional Area: J. H. Thomas, 52, Tay Street, Perth. Lowland Divisional Area: Lieut. J. B. Mayor, 1st Highland Field Coy., Highland Divisional Engineers, 21, Jardine Street, Glasgow.; Major M'Bean, Officer Commanding, Royal Engineers, 21, Jardine Street, Glasgow.

It is surprising that certain recruiting offices still turn away motor cyclists who make enquiries, with some such remark as "We are not recruiting for despatch riders." Surely, the War Office should issue definite instructions to all R.O.'s on the subject of men for the technical sections of the Army.



Corporal F. Begley, who has just recovered from wounds received at the Front. The photograph shows Begley on an 8 h.p. Zenith, which he rode in the recent Army and Navy hill-climb.

With applications received from prospective recruits for the R.F.C. and car drivers and mechanics for the A.S.C. (M.M.G.S.), the total of applications dealt with by the Editor from motor cyclist recruits now comes to 4,554.

Three recruits last week rode from Dewsbury (Yorks.) to Coventry on a 6 h.p. Enfield sidecar. This is keenness to be admired, but it is always well to make an appointment beforehand.

Gerald Hadfield and William Norman arrived from Johannesburg last week, having paid their own passages home specially to enlist. They are now driving cars with the M.M.G.S.

Experienced car drivers and mechanics with workshop experience are still wanted. Applications should be addressed to Mr. Geoffrey Smith, Editor *The Motor Cycle*, Coventry.

LETTERS TO THE EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Four-stroking on Two-strokes.

Sir,—As some of your readers have complained that their two-stroke machines four-stroke, it may be of use to mention my own experience. I have a 2½ h.p. Alldays-Matchless (Villiers engine), which insisted on four-stroking with any but the smallest throttle opening. I came to the conclusion that with a wider throttle the mixture must be too strong, so changed my jet (Senspray 32) for a 28. This has completely cured the trouble. I may mention that this little machine is capable of taking me up gradients of 1 in 7, where a sharp corner at the bottom compelled a slow start, and will run miles at 25 to 30 m.p.h. without a trace of overheating. I can get 110 miles out of a gallon. The machine is single geared.

TWO-STROKE.

Boycotting German Motor Cycles and Accessories.

Sir,—Whilst heartily sympathising with the spirit of "Delta's" letter (published in *The Motor Cycle*, September 2nd), may I suggest that one important phase of the question has, to a great extent, been overlooked. I refer to the behaviour of British magneto makers. Perhaps a narration of my own recent experiences will best explain my meaning.

A short time ago the contact breaker screw (a slender pin about 1½in. × $\frac{3}{16}$in.) of my U.H. magneto snapped, leaving the threaded end in the armature spindle, but with a large piece projecting above the thread, yet so far down in the hollow of the tunnel as to require a long fine-nosed tool to grip. With some such tool as a dentist's fine forceps it would have been but the work of a minute to grip and unscrew, whilst I could make the new pin myself in a few minutes. However, I had no suitable gripping tool, so sent off the magneto *(less* magnets) to a firm which advertised it could return repairs in a day. I may say that before the pin snapped the instrument was in first-class order, giving very strong current, contact breaker clean, with points almost as new, and there was absolutely no sign of condenser trouble.

In a week or so I had a *pro forma* invoice from the repairers charging for repairs to "faulty" condenser, new contact breaker screw, remagnetising (the magnets were on my workshop shelf!), overhauling contact breaker, and trimming "points," etc., £1 8s. 6d. (The makers' price for broken screw renewal in 1914 list was 5s.)

Of course, it was self-evident they were "making a job"; but what was I to do, for I wanted the machine at once for business purposes, and to have it I must pay as above. Accordingly, under protest, and hoping to receive the magneto at once, I sent the money, pointing out the difficulty they must have experienced over the remagnetising. In reply, they returned me 3s. 6d., saying the charge for remagnetising was an oversight! but no magneto. Eventually, after three weeks it arrived. I examined it. The contact breaker was very dirty, and had traces of rust, so I decided to inspect the armature. What a mess! The makers' finish had been really fine, but now! Well it suggested to me the "boggling" of an old cobbler.

It is said that British magneto makers hope to obtain and retain home trade. I would put this proposition to them. If they may reasonably so hope they must treat their customers approximately as fairly as the German makers did.

Of course, makers must charge highly in these troublous times. I would not have objected, in the above case, to a charge of 10s., but to charge 25s. for a 2s. 6d. job, and, at the same time, unnecessarily to reduce one's platinum points is, I submit, unreasonable.

Possibly, I was unfortunate in my choice of repairers, yet I think it would be well for makers to remember that the war will come to an end some time, and German competition probably be resumed; and I would suggest to fellow riders who may have experienced extortionate treatment that they keep a mental black list of those who thus treat them.

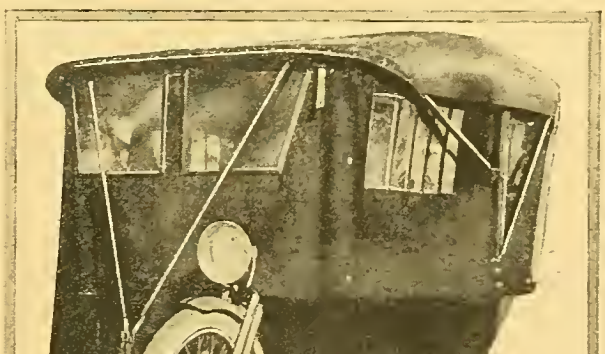
I heartily wish well to British trade, and this is one of my chief reasons why I have written so lengthily, for which, sir, I ask your kind indulgence. It seems to me that a gentle reminder to, and for the good of, the trade is desirable.

SLIDE-REST.

A COPY OF THIS LETTER WAS FORWARDED TO THE FIRM REFERRED TO, AND THEIR REPLY IS APPENDED:

"We are in receipt of your favour to hand, and the writer has looked into the complaint in question. An inspection of our works records would enable you to form your own judgment as to whether care is taken in the carrying out of our repairs. In fact, we shall be very pleased at any time for your representative or even your readers to inspect our works.

"We received 'Slide-rest's' magneto and his definite instructions to carry out any repairs necessary. Had we received any complaint from 'Slide-rest' as to our work, we should have been pleased to make careful enquiries into this. There certainly was a little delay in returning his magneto to him, owing to our annual holidays, to the enormous holiday rush we experienced, and also, the parts his magneto required being unobtainable from the makers, to the fact that we had to make them specially. We might also add that the Government is taking almost our entire output of magnetos and parts, and we are undertaking the magneto repairs for the Mechanical Transport."—For THE RUNBAKEN MAGNETO CO., LTD., J. H. Runbaken, managing director.



A Harley-Davidson sidecar outfit, in which both driver and passenger are completely enclosed. With present-day designs of passenger machines the occupant of the sidecar only is catered for in respect of protection against the elements, and the above way of meeting the case is highly interesting

Leicester Signposts.

Sir,—It may interest you to learn that upon publication of your paragraph in the issue of Sepetmber 16th, page 287, referring to "out-of-date signposting in Leicester," the Automobile Association got into communication with the local authorities on the matter, suggesting the alterations necessary for correct signposting of the road referred to.

We have now heard from the local authorities that our suggestion will be adopted.

STENSON COOKE, Secretary, A.A. and M.U.

A Satisfactory Two-stroke.

Sir,—I read with interest in your issue of October 14th a letter *re* "A Satisfactory Two-stroke," and, like the Editor, should like to know how Mr. A. D. Webb gets his range of speeds from 2 to 45-50 m.p.h.

I should like to give my experiences of a New Hudson two-stroke, which I purchased in May this year; since then I have covered 4,000 miles. I consider my machine the fastest two-stroke here (Beaminster), but I do not think I can exceed 35 m.p.h. It is a 2¼ h.p. two-speed, and I have always got from 120 to 130 m.p.g. until recently, when my consumption dropped to 75 m.p.g., but after a little adjusting I am getting 120 again. I started a 548 mile tour on August 22nd, and my longest runs per day were 170 and 140. On the day I did 170 miles I only dropped down to low gear three times, which I consider exceptionally good. This was from Salisbury to Fenton, Stoke-on-Trent. On the whole distance I averaged 19¾ m.p.h., and during the 548 miles I only used 4½ gallons of petrol (No. 2), so I do not consider Mr. Webb's average m.p.g. exceptional, especially on benzole, as I believe an engine is supposed to go further on a gallon of benzole than on a gallon of petrol.

I may say I have no connection with the New Hudson makers, but am a very satisfied rider. BILL BAILEY.

A Motor-assisted Bicycle.

Sir,—So much has been written in your and other papers of what should become of the motor cycles and motor cyclists after the war that I beg to submit to you an idea for which I have been fighting in the French papers for some years, and which you will perhaps find interesting under the present circumstances.

I am a cripple. Not a war cripple, although I was a soldier some twenty years ago, but after having typhoid fever I lost the use of my left knee, left elbow, and right wrist, and I became very subject to rheumatism, and my joints tire quickly.

Well, I suppose that after the war there will be many a one in similar case. So I am emboldened to go on. Up to the time of my fever (1904) I was an occasional motor cyclist and a very ardent cyclist; in fact, the privation of my cycle was certainly what I felt most. After two years of sticks and crutches I took to cycling again, and, after many experiments, I possess now two multi-geared bicycles on which I can go almost anywhere, but, owing to my weakness, twenty miles per day is my maximum.

So, naturally, I turned my eyes to motors. I had five motor cars, but the joys of motoring in those expensive outfits serve only to make more bitter the remembrance of my journeys on my bicycle. So I bought motor cycling papers, and began to learn what was possible for me in the future.

My past experiences and a few tries soon taught me that the motor cycle was not for me. The speed and consequent draught of air alone would be sufficient to prevent my buying one; but also I knew that the motor cyclist must be physically a fit man, ready in all his limbs for all emergencies, and last, but not least, I did not want speed. I wanted merely some small contrivance to do exactly what I did with my legs—an average of 12 m.p.h. and a return by train if necessary.

I enquired after the auxiliary motors, French and English, and after many references and letters, bought what I thought the best, namely, an Auto-wheel, and as I go every year to Aix-les-Bains for a cure, I took it with me for trying the mountain roads. My experimenting did not go far, for I fell and broke my collarbone.

Nothing like a broken bone for thinking. I reflected then that a cyclist had only a power of ¼ h.p., and that a bicycle was built to that power. That to put upon it a 1 h.p. outfit was at the same time wasting power and trying terribly the frame and wheels, and, lastly, that if a ¼ h.p. man could go anywhere with a suitable gear, there was no reason why a ¼ h.p. motor, aided occasionally with the pedalling ¼ h.p. man, should not also go anywhere with the help of a suitable gear and adequate cooling.

How can such a small motor be made is the secret of the future; but it occurred to me that it could have the following lines: Two-stroke, mechanical lubrication with oil in a sump (like a Velocette), chain drive with a sprocket, the gearing down from the motor being 1 in 10 or in 12.

Such a motor should go anywhere, and the consumption should be very low, perhaps 200 miles to the gallon. Perhaps it could be made for £10; but if any good maker will sell me such a one I am quite ready to pay £20 for it, and take it to the Alps by way of experiment.

What of the cooling? The joint powers of the cyclist and the motor would probably negotiate the stiffest Alpine roads at about 5 m.p.h.,-the stiffest gradients being about 1 in 7. But, owing to their lengths, overheating would perhaps be a trouble, but it would be very simple to fit a fan frictioning on the external flywheel of the motor.

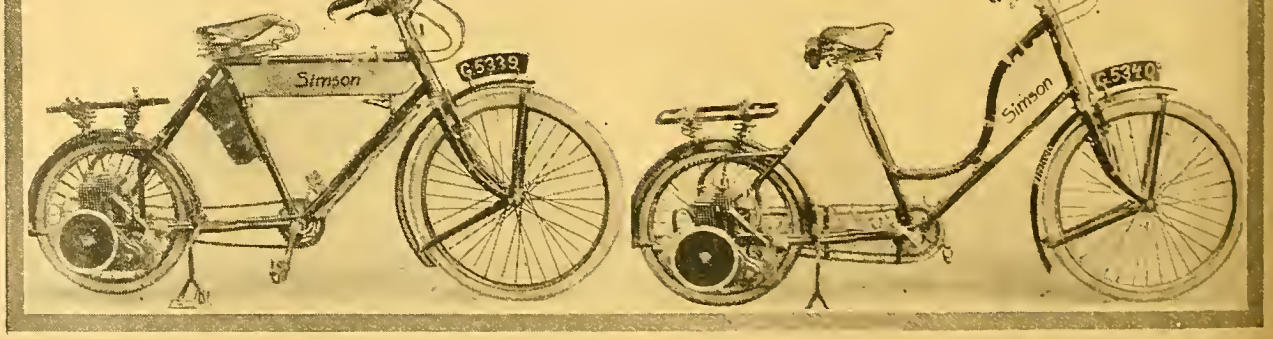
This is a war letter—that is, a letter of a man who, being unable to do his bit, finds the time very long indeed, especially as he passed the three most glorious years of his life learning, and subsequently teaching, the mysteries of the "75." M. QUESNEY.

Rouen.

A Dutch Lightweight.

Sir,—With regard to Mr. E. F. Boyd's appeal, I beg to enclose photographs showing how an Auto-wheel is built into the frame of a bicycle instead of being attached at the side in the usual manner. The price of a new frame is £9.

Amsterdam. SAM VAN DER MARK.



Auto-wheel fitted in place of rear wheel of pedal cycle (See letter on this page.)

Engine Rattle in Two-strokes.

Sir,—It was with very great interest that I read "Oile's" article on two-strokes in your issue of October 7th, for I at one time experienced the selfsame trouble with one of the first 2¾ h.p. two-stroke Dalm engines, made by Messrs. Dalman and Sons.

In my case the rattle occurred when the engine was turning at about 2,300 r.p.m. or 29 m.p.h. road speed. I went to considerable trouble to try and diagnose the cause of the rattle, and experimented with various plugs, as well as trying them in different positions at the top of the cylinder and at the side, but with no beneficial results. After some time I came to the conclusion that it must be due to the expansion of the piston head. I wrote, therefore, to the makers, who informed me that I might cure the trouble by filing a little metal away from the side of the piston above the top ring. This I did, and for some time the rattle ceased. One day, however, it started again, and once more I filed off a little more metal, which cured the noise for about 300 miles, when once more I heard the now familiar rattle. So having had enough of it I wrote to the manufacturers, who requested me to send them the engine in order that they might test it; this they did at their own expense, as well as fitting a new type of piston giving a much greater clearance above the top ring. After this my trouble ceased until I had run about 800 miles, when it recommenced. So I removed the cylinder, and found that a carbon film had become deposited on the side of the piston head, and by the glaze on the carbon I could see that there was no longer any clearance between the head and the cylinder walls. I removed the carbon, and the engine no longer rattled. Since then I have run 3,000 miles, and each time the rattle starts I clean the piston and the trouble stops.

It is very difficult to make any definite suggestion as to why "Oile's" engine suddenly ceased to rattle after running 850 miles from the time of the second overhaul, but in all probability the reason is that the cylinder has become slightly worn, thus allowing more room for the piston to expand; or the carbon film has become detached from the side of the piston head owing to the tapping, and thus left the piston free to expand.

As to the use of Harcourt radiators, they make a wonderful improvement to the running of the engine, especially when a sidecar is fitted, for it is possible to run for miles with the engine "all out" without the slightest signs of overheating, and since fitting them I am no longer troubled with the sparking plugs giving out—my last plug, a single-pointed one, has run over 3,000 miles. C. S. ROSCOE.

Sir,—Like your correspondent in *The Motor Cycle* of October 7th, I have followed the correspondence and articles on "two-strokes" with interest. This excellent article has induced me to send you some notes on my experience with a Popular Levis, which may prove of interest to your readers. I used my Levis daily for business and pleasure from October 6th, 1914, to May 30th, 1915, when I transferred to a 2¾ h.p. twin, four-cycle, but I must admit that I have never had the same fondness for the latter, and I shall eventually go back to the two-stroke.

In a general way my mileage is made up of runs of two and a half to nine miles over very bad surfaced roads, mostly level, but with some short, sharp gradients—one of about 1 in 10. The Levis averaged about 90 m.p.g. In very wet weather I was troubled with belt slip on the stiff gradients, but the feature of the two-stroke which appeals to me is the wonderful torque of the engine at low speeds, for by throttling down until the belt ceased to slip I could invariably mount the hills at slow speed. One engine pulley was worn out at about 1,000 miles, so I had a new one made which increased the gear from 6 to 1 to 5¾ to 1. There was no appreciable difference in hill-climbing, but the general running was improved.

When I sold the machine at about 3,000 miles the original Dunlop belt was still in good condition, and the engine pulley was just visibly wearing.

The original plug—mica, of unknown make—single point, gave no trouble whatever up to about 600 miles, when I began to get trouble in starting. I did not blame the plug at first, because as soon as the engine started firing it would continue quite regularly. There was no spitting or coughing; nothing happened as I sprinted alongside until the engine commenced to fire with perfect regularity. I began to dread starting, although it usually started beautifully after paddling three or four strides. I never knew but what I might be in for an exhausting struggle. I had taken everything to pieces and discovered nothing several times, until one day I only got an occasional spark at the plug when I jerked the magneto around. I bought a multi-point Lodge plug, and my starting trouble was at an end. The same plug was running when I parted with the machine. I tried a new Bosch single point plug on one occasion, but took it out after about a mile of misfiring. This Bosch plug ran perfectly afterwards in a friend's Douglas.

At about 2,000 miles the Levis developed a habit of suddenly rattling and coming to a standstill on stiff gradients. Examination showed that the engine was not unduly hot, the spark was all right, and the carburetter flooded. I would paddle off quite easily, having done nothing. At last, when it rattled and stopped I did not bother to look for the trouble but just waited about half a minute, keeping astride the machine, and then paddled off again without trouble, but it puzzled me. If I started away at the foot of my steepest gradient the machine usually went up without any trouble; if I came over this same hill, having travelled any distance beforehand, it invariably rattled and stopped. It seemed like overheating, but the cylinder was never unduly hot.

About this time I got off my usual beat and rode to Bristol, a distance of 140 miles. The engine rattled and stopped on every stiff hill, and on some of the long pulls it showed the same symptoms, but by immediately throttling down I managed to keep going. On the Calne Downs I decided to try if I could produce the same result on the level, so I opened out and rode hard. About three miles was enough, the rattle began, I kept the throttle open, but came to a standstill. My average speed to Bristol, including all stops, was 20 m.p.h. During the run I tried a new plug, and tried varying the oil drip, but with no effect on the rattle and stop. At Bristol I pulled things to pieces again, taking the carburetter (Amac) and petrol pipes and magneto right off. Everything appeared to be in good order, but in putting back the float I pushed the needle out and with it the small piece of gauze on the intake of the float chamber. This gauze was covered with fine fluff about ½in. thick, which I scraped off. On trying the machine again there was no holding it on hills—no need to humour it—full throttle all the time. I covered the distance from Bristol to Reading (79½ miles) on the return journey in just under three hours, without a sign of rattle, and with no involuntary stops.

From Reading to home (Bexley Heath) I rode easily. By keeping the gauze free from fluff I was never troubled with rattle again. The two-stroke appears to be very sensitive to petrol adjustment, unless it is on the strong side. I experimented with a smaller jet and gradually opened it out with a broach until I was satisfied with the result. On then comparing it with my original jet I found the difference to be almost negligible—something under half a thousandth difference. My experience of two-strokes is confined to the Levis, where I got no rattle so long as I kept the petrol pipes free. May I suggest that on some makes the level in the float chamber is not well enough maintained when the demand is great, such as in hill-climbing or speed work on the level.

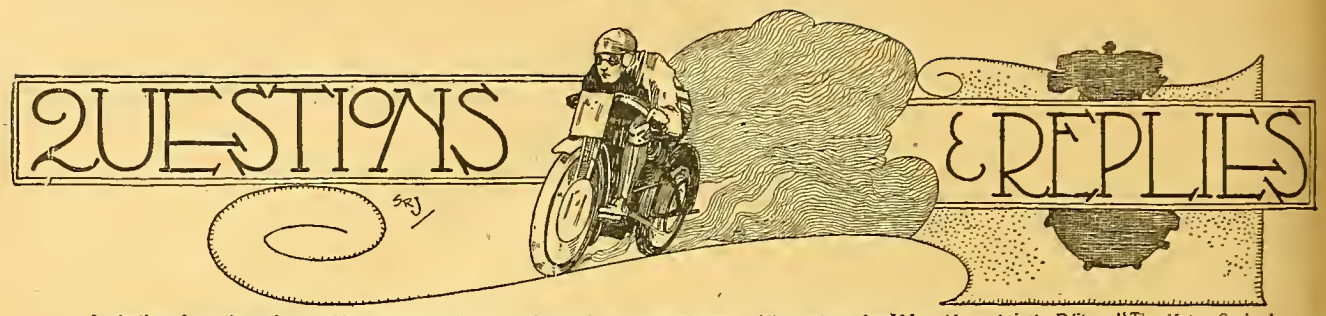
I never had any trouble with four-stroking when starting. May I suggest that this is more likely to occur with the petroil system, where the proportion of oil in the float chamber may be too great after the machine has been standing and the petrol evaporating. The drip feed on the Levis gave no trouble except that it was difficult to estimate the correct position of the adjustment. On the run to Bristol and back the oil consumption was at the rate of 1,020 m.p.g. and petrol 107 m.p.g.

I tried the Levis of a friend who complained of electric shocks from his handle-bars at high speeds. It was like a strong shocking coil. The makers suggested that the belt was bottoming in the engine pulley. A new pulley proved to be an effective cure.

I took my engine to pieces three times for cleaning, and found very little carbon deposit, no tendency for the rings to stick, and the bearings in fine condition

I sold my Levis because I wanted something faster, and as I use my motor cycle every day, in all weathers, the belt slip was a decided nuisance, but the Levis had its points, and I parted with it with a feeling of regret.

SAN KONTWEIT.



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Petroil Lubrication for Four-strokes.

I have a 3½ h.p. sidecar combination. Could you inform me if, in your opinion, I should get better results if I mixed lubricating oil with the petrol? —P.H.

The petroil system cannot be used alone for a four-stroke engine, but mixing a little lubricating oil with the petrol is sometimes beneficial in the case of a new engine.

Laying Up a Motor Cycle for the Winter.

Could you tell me what to do with a motor bicycle which is going to be out of use for three months?—R.T.G.

If you wish to lay up the machine, the best plan is to jack both wheels off the ground; that is to say, put the back wheel on the stand, and, if a front stand is not provided, hang the machine from the ceiling with a rope round the handle-bars, so that the front wheel is off the ground. This will save the tyres. Cover all bright parts with vaseline.

Leaky Crank Case.

I have received my engine back from the makers after having a new cylinder, etc., fitted. It is now greatly improved in running, and the only fault I have to complain about is that oil oozes pretty freely from the crank case joints—not the cylinder joints. This is particularly noticeable in the region of the magneto, where oil oozes from beneath, all round, and runs down the crank case. The oil also comes out of the crank case joints beneath the cylinders. In short, the engine gets into a filthy mess after quite a short run, and it is no use trying to keep it clean. What effect will this have ultimately on the running? I have tightened up all nuts without effect, and should like to know if it is possible to cure this without taking the crank case apart, which I have no desire to do, seeing the engine has been so recently overhauled.—J.W.K.

You cannot cure the trouble without taking the engine down. A brown paper washer soaked in boiled linseed oil should be placed between the faces of the crank case; or the faces coated with gold size or fish glue, after having been carefully cleaned. A serious leakage of oil will necessitate a more liberal use of the lubricating pump.

Benzole as a Fuel.

I find, after many experiments, that I get far more power in using pure benzole than is the case with a mixture of benzole and petrol. Unfortunately, in cold weather, benzole alone is apt to freeze. I should be greatly obliged if you would inform me what is the very smallest proportion of petrol mixed with benzole which would check the freezing of the mixture.—T.H.

You may use a mixture of one-third or one-quarter petrol and the rest benzole; this would prevent freezing. We should be interested to know if you are still able to buy benzole, as we have heard that all supplies have stopped. It certainly cannot be purchased in London or the Midlands.

Difficulty in Starting.

I have a 1909 Triumph, which I find very hard to start; one has to get up a good running pace before it gets away. This, of course, is very exhausting, and I often fail to get up enough pace if tired. Several people have given me suggestions. Can you inform me as to whether these are correct? If not, how I can remedy difficult starting. The suggestions are: (1) To rebore the carburetter, which I think is needed; (2) to fit a decompressor.—H.T.

The secret of easy starting is a strong mixture and a small quantity of it. The more frequent causes of bad starting are air leaks at the carburetter and induction pipe unions. As regards your suggestion, we do not know what you mean by reboring the carburetter. Do you mean reboring the cylinder and fitting a new piston? This is often necessary in the case of machines which are five or six years old. The fitting of a decompressor would be of some service to you.

THE MOTOR CYCLE Buyers' Guide

OF 1916 MODELS.

THURSDAY, Nov. 25th, 1915.

Since 1906 the Buyers' Guide has proved a much appreciated feature of this journal. In the absence of a Show, a Buyers' Guide of 1916 models becomes an urgent necessity. Thursday Nov 25th has been selected as the date of this issue.

An Extraordinary Noise.

During a run of ninety miles on my 1911 3½ h.p. an awful rattle started in the engine, and at the same time the engine fired very weakly. This went on for half a mile, when the rattle stopped and the engine fired ordinarily. This happened on and off for the whole journey. Please explain this. I may say the platinum on one of the points is very nearly burnt off. Would this cause the trouble? If so, why?—D.A.S.

We should say that there is something loose in your crank case, a gudgeon pin screw, for instance. We can only advise you to have the engine taken down and carefully examined. The noise could hardly be caused by a burnt-out platinum point, but it is quite likely that this would cause a bad attack of misfiring. The burnt platinum point should, of course, be renewed if it cannot be trued up.

Starting Trouble.

I have a 3½ h.p. single which has lately developed a strange obstinacy in starting from cold, although when warmed up will start quite easily and fire perfectly at either high or low speeds. Even after giving injection by compression tap it will only fire spasmodically and erratically after a good deal of pedalling, and goes on like that, missing and firing alternately for about a minute until warmed up. I have plugged up the holes in the carburetter barrel, but this makes no difference. There is no air leak that I can discover. I have fitted a new high tension cable, and get a spark with plug touching cylinder, though under compression it does not seem to fire. I have cleaned and adjusted points both close and wide without making any difference, also cleaned carbon brush and collector ring.—W.McK.

Your trouble is certainly extraordinary. If an engine is particularly obstinate at starting, there is one remedy which is nearly always certain to help matters, though it is a slightly inconvenient one. This is to detach the sparking plug, hold it upside down, and fill the cap thereof with petrol, then quickly screw it into the engine and push off. We should recommend you to try this, and see if it brings about the desired results. We shall be interested to hear if it does. Also see that your spark gap is not too close; try a gap of about 1 mm. It is possible that the valve is a bad fit in the guide, thus admitting air.

8000 miles without even a single puncture

286, Worsley Road,
Swinton, Manchester.
September 30th, 1915

Messrs. The Kempshall Tyre Co.

Dear Sirs,—For the past 15 months I have ridden a 7.9 h.p. Indian Combination (1914) fitted with your anti-skid tyres; I have travelled over all sorts of roads, the Welsh passes included.

I have ridden 8,000 miles without even a single puncture, and the tyres are still in perfect condition. I cannot speak too highly of the even wear and durability.

I should think that a run of this distance on three wheels without the least tyre trouble, not even a puncture, constitutes a record.

I have just exchanged my machine for a 1915 model.

Yours truly,
(Signed) J. CROSSFIELD.

The KEMPSHALL Tyre Co. (of Europe), Ltd.,
97, 98, LONG ACRE, W.C.
Cambridge Street Rubber Works, Manchester.
'Phone: 244 Gerrard (2 lines). 'Grams: "Studless, London."
Coventry—G. R. Bromley, Warwick Chambers, Warwick Row.
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A wonderful record on KEMPSHALL TYRES

C.D.C.

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PORTABLE WOODEN BUILDINGS

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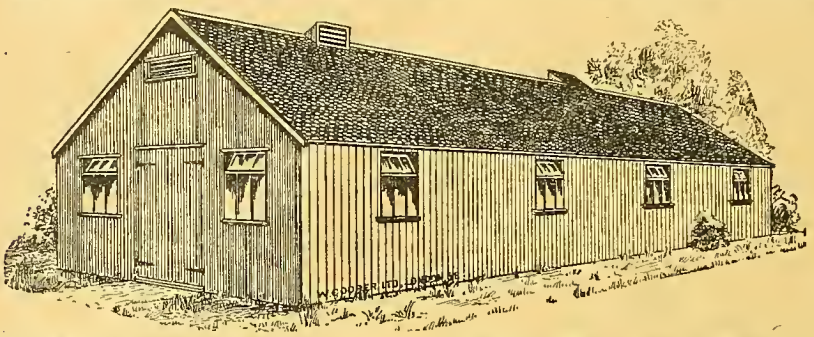
SPECIFICATION.—Substantially constructed Sides and Ends in 15ft. and 10ft. Sections respectively, with Window and Ventilation in each Section. Framework of 2in. by 3in. and 2in. by 4in. (according to size) well seasoned Timber covered with stout Tongued and Grooved Matchboards. Roof of strong Principals and Rafters with Tongued and Grooved Boards and good stout Felt covering. No Floor. Complete with Doors, Bolts, and Screws. Any handy men can erect. Carefully put on rail at Works. Any size despatched in three days.



Length. ft.	Width. ft.	Eaves. ft.	Ridge. ft	Price. £	Length. ft.	Width. ft.	Eaves. ft.	Ridge. ft.	Price. £
30	15	7	12	30	60	25	8	15	100
45	15	7	12	45	90	25	8	15	150
60	15	7	12	60	120	25	8	15	200
45	20	8	14	60	60	30	8	16	120
60	20	8	14	80	90	30	8	16	180
75	20	8	14	100	120	30	8	16	240
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'Phone—943, Mayfair.

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Enlarged section dealing with Two-stroke motor cycles.

New section dealing with electric lighting dynamos as applied to motor cycles.

Price **1/-** net. By Post, **1/2**

From Iliffe & Sons Ltd., 20, Tudor Street, London, E.C.

And leading booksellers and bookstalls.

Difficulty in Starting.

(1.) I have a 2¼ h.p. two-speed two-stroke motor cycle which has done just over 200 miles. Lately I have found it hard to start (it has not a free engine) after it has been idle for a day or two. After pushing it a little it partly starts, and then stops again. This occurs until it gets hot, then it starts, and I have no more trouble with it, and it runs well. Could you explain the trouble to me as I am a novice? (2.) The machine does about 50 m.p.g., but I think it ought to do much more.—E.T.

(1.) You might get over the difficulty by injecting a little petrol, placing the machine on the stand, and starting it by pulling over the back wheel, then let it run for half a minute. This should have the effect of warming up the engine, and it should then start easily on the road. (2.) The petrol consumption is certainly excessive. Possibly you have too large a jet fitted, or there may be leaks at the petrol unions—at the filler caps if you fill the tank too full, and at the carburetter float chamber through a piece of grit under the needle. A great deal of petrol is wasted in this manner. You should attend to the petrol level, use as small a jet as possible, and give plenty of air when driving.

Freight Charges to Canada.

I beg to enquire of you as to the maximum cost of sending a cycle car or light car out here to Saskatoon, including all charges both freight and duty, if any; also motor cycle. In this Western country the roads, or rather trails, are not a patch on the worst roads in the Old Country; but for experiences they are unrivalled, as one has to carry almost a miniature workshop on trips of any distance. The one big fault with my 7 to 8 h.p. two-speed twin is the clearance between the crank case and ground, and oftentimes I have to "reverse" (?) and "go on" again, picking my trail as I travel. Quite a difference from riding for miles without having to worry about what kind of road you are going to travel on next, as in England none of these worries confront you. You speak about and also organise hill-climbs, etc., but you should come and try some of our "sand and mud" climbs over here, then you would get all the reliability test you wished for; still, however, it is part of the sport, and one gets used to it. It is a nice sort of experience to ride along in the dark and suddenly find oneself looping the loop over a newly-ploughed field, and then one comforts oneself by reflecting "This is the life." Another nice sensation is running into a slough, or dyke, as it is impossible to see what sort of ground one is coming to on account of keeping one's machine in the trails. However, it is fascinating, nevertheless.—G.K. (Saskatoon, Canada).

The shipping charges from London to Saskatoon for a cycle car or light car, also a motor bicycle, would be as follow: Cycle car or light car not exceeding 25 cwt., or 10ft. 8in. × 5ft. 2in. × 5ft. 3in. when packed, £44 1s. 2d.; motor cycle not exceeding 2½ cwt., or 5ft. 4in. × 1ft 8in. × 3ft. 2in. when packed, £8 5s.; motor cycle not exceeding 3 cwt., or 5ft. 4in. × 1ft. 8in. × 3ft. 2in. when packed, £9 7s. 8d. The above rates include packing and shipping expenses in London and ocean freight, but not insurance, landing, clearing, and delivery expense abroad. We understand the duty on motor vehicles of British manufacture is 27½% *ad valorem*.

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"R.B." (Devon). — 2¾ h.p. Lady's Douglas, two-speed, for light sidecar work. Efficiency and reliability.

"E.B." (Kingston).—Omega two-stroke, two or three-speed. Ease of starting, consumption, efficiency, and suitability for touring in hilly districts.

"J.S." (Liverpool).—2¾-3 h.p. Connaught two-stroke. Reliability and petrol consumption.

"J.H.D." (Ireland).—2¾ h.p. Douglas (three-speed), with Rally or Grosvenor sidecar. Speed, hill-climbing, reliability, and upkeep.

"R.G.E." (Gosport).—Babcock bypass fitted to an Amac carburetter on 5-6 h.p. Ariel for slow running.

"C.A.C." (Lancaster).—J.E.S. auxiliary set compared with an average lightweight.

"J.H.J." (Dover).—3½ h.p. A.B.C. T.T. model. Maximum speed, petrol consumption, wear on tyres, and hill-climbing.

"P.D.T." (Glasgow).—3¾ h.p. Victoria. Comfort, speed, reliability, consumption, and hill-climbing, solo, and with sidecar.

"E.G.M." (Saltcoats). — Four-cylinder F.N. Reliability and consumption.

"A.H.D." (Luton).—Grado pulley for 2½ h.p. engine.

RECOMMENDED ROUTES.

CARDIFF TO COVENTRY and distance.—INTERESTED READER.

Cardiff, St. Mellons, Newport, Chepstow, Lydney, Newnham, Gloucester, Tewkesbury, Evesham, Bidford, Stratford, Warwick, Coventry. Approximately 110 miles.

NEWPORT TO HUDDERSFIELD.—E.R.G.

Newport, Usk, Monmouth, Ross, Worcester, Kidderminster, Bridgnorth, Wellington, Hodnet, Market Drayton, Audlem, Nantwich, Crewe, Sandbach, Chelford, Alderley, continuing to Huddersfield through Bollington, Chapel-en-le-Frith, Hayfield, Glossop, and Holmfirth.

LINCOLN TO BIRKENHEAD.—J.R.F.

Lincoln, Saxilby, Newtown, Markham Moor, Bothamsall, Budby, Cuckney, Bolsover, Calow, Chesterfield, Baslow, Bakewell, Buxton, Macclesfield, Knutsford, Nantwich, Chester, Birkenhead.

PORTSMOUTH TO NOTTINGHAM.—R.G.E.

Portsmouth, Gosport, Fareham, Bishop's Waltham, Queen's Head Inn, Winchester, Sutton Scotney, Whitchurch Newbury, East Ilsley, Abingdon, Oxford, Banbury, Byfield, Daventry, Kilsby Lutterworth, Leicester, Loughborough, Nottingham.

HEREFORD TO MILDENHALL.—O.S.P.

Hereford, Ledbury, Tewkesbury, Toddington, Stow-on-the-Wold, Chipping Norton, Deddington, Buckingham, Wolverton, Newport Pagnell, Bedford, St Neots, Cambridge, Newmarket, Mildenhall.

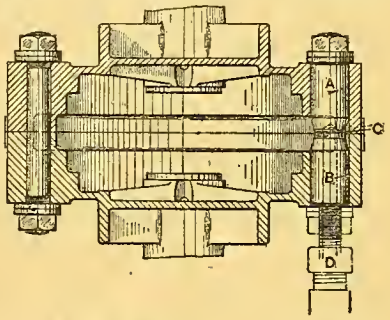
A picturesque cottage near Dryburgh Abbey, N.B. The machine in the foreground is a 5-7 h.p. Abingdon.

PATENTS.

By ERIC W. WALFORD

Crank Case Oil Supply.

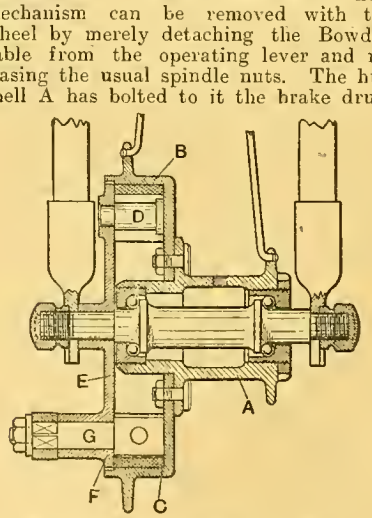
Usually crank cases are cast with a special boss into which is screwed a nipple for the oil pipe. This is dispensed with, and a very neat construction afforded, by the invention shown. One of the crank case bolts A is made slightly larger than usual, and is bored out at



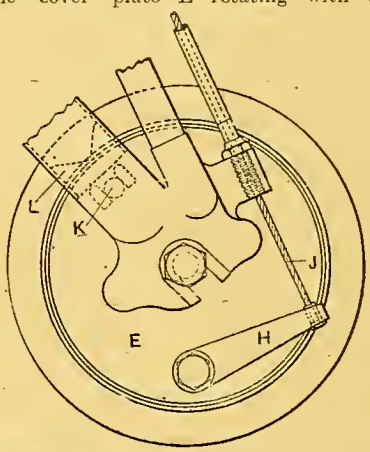
B. At its centre it is reduced in diameter and drilled radially, as shown at C, to afford a clear passage for the oil into the interior of the crank case. The oil pipe is connected to the bolt by a union at D.—Villiers Engineering Co., Ltd., and F. H. Farrer, No. 9,423, 1915.

A Front Wheel Brake.

This is a simple form of enclosed expanding band brake, an important feature of which is that the whole mechanism can be removed with the wheel by merely detaching the Bowden cable from the operating lever and releasing the usual spindle nuts. The hub shell A has bolted to it the brake drum



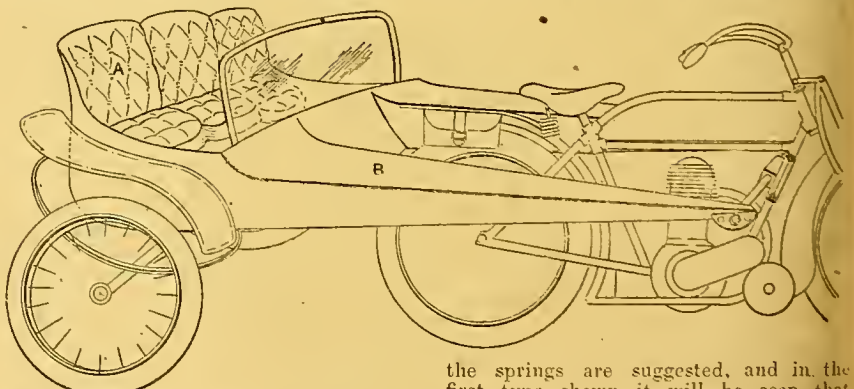
B, the interior periphery of which is acted on by the brake band C. This brake band is mounted upon a pivot D carried by a plate E which serves to enclose the mechanism, and at E affords a bearing for the actuating spindle G, the inner end of which carries an expander cam which opens out the brake band into contact with the drum B. The end of the spindle G is provided with a lever H, to which is connected the Bowden wire J. To prevent the cover plate E rotating with the



wheel when the brake is applied, it is clamped tightly up to a shoulder on the wheel spindle, but an additional safeguard may be provided in the form of a peg K, which may engage the fork end lug L.—Bradbury and Co., Ltd., and L. W. Harvey, No. 18,349, 1914.

A Trailer Revival.

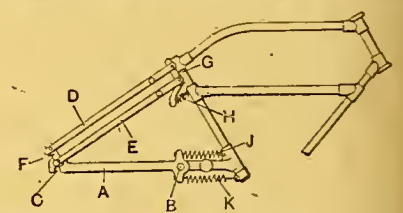
The suggestion that the trailer again be brought to the fore comes rather as a shock in these days of the ubiquitous sidecar combination. The illustration, however, is taken from a recent patent specification, and shows a form of multi-



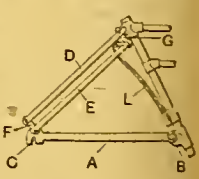
seated trailer A, provided with forwardly extending horizontal trays B, which accommodate the legs of the passengers, and by passing along the sides of the machine somewhat reduce the overall length of the combination. The attachment at the front is by means of ball and socket joints, so that the bicycle may incline to right or left on corners. It will be noticed that, contrary to the old type of trailer, in which the frame was coupled to the bicycle and the body spring mounted on the frame, the present construction has its body attached to the machine, and the axle is carried by springs depending from the body.—C. L. Broadbridge, No. 19,758, 1914.

Rear Springing.

Much attention is now being given to the rear spring suspension of motor cycles, and in the two constructions here



illustrated the chain stay A is pivoted at B, so that its rear end may rise and fall. The slots for the wheel spindle are shown at C, and in each case the usual rigid rear stays are replaced on each side of the wheel by members D E coupled by links F G at each end. The couplings are of a pivotal nature, so that the members D E F G form a flexible parallelogram, which is deformed by movement of the wheel. In the specification various methods of applying



the springs are suggested, and in the first type shown it will be seen that three coil springs H J K are used, so disposed as to resist movement of the chain stays and deformation of the parallelogram In the second type a laminated spring L is employed for this purpose, and affords a neat and substantial construction.—H. S. Bilbe. No. 18,770, 1914.

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,, ,,	26×2¼	19/-	26/6
,, ,,	26×2¾×2¼	20/-	28/-
,, ,,	26×2½	20/9	28/9
,, ,,	26×2½×2¼	20/9	28/9
,, ,,	26×3	25/-	34/-
Basket Pattern Heavy	26×2¼	24/6	34/-
,, ,,	26×2½	27/-	37/6
,, ,,	28×3	35/-	48/3
Combination	26×2¼	36/-	50/-
Combination	26×2½	**35/-**	54/6
Autobi Basket Pattern	650×65	29/9	39/6
Autobi Rubber-studded	650×75	31/6	44/3

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26×2¼	Heavy	Anti-skid	24/6	32/6
26×2¾	,,	,,	26/-	37/6
28×2½	,,	,,	30/-	52/6
28×3	,,	,,	32/6	57/6
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26×2½	,,	,,	40/-	48/-
650×65	,,	,,	45/-	62/6
28×3	,,	,,	55/-	70/-

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	Our Price.	Usual Price.
BEST ENGLISH MAKE (1913 Pattern)—		
650×65 Pillion	21/-	50/-
ELITE—		
26×2 3-ribbed Lightweight Cover	13/6	
CLINCHER—		
24×2 Clincher de Luxe	19/6	28/-
26×2½ (for 2¾) Dreadnought	35/-	47/3
26×2½ Dreadnought	29/6	50/10
26×2½ de Luxe	25/6	30/9
26×2¾ (for 2¾) de Luxe	23/6	41/-
26×2¼ A Won, Wired-on, Ribbed	18/-	
26×2¼ de Luxe, Wired-on, R/S.	21/-	
26×2½ Ribbed	13/6	
26×2¼ Rubber-studded	15/6	
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26 × 2	5/3	7/3	Butt ends 1/6 extra.
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26 × 2½ × 2¼	6/9	8/9	
26 × 2½	6/9	8/9	
26 × 3	8/9	10/6	
650 × 65	7/9	11/6	
650 × 75	10/-	14/-	
ELITE BEST QUALITY (guaranteed)—			
26 × 2	4/6		Butted 1/3 extra.
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26 × 2½	6/-		
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28 × 3	9/3		
PALMER—			
650 × 65 Butted	9/9	12/6	
CLINCHER—			
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⅛in. section	foot	1/3	2/2
¾in. section	,,	1/-	1/11

		Our Price.	Usual Price.
CONTINENTAL—			
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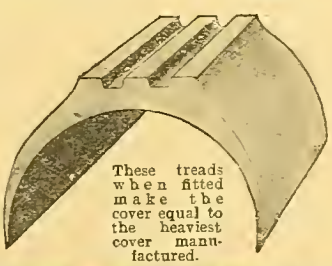
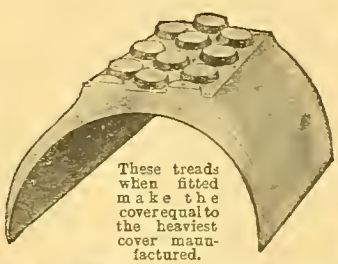


These treads when fitted make the cover equal to the heaviest cover manufactured.



These treads when fitted make the cover equal to the heaviest cover manufactured.

ELITE RUBBER Co., LTD.

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266, Vauxhall Bridge Road, Victoria, S.W.
One minute from Victoria Station.
'PHONE: VICTORIA 6553.

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ADVERTISEMENTS in these columns —First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to ILIFFE & SONS Ltd., and crossed & Co.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, 2d. will be charged for registration, and three stamped and addressed envelopes must be sent for forwarding replies. Only the number will appear in the advertisement. Replies should be addressed, "No. 000, c/o 'The Motor Cycle,' Coventry"; or if "London" is added to the address, then to the number given, c/o "The Motor Cycle," 20, Tudor Street, E.C.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

Abingdon.

ABINGDON, King Dick, 3¾h.p., Grade gear, and sidecar, splendid puller and perfect condition; £22, or offer.—Butterworth's Garage, Mill Lane, Brixton Hill. [X0852

A.J.S.

A.J.S., latest 2¾h.p. model in stock.—Marston's, 26 and 31, Bridge St., Chester. [X0714

A.J.S., latest, new 1915, 2¾h.p., 3-speed, no waiting; 50 gns.—Stevenson, Stewartstown. [X0516

6h.p. A.J.S. Combination, just overhauled, perfect order, lamps, etc.—Evans, Garage, Newport, Salop. [4704

A.J.S., 6h.p., complete with sidecar, just delivered; £95.—Turpine, 22 and 29, Preston Rd., Brighton [0711

A.J.S., 1913, 2¾h.p., 3-speed, enclosed chains, speedometer; £33.—Lieut. T. Neame, Colkins, Faversham, Kent. [X9853

A.J.S.—Prompt delivery of all models, 6h.p., 4h.p., and 2¾h.p.—P. J. Evans, Birmingham and district agent, 87-91, John Bright St. [4589

A.J.S. 1914 (June) Combination, mileage 3,200, hood, screen, fully equipped, like new; £70.—Griffiths, 114, Cavendish Rd., Clapham Common, London. [4504

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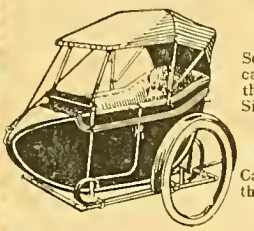

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B.S.A., 1913, 3½h.p., 2-speed, horn, Lucas lamps, perfect; £35.—Sharpe, Sutherland House, Windlesham, Surrey. [4630

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B.S.A., 1915, chain-cum-belt, 3-speed, countershaft gear, new August.—Nearest offer to 10, College Av., Fishponds, Bristol. [4417

B.S.A., 1914, 4h.p., 3-speed countershaft gear, splendid condition, also coachbuilt sidecar; £56.—Atkins, Rosemount, Ash Vale, Surrey. [X0562

1914 (November) 4h.p. B.S.A. Combination, 3-speed; bargain, £55; seen at Deal.—Box 9,462, *The Motor Cycle* Offices, Coventry. [X0740

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CALTHORPE, 1915, 2-stroke, 2-speed, just arrived from works; immediate delivery; £31/7.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London [4462

CALTHORPE, 1915, J.A.P., Enfield 2-speed, just arrived from works; immediate delivery; £36/15. —Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [4460

CALTHORPE-J.A.P., 1915, 2¾h.p., 2-speed Enfield gear, delivery from stock; 35 gns.; touring or T.T. bars.—Elce and Co., 15, Bishopsgate Av., Camo-mile St., E.C. [0481

CALTHORPE Junior, 2-speed, in nearly new condi-tion; £18, or near offer.—Tuke and Bell, Ltd., Motor Engineering Department, Carlton Engineering Works, High Rd., Tottenham, N. [4139

1915 2¾h.p. Calthorpe-Jap, Enfield 2-speed, free engine, Lucas head and tail lamps, horn, tools, and spare tyre, excellent condition, good climber, owner enlisting; £32, or nearest.—Williams, Chapel Ash Depot, Wolverhampton. (D) [X0750

Campion.

CAMPION-J.A.P., 4h.p., 1914 model; £37/10; splen-did condition; owner in army 6 months.—Raston, Maythorn, Holmfield Rd., Leicester. [X0518

Centaur.

CENTAUR 2½h.p. Lightweight, good tyres, B. and B., extremely low frame, suit beginner; snip; £7, or offer.—Butterworth's Garage, Mill Lane, Brixton Hill. [X0853

Chater-Lea.

CHATER-LEA No. 7, 8h.p., double-seated sidecar, hood, screen; £47.—Pearse, Staplehurst. [4601

CHATER-LEA No. 7 8h.p. J.A.P., 1914½, and £15 Chater-Lea art cane sidecar, with luggage grid and wind screen; cost £110, not ridden since October, 1914; owner at Front; £80, or near offer.—129, Dill Hall Lane, Church, Lancs. [X8972

Chater-Lea-Buchet.

CHATER-LEA-BUCHET, 2¾h.p., U.H. mag., B. and B., spring forks, low, light, and fast; £17.—Green, c/o 196, Fore St., Edmonton. [4427

Chater-Lea-Fafnir.

CHATER-FAFNIR, 3h.p., B. and B., accumulator ignition, recently overhauled; £6/10.—Baltic Cot-tage, Suffolk Rd., Dartford. [X0422

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BAT, 1914, 6 h.p., 3-speed, coach Sidecar **£53**
REX, 1914, coach Car, 8 h.p., 2-speed .. **£58**
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CHATER-J.A.P., 4h.p., Bosch, B.S.A. carburetter, lamp, spares; £16/10.—Dixon, 9, The Crescent Surbiton. [4691

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CLYNO, 1914, 2½h.p., 2-speed, F.E., lamps, speed ometer, and accessories, almost new condition £30.—Jones, 63, Narbonne Av., South Side, Clapham Common, S.W. [4439

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£38.—Douglas, 1914, 2¾h.p., 2 speeds, clutch, ki start.—40, Portland Rd., Edgbaston. [X008

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DOUGLAS, 1913, 2-speed, new tyres, speedometer as new; £35.—Jones and Adams, The Promenade Palmer's Green. [464

DOUGLAS, 2¾h.p., 1914 U model; net cash £35, n offers.—Apply, Buller Pratt, Highcliffe House Bradford, Yorks. [403

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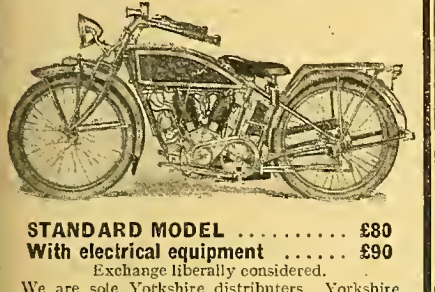

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DOUGLAS, Douglas, Douglas.—Get one at the wholesale and retail Scottish agents, Alexander and Co., 115, Lothian Rd., Edinburgh. [4118

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DOUGLAS R, 2¾h.p., late 1913, 2-speed, clutch, kick starter, P. and H. lamp, horn, tools, spares, splendid condition; £35.—81, Cecil Av., Bradford. [X0605

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DOUGLAS, 1914, 2¾h.p., 2-speed, T.T. bars, Bosch, Amac carburetter, new belt, excellent condition; £40.—Morton, 20, Watkin Terrace, Northampton. [4414

DOUGLAS 1915 Model U, 3 speeds, good condition, Watford speedometer, expensive accessories; £48.—E. Appleyard, Ellercourt, Rawcliffe, Yorkshire. [4607

DOUGLAS, 1915, 2¾h.p., Colonial model, 3-speed, kick start, lamp, horn, speedometer, mileage 1,000, as new; owner going abroad; £50.—Mills, Derwen, East Liss. [X0427

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DOUGLAS, 1914, 2¾h.p., touring, good condition, lamp, horn, new Dunlop back; £36, lowest, or part exchange coachbuilt sidecar.—Douglas, 107, Earlham Rd., Norwich. [X0658

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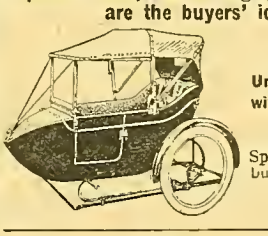

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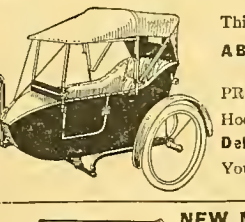

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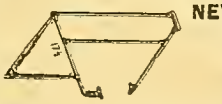

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ROYAL Enfield, 1911, 2¾h.p., good condition, complete; £20.—Laytons' Garage, Bicester, Oxon. [X0752

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ENFIELD 1914 6h.p. Combination; cost £100 with accessories, cash only £60.—Lamb's, 151, High St., Walthamstow. [4521

ENFIELD, 3h.p., new in June, perfect, horn, and tools; £45, or lightweight in part payment.—Godwin Bros., Woking. [X0832

ROYAL Enfield Coachbuilt Combination, genuine 1914, 6h.p., splendid condition; accept 55 gns.—76, Summerley St., Earlsfield, S.W. [4568

ENFIELD, 2¾h.p., late 1912, tyres new, re-bushed Xmas, 1914, in splendid order; £24, or highest.—Allen, 26, Vaughan St., Coalville. [X0608

ENFIELD, 1914, 3h.p., 2-speed, kick start, Binks carburetter, tyres nearly new, lamp, horn, tools, spares; £34.—Blake, Church St., Wantage. [X0627

ENFIELDS.—The reliable British machines, famed for quality and durability. Immediate delivery at Alexander's, 115, Lothian Rd., Edinburgh. [4124

ENFIELD, 1915, 3h.p., head and rear lamps, Stewart speedometer, horn, excellent condition; £38; view by appointment.—Hall, 3, Lennox Mansions, Southsea. [X0080

ENFIELD Combination, 1915½, 8h.p., spring handlebars, Pillion, spare, fully equipped; cost £95, bargain, £85.—Harris, Heatherlea, Dartford Heath, Kent. [4621

1912 2¾h.p. Twin Enfield, 2-speed, clutch, chain drive, footboards, everything perfect; bargain, £21.—C.C.R. Motor Works, St. Ann's Well Rd., Nottingham. [X0628

1915 Enfields.—All models immediately from stock. Buy now while they are to be had.—Alexander's, 115, Lothian Rd., Edinburgh, and 272, Gt. Western Rd., Glasgow. [4122

1912 6h.p. Royal Enfield, with special wide coachbuilt sidecar to seat 2 children, very good order; £50; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0722

ENFIELD 6h.p. and Coachbuilt, 1912½; £45; entertain exchange 3h.p. 1915; view appointment, preferably Saturday, Sunday.—Buraup, 4, Cardigan Court, Richmond, S.W. [4684

3h.p. Enfield, June, 1915, 2-speed, Amac and Senspray carburetters, knee grips, lamp, horn, beautiful condition; £45, or close offer.—Moyle, Deneholm, Shepperton-on-Thames. [X0780

ENFIELD 1915 3h.p. Twin, kick starter, footboards, 2-speed, excellent order, property of officer at Front; bargain at £43.—Seen at Taylors', 21a, Store St., Tottenham Court Rd., London. [4470

ENFIELD 1914 6h.p. Combination, in splendid order, coach sidecar, backrest, luggage carrier, rear light, horn and tools, complete; £63.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0491

1914 Enfield 6h.p. Coachbuilt Combination, new February, 1915, not ran 1,000 miles, Lucas lamps, Watford speedometer, spare valves and tube.—Garratt, 270, Mount Pleasant Rd., Tottenham. [4569

DEAL STREET,

COLLIERS MOTORIES COLLIERS

HALIFAX.

NEW MODELS.

1915 **ROYAL RUBY,** 2½ h.p., 2-stroke **£29 10**
1915 **ROYAL RUBY,** 6 h.p. J.A.P., 3-speed **£87 0**
1915 **ROYAL RUBY,** 2½ h.p. J.A.P., 2-speed **£39 10**
1915 **ROYAL RUBY,** 2-stroke, 2-speed **£36 10**
1916 4-cylinder **CALTHORPE** Minor ..... **185 gns.**
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2¾ h.p. **DOUGLAS,** fixed gear **£18 10**
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FOR VALUE.

We offer a Brand New latest type (just delivered from makers) £6S 6 h.p. 2-speed REX at 10% discount. If you have no customer for your present machine, we give you this discount in addition to a liberal exchange allowance. With REX Coach-built Sidecar, £12 10s. extra. Why wait for deliveries or pay 5% to 33⅓% extra?

SPECIAL BARGAIN.

1912 6 h.p. 2-speed Free-engine REX DE LUXE, and luxurious coach-built Sidecar. Complete with front and rear lamp, horn, pump, toolbag, and tools £31 10

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1914 6 h.p. (new) **REX** Sidette. **Exchanges quoted**
15 h.p. 4-cylinder **RENO** 5-seated Car **£6S 0**
1913 3½ h.p. **RUDGE** Multi **£36 10**
1913 6 h.p. **ENFIELD** Combination **£53 10**
1913 6 h.p. 2-speed **REX** and Sidecar **£44 10**
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1912 6 h.p. 2-speed **REX** and Sidecar **£37 10**
1912 6 h.p. 2-speed free-engine **REX** **£33 10**
1912 3½ h.p. **N.S.U.** and Sidecar **£24 10**
1912 3½ h.p. **LINCOLN-ELK** **£19 10**
1912 3½ h.p. 2-speed **BRADBURY** and S'car **£32 10**
P. & M., 3½ h.p., 2-speed, grand condition.. **£29 10**
1912 (Nov.) **SCOTT** and Sidecar..... **£38 10**
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3½ h.p. tourist **REX,** spring forks **£14 10**
1910 3½ h.p. 2-speed **REX** and Sidecar **£24 10**
1910 5-6 h.p. 2-speed **REX** and Sidecar **£26 10**
MOTOSACOCHE, magneto, lightweight **£10 15**
PEUGEOT, 5-6h.p., 3 speeds, twin **£19 19**
P. & M., 3½ h.p., 2-speed, and Sidecar **£24 10**
N.S.U., 2-speed, F.E., twin, spring forks ... **£13 10**
REX, 5½ h.p., twin, magneto, tourist **£15 10**
REX, 3½ h.p., magneto, spring forks **£14 10**
5½ h.p. F.E. twin **REX,** specially good **£17 10**
REX Coach-built Sidecar, with apron (new) **£12 10**

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1915 Second-hand 10 h.p. 4-cylinder 2-seater **RITZ** Car, electric lamps and electric horn, hood, screen and tools. Only done about 500 miles. Tip-top condition. Complete with number-plates and registration. Any trial or examination. **New price £120** plus import tax.

Lists on application. Trade enquiries welcomed.

WE ARE CASH BUYERS OF UP-TO-DATE MORGANS AND LIGHT CARS.

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Enfield.

ENFIELD 1915 6h.p. Combination, coachbuilt sidecar, the finest combination made, all complete; £84; just arrived from works; immediate delivery.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [4458

1915 Enfield 6h.p. Combination, Lucas lamps and horn, splendid order throughout; any test or examination invited; finest combination made, and good as new; price reasonable.—Percy Holmes, Lancley, Heanor. [4413

ENFIELD 1915 3h.p. Twin, 6 weeks old, cost with accessories £56; absolutely as new; £48; owner proceeding abroad.—Corporal Montgomerie, 9, Walpole Gardens, Strawberry Hill, Middlesex. 'Phone: Richmond 1677. [4410

ROYAL Enfield Combination, £84; 3h.p. twin, 50 gns.; 2¼h.p. 2-stroke, 38 gns; immediate delivery all models.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0571

ENFIELD, 6h.p., coachbuilt sidecar, new August, 1914, complete lamps, mechanical horn, spares, etc., new oversize tyres front and back, perfect condition; £63.—Lloyd, 32, Campbell Rd., Longsight, Manchester. [X0846

ENFIELD Standard £84 Combination in stock; deferred payments, quarter down and balance in 12 instalments; liberal allowances for shorter periods; exchanges.—Lamb's, Enfield Specialists, 151, High St., Walthamstow. [4509

ENFIELD, 1915, 3h.p., 2-speed, and free engine, chain drive, kick starter, mechanical lubrication, Palmer tyres, just arrived from works; immediate delivery; £52/10.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [4459

ENFIELDS, all models actually in stock.—6h.p. combinations, 3h.p. 2-speed twins, T.T. and touring models, also 2¼h.p. 2-speed 2-stroke.—P. J. Evans, 87-91, John Bright St., Birmingham, controlling district agent. [4585

6h.p. New Enfield Sidecar Combination, just delivered fresh from works, fitted with handsome coachbuilt sidecar and storm apron, tools, complete; £84 cash; exchange; easy terms. When purchasing new machines it is the same in purchasing from Wauchope's as though you were dealing with the makers direct.—Numerous testimonials are received from time to time from satisfied clients who have dealt with Wauchope's, 9, Shoe Lane, Fleet St., London. [0679

Excelsior.

EXCELSIOR, 3¾h.p., new Hellesen, B. and B., h.b.c., lamp, stand, and carrier; £5; seen running.—97, Latchmere Rd., Battersea. [4507

EXCELSIOR (American), 1915, 7-9h.p., 3-speed clutch model, the very best value; we can deliver from stock; £62.—Laytons' Garage, Bicester, Oxon. [X0755

EXCELSIOR (American), 7h.p., 3-speed; new prices standard £80, electrically equipped £90; exchanges quoted. Yorkshire dealers supplied. Motor Exchange, Horton St., Halifax. [0385

7h.p. American Excelsior Twin, 1914, coachbuilt sidecar, Bosch mag., 2-speed gear, speedometer; cost 80 gns.; owner going Tropics; trial; £47.—Heath, 420, Richmond Rd., East Twickenham. [4484

EXCELSIOR (Coventry), 1914, 5-6h.p., Bramble coachbuilt sidecar, 2 speeds, speedometer, lamps, horn, mirror; £50; seen by appointment.—Cooper, 9, Silwood St., Rotherhithe, London. [4667

F.N.

F.N., 5-6h.p., 1912, 4-cyl. £21.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [4627

F.N. Lightweight, 1912¾, as new, £26; offers, or with cash for good combination.—60, Greenbank, Rochdale. [X0657

F.N., 4-cyl., Bosch, Binks carburetter, electric lighting, perfect running order; bargain, £18/10.—Kinnear, 65, Dalmeny Av., Norbury. [4434

F.N., 1911, 7h.p., 4-cyl., 2-seater coach combination, D.A. lighting set, 5 gn. speedometer, 3 lamps, and many other accessories; 70 gns., or quarter down and 12 monthly instalments; exchanges.—Lamb's, 151, High St., Walthamstow. [4510

Grandex.

1914 3½h.p. Grandex-Precision, variable gear, tyres good, lamp, horn, new belt, enamel and plating perfect; £35, or very near.—Grindley's Garage, Prees, Salop. [X0726

Harley-Davidson.

HARLEY-DAVIDSONS in stock.—Premier Motor Co., Birmingham. [4736

HARLEY-DAVIDSON 7-9h.p. Twin and 4h.p. in stock.—Turpins, 29, Preston Rd., Brighton. [0715

HARLEY-DAVIDSON 11F, brand new, unridden, best offer secures.—19, Village Rd., Finchley, N. [4355

1915 Harley-Davidson, model 11C, 4½h.p., 2-speed, fast, absolutely as new, not done 500 miles; £48.—Railway Garage, Staines. [4744

HARLEY-DAVIDSON Sidecar Combinations in stock for immediate delivery; a few machines free of import duty.—The Premier Motor Co., Aston Rd., Birmingham. [4736

MOTOR CYCLES FOR SALE.

Harley-Davidson.

MODEL 11F 7-9h.p. Harley-Davidson, 3-speed, £68/5; model 11J, electrically equipped, £76/13.—The Premier Motor Co., Birmingham. [4735

HARLEY-DAVIDSON, 4h.p., 2 speede, done 1,500 miles, as good as new; £65, or nearest offer.—Apply, B. Shirreff, Whitley Brow, Melksham, Wilts. [X0515

HARLEY-DAVIDSON, late 1914, 7-9h.p., 2-speed, all accessories, magnificent condition, just overhauled; 48 gns., nearest.—Lieut. Tovey, 6, Capel Terrace, Southend-on-Sea. [4411

1915 Harley-Davidson, model 11J, 7-9h.p., 3-speed, electric light and horn, with Royal Leicester sidecar, almost new, done 500 miles; £80.—Thomson, 9, Alexandra Rd., Leicester. [X0082

HARLEY-DAVIDSON, 1915, 7-9h.p., 3-speed, electric light and horn, Watford trip speedometer, clock, perfect condition; £70, or offers.—Garrod, Burfords, Bishops Stortford. [4438

HARLEY-DAVIDSON, 1915, 11h.p., electrically equipped, with horn, lamps, 3-speed, 3 weeks old, only done 100 miles, absolutely new; £72, or offer.—Dennis, 5, Cambridge Rd., Lee, Kent. [4423

HARLEY-DAVIDSON, Model 11J, electrically equipped, with Bramble sidecar, spare tubes, valves, Stewart speedometer, not ridden 800 miles; £85, or £22/5 down and £5/8/4 monthly; bargain.—Lamb's, 151, High St., Walthamstow. [4515

HARLEY-DAVIDSON Models F. and J. (no advance in price), complete with their own 20 gn. sidecar, or Montgomery Canoelet. Millford, Bramble or Phœnix, delivered from stock; deferred payments quarter down and 12 instalments; discount for quicker payments; exchanges.—Lamb's, 151, High St., Walthamstow. [4511

HARLEY-DAVIDSON.—The motor cycles of great refinement. We can deliver the "Silent Grey" from stock, and have a large selection of suitable sidecars. Send us your requirements; we can fill them.—Extended payments and exchanges arranged by the sole wholesale distributers for Lancashire (except Barrow district) and Cheshire, the Colmore Depot, 31, Renshaw St., Liverpool; and 261, Deansgate, Manchester. [4641

Hazlewood.

HAZLEWOOD Six, 1915, 3-speed, sidecar, accessories, done 1,800; cost £96, accept £68.—Douglas Deans, 172, Great Western Rd., Glasgow. [X0606

1914 5-6h.p. Hazlewood and Coachbuilt sidecar, perfect condition, twin, 3-speed, free engine, kick start, Bosch mag., J.A.P. engine; price, lamps and tools, £55; owner on active service.—Lovey's, Bridge St., Tiverton, Devon. [4749

Henderson.

HENDERSON, 1914, splendid condition, high gear for fast solo work; £60.—Dodds, Kendal Grove, Admiralty Rd., Felpham, Bognor. [X0430

HENDERSON Combination, 1914, 8-10h.p., 4-cyl. engine, Lucas lamps, horn, speedometer, watch, etc., various spares, perfect condition, just overhauled; cost £110, accept £65, or close offer.—Wrightson, 68, Haselyn Rd., Crouch End, London. [4605

Hobart.

HOBART, 2-strokes.—Immediate delivery from stock. —Alexander's, 115, Lothian Rd., Edinburgh, and 72, Gt. Western Rd., Glasgow. [4126

Humber.

3½h.p. Humber, 1912, £18; trial willingly.—Atkin, 4 56, Solent Rd., West Hampstead. [4466

HUMBER, 3½h.p., 1911, 2-speed model, excellent condition; £24.—A. Holland, Earlsdon, Coventry. [X0847

HUMBER, late 1911, 3½h.p., 2-speed, sidecar, spares, good condition; £25.—Nobbs, Sandleford, Bramber Rd., N. Finchley. [X9763

1912-13 Humber, 2-speed, and sidecar, splendid order; £28, complete.—Chapman, Highbridge Rd., Waltham Abbey. [4655

HUMBER, 1912, 3½h.p., 2-speed, handle starter, overhauled, £24; or with sidecar £29.—W. Bowen and Hartley, 5, Woodhouse Lane, Leeds. [X0664

1914 3½h.p., 3-speed Humber, and coachbuilt sidecar; £42/10; all new Feb., 1915; seen any time appointment.—42, Chandos Av., Whetstone, N. [4476

HUMBER Combination, 1911, 3½h.p., 1913 N.S.U. 2-speed F.E., new Dunlops, new belt; £28; lightweight and cash considered.—98, Middlewich Rd., Northwich, Cheshire. [X0771

3½h.p. Humber, 1911, 2-speed, handle starter, perfect condition; highest cash offer, or exchange good lightweight and cash.—Shears, Whitehouses, Moira, Ashby-de-la-Zouch. [X0733

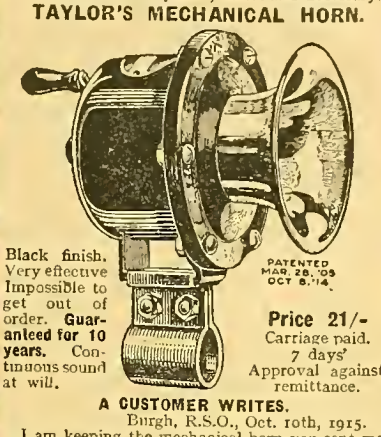
HUMBER, 1912, 3½h.p., N.S.U. gear, 2 lamps, Jones speedometer, horn, 1915 smart cane sidecar, irons, tools, spares of all sorts, perfect condition; all anywhere; £35, no offers. Tel.: Finchley 1675. 23, Hertford Rd., East Finchley. [4727

1913 3½h.p. Humber, wicker sidecar, Sturmey-Archer 3 speeds, free engine, kick starter, lamps, horn, tyr recently overhauled, back wheel re-built, fitted Dunlop combination tyre; £30; seen evenings after 7.30.—G. S. Bowland, Rickmansworth. [4530

GET IT AT TAYLORS

Four Excellent Adjuncts, useful and necessary.

TAYLOR'S MECHANICAL HORN.



Black finish. Very effective Impossible to get out of order. **Guaranteed for 10 years.** Continuous sound at will.

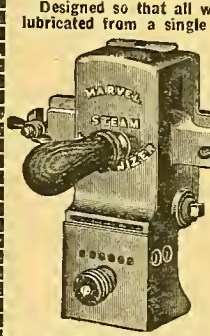
Price 21/- Carriage paid. 7 days' Approval against remittance.

A CUSTOMER WRITES.

Burgh, R.S.O., Oct. 10th, 1915.

I am keeping the mechanical horn you sent me on approval, as I think it quite the best one I have yet seen, and am very pleased with it.—R.R.

Designed so that all working parts can be kept lubricated from a single lubricator.



The 'MARVEL' VULCANISER.

Both Covers and Tubes of any size can be effectively vulcanised. A permanent repair is guaranteed. Saves expense of sending tyres away, and a great saving in time.

Anyone can do it. To prove this, we will forward on 10 days' approval against remittance Money returned, less carriage, if not satisfied. Immediate delivery. Complete with supply of all necessary materials. Price—motor cycle and cycle car size, **13/9**; car size, **27/6**. Carriage paid.

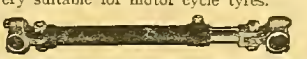
SATISFIED USERS.

Adelaide Street, Bradford.

Dear Sirs,—I received the "steam vulcaniser," and I thank you for your prompt attention. I have tried the machine, and am better satisfied than I expected, as I thought some practice would have been necessary, but anyone following instructions would not have the slightest trouble. When I wished to show my friends the repaired place in cover (the gash was 4in. long), I had to point the places out to them, as they could hardly be seen. Yours truly,

THOMAS WILSON.

Another letter: "I find it quite satisfactory, and very suitable for motor cycle tyres."



TAYLOR'S SIDECAR SAFETY ARM

Converts three-point suspension to four-point. Strengthens sidecar at weakest point. To fit 1⅛" and 1¼" tubes. State size clips required. Price **8/3**. Extra long arms extending to 28", 1/- extra.

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LOW GENERATOR

Full particulars on application.

Motor cycle size, **35/-**; light car size, **55/-**; large car size, **75/-**. In stock.

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MOTOR CYCLES FOR SALE.

Humber.

1911 2-speed Humber, handle starting, wicker sidecar, in excellent condition; price £21.—Tuke and Bell, Ltd., Motor Engineering Department, Carlton Engineering Works, High Rd., Tottenham, N. [3998

Indian.

INDIAN, 1914, 7h.p., 2-speeds, clutch, Millford sidecar; £55.—28, Tranmere Rd., Earlsfield. [X0842

1915 Indians.—Immediate delivery of model O from stock.—Alexander's, 115, Lothian Rd., Edinburgh. [4121

1914 Indian, 7h.p., road racer, lamps, speedometer, etc.; £44, offers.—2, Station Rd., Dovercourt. [4573

INDIAN 1914½ coach combination, 7-9h.p., 2 speeds, £60; take Douglas part.—Sinclair, East Molesey. [X0850

INDIAN, late 1912, 7-9h.p., 2 speeds, kick starter, coach sidecar; trial; £39.—Giffen, Southwold Rd., Watford. [4534

INDIAN, 1915, 7-9h.p., T.T. model, excellent condition, all accessories; £50.—Miall, c/o Allpress, Edgware. [4612

7-9h.p. 1914 T.T. Indian, owner joined the colours in September, 1914, not since used.—J. Page, High St., Ware. [4445

1914 7-9h.p. Indian and coachbuilt sidecar, excellent condition; accept £60.—Parker and Son, St. Ives, Hunts. [4713

5h.p. Indian, 1915 (July), with 14 gn. sidecar, as new, perfect throughout; £60; trial given.—59, Bexley Rd., Erith, Kent. [X0630

BLUE Indian, 7h.p., clutch, underslung sidecar, accessories; £32; appointment.—Salt, 3, Union Rd., Tufnell Park, N. [4501

1915 3-speed 5h.p. Indian, coachbuilt sidecar to match, used 3 days; accept £75.—Parker and Son, St. Ives, Hunts. [4712

INDIAN, 1911, 7-9h.p., free engine; £29; splendid condition, T.T. bars.—Corporal Hadley, 38, Portland Place, Leamington Spa. [X0639

INDIAN 1914 Combination, 7-9h.p., little used, electric equipment; £55, bargain.—4, Dollis Rd., Church End, Finchley. [4432

INDIAN, 1914, free engine, T.T., 7-9h.p., speedometer, lamp, horn and accessories; £45, or nearest offer. —Smith, North Thoresby, Lincs. [X0527

1912 5h.p. Indian, engine just overhauled, good tyres, £27; with wicker sidecar £29/10.—Harris, Burnham Villa, Bookham, Surrey. [X0081

7-9h.p. Indian, new Easter, clutch model, lamps, speedometer, electric horn, spares, etc.; 40 gns.—Walker, 21, Hendon Rd., Sparkhill, Birmingham. [X0705

1914 Indian Hendee Special, electric starter and lights, smart coachbuilt sidecar; nearest £60, or Douglas part.—20, Chaucer St., Leicester. [X0708

INDIAN Motor Bicycle, 1914, 7-9h.p., T.T., clutch model, speedometer, lamp, perfect condition, very fast.—Taylor, The Island, Melksham, Wilts. [X0849

INDIAN 3½h.p. Twin, 2-speed, free engine, lamps and horn, been used very little, in new condition; £52.—Liddiard's, Downing St., Cambridge. [X0592

1915 5h.p. Indian, 3 speeds, lamp and horn, complete, been few miles only, not scratched; £55. —Walbro Motor Co., Saffron Walden, Essex. [X0864

INDIAN, 1915, model C, 7-9h.p., 3 speeds, electric equipment, delivery from stock; £78.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0551

LATE 1914 Indian, 7h.p., and sidecar, 2 speeds, speedometer, and electric equipment, splendid condition; £60, or near offer.—Asher, Wincobank, Sheffield. [X0597

INDIAN, spring-frame 1914 model, 7-9h.p., with 2-speed, clutch, and all accessories; in quite new condition; £56.—Newnham, 223, Hammersmith Rd., W. [4637

INDIAN, 1915, 5h.p., 3 speeds, clutch and kick start, T.T. bars, large Lucas lamp set, horn and magneto rear light, condition as new throughout; £56.—Below.

1915 7-9h.p. Indian Road Racer, P. and H. lamp set, as new, 1,500 miles, £49; absolutely new red torpedo £15 Northern sidecar, £12 extra.—Gilbert Hall, Matlock. [X0640

INDIAN, 1915, 5h.p., 3-speed model; £63; delivery from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0717

1915 Indian 7h.p. Twin, 3-speed, F.E., Corbin-Brown front-drive speedometer, spring frame, specification as list; £55.—Robinson's Garage, Green St., Cambridge. [6867

1915 Indian, 5h.p., 3-speed, kick start, Miller lamp and horn, not yet done 500 miles, guaranteed in better condition than new; price £60.—19, Aviemore Rd., Stanley, Liverpool. [X0668

1914 Hendee Special Indian, 7-9h.p., electric lighting and starter, Millford sidecar, as new, done 2,000 miles; cost £100, bargain, £60.—23, Fountayne Rd., Stoke Newington, N. [4190

INDIAN 1914 7h.p. Coachbuilt Combination, 2-speed, clutch and starter, electric lamps, horn, also speedometer, thoroughly sound; £60.—P. J. Evans, John Bright St., Birmingham. [4583

MOTOR CYCLES FOR SALE.

Indian.

INDIANS B, Indians C, and Indians D, all in stock ready to drive away, red sidecars to match.—Birmingham and Midland distributing agent, P. J. Evans, John Bright St., Birmingham. [4584

INDIAN, late 1913, 7-9h.p., 2 speeds, kick start, fully equipped, Premier sidecar, Cape hood, wind screen, all in excellent condition; cost £100, accept £50.—Bird, 41, Quebec Rd., Ilford. [4528

INDIAN, 1915, 3½h.p. twin, 3-speed gear box, Lucas horn, head lamp, generator, rear lamp, and several spare parts, splendid condition, ridden about 300 miles; £56/10.—Groll, Rockstow, Maidstone. [X0428

7-9h.p. Indian, 2-speed, clutch, kick start, and Mills-Fulford coach sidecar, perfect order, very fast, lamps, spares; £45; consider Douglas part.—Box 9,458, *The Motor Cycle* Offices, Coventry. [X0604

7h.p. T.T. Indian, late 1914, Lucas lamp and generator, horn, speedometer, spares, and tools, complete, tyres good, condition excellent; £48, offers.—Lieut. Casper, Springfield, Darlington. [X9693

1915 3½h.p. Iodian, equipped with lamps, generator, horn, unscratched, guaranteed absolutely faultless; reason disposal, purchased Indian combination; £49, no offers.—Frank Stansfield, Fleetwood. [4415

1915 Indian, 5h.p., 3 speeds, mechanical horn, acetylene head light, all accessories, scarcely ridden, unscratched, good as day left factory; what offers?—Box L1,611, *The Motor Cycle* Offices, 20, Tudor St., E.C. [4723

1914 7-9h.p. 2-speed Indian Combination, electric equipment, speedometer, wind screen, etc.; cost £95; new condition, perfect; £55, or exchange lower power; Midlands.—Box 9,459, *The Motor Cycle* Offices, Coventry. [X0737

7h.p. Indian 1915 New Combination, complete with de luxe sidecar, electric lighting set; £94/10; immediate delivery from stock; cash, exchange, or extended paymeots arranged.—Wauchope's, 9, Shoe Lane, London. [X0696

INDIANS in stock for immediate delivery; 7h.p. 3-speed coachbuilt combinations, 7h.p. road racers, 5h.p. 3-speed double purpose mount.—P. J. Evans, 87, John Bright St., Birmingham, sole Midland distributing agent. [4586

INDIAN, late 1913, 7-9h.p., with Cowey speedometer and Mills-Fulford Radio spring wheel sidecar, whole outfit in perfect order; £55.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0569

INDIAN, 1914, 7-9h.p., clutch, new Dunlop tyres, speedometer, large Miller lamp, Lucas horn, pillion seat, 50 gns., or £13/10 down and £5/5 monthly; also model C just arrived. £78.—Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green. [4516

INDIAN, 1913¾, 7-9h.p., with speedometer, lamp, tools, spares, etc., also with coachbuilt Mills-Fulford sidecar, practically new, with screen and hood, only done about 3,500 miles; will accept £62, or near offer.—Apply, Chas. H. Mayo, Ivydene, Queen's Rd., Hersham, Walton-on-Thames. [4549

INDIAN, 7-9h.p., 1915, spring frame, 3-speed, complete with Indian sidecar, electric head and tail lamps, extra acetylene head lamp set, in perfect condition, only run 2,000 miles, £70, bargain; also 5h.p. Indian and sidecar, 1915 model, £59.—Lawes, Aldershot. [X0600

1915 T.T. Indian, clutch model, 7-9h.p., appearance like new, run very little, reinforced type, developing 20h.p., 2 lamps and horn (Lucas), very fast machine; consider small 2-seater, or good 3½h.p., or sell £48, great bargain.—Cadzow Lodge, Hamilton. [X0530

1915 7-9h.p. Indian Road Racer, with clutch, complete with P. and H. headlight, mechanical horn, machine 2 weeks old, infinitely better than new, in absolutely perfect condition in every respect, honestly worth 60 gns.; first cheque for 46 gns. secures this most marvellous bargain; one of the best and most luxurious machines in the world.—Julian, Broad St., Reading. Biggest dealer in the South. 'Phone: 1024 [X0798

1915 7-9h.p. 3-speed Indian, complete with electric head light, electric sidecar lamp, electric tail lamp, electric horn, speedometer, Mills-Fulford 17 gn. most luxurious sidecar. This magnificent machine is in every respect equal or better than new, and in absolutely perfect condition; it is honestly worth £100, and we are offering it at the ridiculously low price of 75 gns. in order to clear.—Julian, Broad St., Reading. Biggest dealer in the South. 'Phone: 1024. [X0800

Ivy.

IVY, 1915, 2¼h.p., 2-stroke, 2-speed, absolutely new; £33/10. W. Bowen and Hartley, 5, Woodhouse Lane, Leeds. [X0665

IVY 1915 De Luxe Model, 2¾h.p., 2-stroke, Lucas lamp, mechanical horn, 26×2¼ Dunlop heavy rubber-studded tyres, machine not done 100 miles; cost £40 recently, £30.—The Premier Motor Co., Aston Rd., Birmingham. [4737

Ixion.

1913 Ixion, 6h.p., just overhauled, re-enamelled and plated, 3-speed, hand clutch, and sidecar; £47/10.—Evans, Garage, Newton, Salop. [4703

IXION, 2¾h.p., 1914, new Dunlop tyres, new Avon belt, spare tyre and tube, muffs, P. and H., just overhauled; £18, or nearest.—Wood, Hardwick Terrace, Chepstow. (D) [X0856

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IXION Motor Cycle, recently new, good hill-climber, perfect accessories, lamp, horn, and spare tyre, excellent reason for selling; bargain, £25.—Barrett, 6, St. Matthew St., Rugby. [X0520

J.A.P.

J.A.P., 1912, 6h.p., 2-speed, free engine; £22.—57, Lamont Rd., Chelsea. [4681

3½h.p. J.A.P., 2-speed, free, grand machine; offers over £21.—Side door, 152, Albion Rd., Stoke Newington. [4708

J.A.P., 1912, 6h.p., 2-speed, Rex-Jap sidecar combination, lamp, horn, Cowey speedometer; £35.—The Premier Motor Co., Aston Rd., Birmingham. [4739

J.A.P., 3½h.p., special racing engine, overhead valves, Chater frame, 3-jet Binks carburetter, recently fitted with Albion tree engine back wheel, tyres, lamps, belt, etc., all good, very fast, also spare back wheel with cover for above; real bargain. £25.—131, Park Lane, Stoke Newington, N. [4497

James.

1915 4½h.p. James Combination, practically as new, complete; £57.—23, York Rd., S. Farnborough. [4598

1915 James Combination, only done 25 miles; cost £79, bargain, £68; seen at Wimbledon.—Box 9,460, *The Motor Cycle* Offices, Coventry. [X0738

JAMES Combination, 3-speed, just arrived; £76/13. Deferred terms quarter down and 12 monthly instalments.—Lamb's, 151, High St., Walthamstow. [4517

JAMES, 1915, 4¼h.p., 3-speed countershaft, Canoelet sidecar, guaranteed not run 200 miles; £66/10.—W. Bowen and Hartley, 5, Woodhouse Lane, Leeds. [X0666

JAMES 4¼h.p. Models, complete with sidecar or without, Lucas electric lighting set; delivery from stock; cash, easy terms, or exchange.—Wauchope's, 9, Shoe Lane, London. [X0695

1914 4¼h.p. James, 3-speed gear, free engine, perfect condition, all accessories; no reasonable offer refused, or would exchange for lower powered machine Triumph preferred.—Lowe, Old Mill, Congleton. [X0672

JAMES, 1915, 4¼h.p., 3-speed countershaft gear clutch and kick starter, chain drive, Canoelet sidecar, with Lucas electric lighting outfit, Lucas electric horn; £90/15.—Colmore Depot, 261, Deansgate, Manchester. [0674

1914 James Combination, 3-speed, wind screen, leg shields, luggage carrier, extra silencer, 3 lamps, spare chains and valve, picked engine, climb anything; £58, or late Douglas part.—Randall, Newcastle Emlyn, Carm. (D) [X010

Juno.

JUNO V.T.S., 2-stroke, 2½h.p., condition as new £25, or gradual payments.—Seen at 248, Bishopsgate, London. [4667

THE Juno-Jap New 6h.p., Sturmey-Archer countershaft gear, £71/18/6, 131/10 month; the Juno 2½h.p. 2-stroke de Luxe, £29/8, 53/11 month.—Seen at 248, Bishopsgate, London. [4677

Kerry.

3½h.p. Kerry-Abingdon, 2-speed, free engine, good order; £30.—W. Newell, Kingsey, near Thame, Oxon. [4411

3½h.p. Kerry-Abingdon, with Roc 2-speed, Best and Lloyd, in good order; £27; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff [0722

Lea-Francis.

1914 Lea-Francis, Jap twin engine, very good condition; £46.—Walbro Motor Co., Saffron Walden, Essex. [X0866

LEA-FRANCIS, 1915, 3½h.p. twin, Lucas lamp, horn perfect; cost over £70 in May; T.T. bars; £6 or exchange for Sunbeam, Scott, A.B.C., N.U.T.—C Clifton Villa, Sittingbourne. [4410

Levis.

LEVIS.—Immediate delivery from stock 1915 model —Alexander's, 115, Lothian Rd., Edinburgh. [4122

LEVIS 1915 Popular Model, just arrived from works immediate delivery; £28/1.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [4400

1915 Levis, 2¼h.p., Popular model, absolutely new stock; £28/1; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6410

LEVIS 2-stroke Motor Cycles, latest 1915 models. Sole London and district agents. Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W. 'Phone: 1432 Regent. [0700

LEVIS No. 1 in stock, £36/17, or £10/13/6 down and 12 payments £2/6/8; special discount for 6, or 9 months; also Popular, £28/1, just arrived —Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green. [4515

L.M.C.

L.M.C., 1911, 3½h.p., Bosch, mag., good condition £18, or offer; evenings, 5 and 7.—Jones, 340, K Rd., Kew, Surrey. [4400

L.M.C. 2-stroke, latest model in stock, 26in. wheels 2-speed, footboards, Palmer tyres; £36/15.—Mi ston's, 26 and 31, Bridge St, Chester. [X0700

MOTOR CYCLES FOR SALE.

Lincoln-Elk.

1914 Lincoln-Elk, 3½h.p., T.T., or ordinary bars, countershaft 2-speed gear, and clutch, tyres excellent, lamps, horn; £25.—Horner, 43, Alexandra Rd., Bedford. [X9978

Martin.

MARTIN-J.A.P 6h.p. Combination, late 1913, coach-built sidecar, seat 2, hood, screen, electric horn, Cowey, Lucas set, good tyres; bargain, £48, no offers; seen any time. Phillips, Tupwood Cottage, Caterham Valley [4690

Matchless.

MATCHLESS, 8h.p. (1913), 2-speed; £52; with sidecar.—5, Park Av., Palmer's Green. [4325

1912 Matchless, 6h.p., 1914, Burbury sidecar; £33, or with 2-speed, £37/10.—2a, Princess St., Blackpool. [X0572

MATCHLESS, 8h.p., F.E., sidecar, speedometer, lamp, horn; £45.—Macrae and Tolfree, 2, Castle Ter., Edinburgh. [4579

4h.p. Matchless-Jap, Kerry sidecar, Bosch mag., B. and B., and accessories; £25.—Hooper, 114, Grove Lane, Camberwell. [4680

MATCHLESS Combination, late 1912, 8h.p., 2-speed, free engine, good condition; £40; trial by appointment.—Hughes, Conway St., Brecon. [X0543

MATCHLESS Combination, 8h.p. J.A.P., 2 speeds; cost over £95, new 6 months ago, condition as new; £75.—Manley, Ferndale Av., Stockport. [X0766

MATCHLESS 3½h.p. Twin, 3-speed, 1913, converted 1914 engine, in splendid condition; owner at front.—J. Langlands, Sutton-at-Hone, Dartford, Kent. [4441

1914 Matchless, 3½h.p. twin-cyl. J.A.P. engine, 3-speed, chain-cum-belt countershaft drive, sporting sidecar; £42.—The Premier Motor Co., Aston Rd., Birmingham. [4740

MATCHLESS T.T., 8h.p., overhead valves, extremely fast, low sporting sidecar; £46; very racy combination.—Macrae and Tolfree, 2, Castle Ter., Edinburgh. [4580

1913 7-8h.p. Matchless, with Canoelet sidecar, lamp, speedometer, etc., in very good condition; £60; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea; also at Cardiff. [0721

MATCHLESS 1913 8h.p. Combination, 2-speed, chain drive, F.R.S. and Lucas lamps, speedometer, horn, wind screen, overall suit, spares; bargain, £52/10.—Stevens, Addington, near Malling, Kent. [4610

MATCHLESS Combination, 1914 8h., 7h.p. M.A.G. engine, Lucas dynamo lighting set, 3 lamps, electric horn, all accessories, perfect condition; owner gone to Front; £80.—Haynes, 11, Augustus Rd., Edgbaston, Birmingham. [X0569

Minerva.

MINERVA, 2½h.p., B. and B., accumulator, footboards; £8.—G. Johnson, Brancaster, near Lynn. [X0533

MINERVA, 3½h.p., Bosch, Senspray, 3-speed, F.E., with sidecar; £18; exchange lightweight.—97, Latchmere Rd., Battersea. [4506

MINERVA, 3h.p., m.o.v., good tyres and belt, stand, in guaranteed perfect order, suit one to learn; £6.—Butterworth's Garage, 64, Mill Lane, Brixton Hill. [X0854

Monopole.

BRAND New 1915 2½h.p. Monopole, Villiers engine, 2-stroke, 2 speeds, a high-class mount, in stock; £37/15.—Walbro Motor Co., Saffron Walden, Essex. [X0861

Moto-Reve.

MOTO-REVE Twin Lightweight, mag., fine machine; £10/10.—Speechley, 45, Church Rd., Acton. [4732

MOTO-REVE, 1912, 2¾h.p. twin, just been overhauled by makers, splendid machine; £14/10.—Finch, 19, Austin Av., Stockton-on-Tees. [X0098

Motosacoche.

MOTOSACOCHE Lightweight, mag., B. and B., good condition; £8/10.—82, Casewick Rd., West Norwood. [4636

MOTOSACOCHE, 2h.p., mag., Druids, etc., recently overhauled; £12/10; appointment.—W., 2, Woodville Gardens, Ealing. [4622

1h.p. Motosacoche, 1910, mag., Druids, excellent order, not done 3,000 miles; no time to use; £10/10.—Dr. Thomas, West Drayton, Middlesex. [4673

1h.p. Motosacoche owner no further use, engine perfect, splendid condition, Palmer tyres, thorough running order; a gift at £15.—Ashleigh, Sterodale Rd., Sheffield. [X0492

New Hudson.

1914 New Hudson, 3-speed, clutch, complete; £35 cash.—Troynor, 18, Rawlinson St., Barrow. [X0580

NEW Hudson, latest model C 2-stroke, in stock, 2-speed; £36.—Marston's, 26 and 31, Bridge St., Chester. [X0717

1914 4h.p. New Hudson Combination, perfect; any trial; cost £80, sacrifice immediately £45.—Moss, Cheelwright, Wigan. [X0614

NEW Hudson, 1912¾, Colonial model, 4h.p., 3 speeds, clutch, coach sidecar; £45.—Ligat, Sylvan Av., Brookland, Cheshire. [X0564

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DOUGLAS, 1913, 2¾ h.p., T.T. model, 2-speed, and speedometer **£33**
RUDGE Multi Combination, 1913, 3½ h.p., coach-built, fitted with hood and screen **£48**
INDIAN, 1914, 7 h.p., clutch model, speedometer, head lamp, and **Flying Middleton Sidecar** **£50**
A.J.S., 1912, 6 h.p., 2-sp. countershaft gear, head lamp, horn, and rear lamp **£40**
A.J.S., 1914, 6 h.p., 3-sp., Lucas lamps and horn, Cowey speedometer, and **Gloria £25 Sidecar** **£70**
ROYAL ENFIELD Combination, 1914, 6 h.p., coach-built, head lamp, horn, speedometer, exhaust whistle **£65**
ZENITH, 1913, 6 h.p., Gradua gear, clutch and kick starter, Lucas head lamp, rear lamp, horn, watch, and Cowey speedometer, and fitted with **Gloria Sidecar** **£52**
P. & M., 1914, 3½ h.p., 2-speed model, Lucas head lamp, hack lamp, & horn **£46**
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1915 New Hudson, 2-stroke, 2-speed model de luxe, run 3 weeks, perfect; cost £42, what offers?—39, Aughton Rd., Birkdale, Southport. [X0485

2¼h.p. New Hudson, 2-stroke, 2-speed model, in extra good condition and running order; price £32/10.—Wanchope's, 9, Shoe Lane, London. [X0694

NEW Hudson, 1915, 2-stroke, 2¼h.p., perfect condition, Miller lamp and accessories; £25.—Cogan, Surgery, Pontyrhyll, Bridgend, Glam. [X0578

NEW Hudson, 4h.p., 3-speed, and sidecar, run less than 3,000 miles, best fittings, a nice outfit; £55.—Liddiard's, Downing St., Cambridge. [X0591

1914 New Hudson Combination, 3-speed, coachbuilt sidecar, fully equipped, guaranteed perfect; accept best offer.—A. Coffin, Holwell, Sherborne. [X0775

NEW Hudson, 2-stroke, from £36; all models from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0603

3½h.p. New Hudson-Jap, late 1912 combination, 3 speeds, very fine condition, complete, lamps, horn, speedometer,—£33, no offers.—French, Manor Court Av., Nuneaton. [X0583

NEW Hudson, 3½h.p., countershaft 3-speed gear; £63; delivery from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0570

NEW Hudson Models A., E., C., and D. actually in stock; also 1914 model C., 2-speed, ridden only 500 miles; £28/10.—Lamb's, 151, High St., Walthamstow. Depot 50, High Rd., Wood Green. [4522

NEW Hudson, late 1914, 4h.p. combination, hardly used, like new, all latest improvements; owner has not time to use it; price £48, or offers.—Apply, A. L. Norman, 855, High Rd., Leytonstone, N.E. [4429

6h.p. New Hudson, 3-speed, and free engine model, fitted with a 2-seat. coachbuilt Bowser sidecar, speedometer, lamp, Lucas rear light; the complete turnout, £57/10.—Wanchope's, 9, Shoe Lane, London. [X0693a

1915 2-stroke New Hudson, 2¼h.p., new in July, fitted P. and H. lamp, horn, and all accessories complete, perfect condition, ridden 500 miles; 27 gns., no offers; view and trial.—Rowse, 24, Broadway, West Ealing, W. [X0092

NEW Hudson, late 1913, 4h.p., 3-speed Armstrong and clutch, renewed July, 1914, 2 new Dunlops, Binks 3-jet, Bosch, Lucas mirror, Stewart speedometer, unused lamps, Canoelet, 3,000 miles, good condition; £45.—63, Hamilton Rd., Reading. [4615

NEW Hudson, 3½h.p., 1912, gear recently overhanled by makers, new 2½×2¼ heavy Dunlop on rear wheel, large Lucas head light, rear light, and horn, tools, spares; £28 cash, or exchange higher power; sidecar, 30/-; appointment.—Bower, 156, Pear Tree St., Derby. [X0643

NEW Hudson Combination, 6h.p. twin, 3-speed gear, clutch, kick starter, new car outer cover back wheel, with new Dunlop inner tube, everything in thorough good order, lamp, horn, etc., 1914 model, put into use March this year; accept £58/10.—Arthur Bell, High St., Marlborough. [4025

New Imperial.

NEW Imperial, 1913, 2½h.p., excellent condition; £17.—Macrae and Tolfree, 2, Castle Ter., Edinburgh. [4582

NEW Imperial-Jap, 1915, 2½h.p., 2-speed, Dunlops, speedometer, horn; £30, no offers.—Winch, 83, High St., Gt. Berkhampsted, Herts. [4496

NEW Imperial Lightweights, 2 speeds, actually in stock; £36/15; exchanges considered.—City Motor Co., 125, London Rd., Manchester. [0718

NEW Imperial-Jap Light Tourists, both models in stock, with and without clutch and kick starter.—Crow Bros., 190, High St., Guildford. [4596

1915 2¾h.p. New Imperial J.A.P., 2-speed, actually in stock; price 35 gns.; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6408

NEW Imperials in Stock for immediate delivery, light tourist, kick-starter, and ladies models; prices from 35 gns.—P. J. Evans, Birmingham and district agent, 87-91, John Bright St. [4587

NEW Imperials.—The motor cycles of guaranteed reliability, fitted with J.A.P. engines and foolproof countershaft gears; prices from 35 gns., and delivery from stock.—The Colmore Depot, 31, Renshaw St., Liverpool. [4640

New Ryder.

NEW Ryder, J.A.P., 1915, 2½h.p., 2-speed, pan seat, Amac, brand new; £35, or near offer.—B., 4, Park Terrace, Southend-on-Sea. [4653

NEW Ryder, 2¾h.p., very latest 1915 model, Albion 2-speed, free engine, drip feed, etc.; accept 37 gns. for quick sale.—Newnham, 223, Hammersmith Rd., W. [4639

Norton.

1914 3½h.p. 3-speed Norton, nearly new coachbuilt sidecar; £56.—Parker and Son, St. Ives, Hunts. [4714

1914 3½h.p. 3-speed Norton, semi T.T. bars, very fast, nearly as new; £50.—Parker and Son, St. Ives, Hunts. [4715

1915 Nortons.—Immediate delivery from stock of the Big Four, chain drive.—Alexander's, 115, Lothian Rd., Edinburgh. [4120

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Norton.

NORTON, 1915, just received one 3½h.p. 3-speed model; £59/17/6; don't wait; exchanges arranged.—Laytons' Garage, Bicester, Oxon. [X0760

NORTON, 1912, 3½h.p., horn, lamp, speedometer, all tools, tyres new, belt good, perfect running order; £25.—Bentham, 92, Ritherdon Rd., Balham, S.W. [X0596

1914½ Norton Big Four, Colonial model, as new, not done 300 miles solo, head lamp, generator, horn, and tools; price £50.—Wood, 70, Newmarket Rd., Ashton-under-Lyne. [4447

N.S.U.

N.S.U., 3h.p., mag., low, good order, handy solo mount; £12/10.—107, High Petergate, York. [X0845

N.S.U., mag., lightweight, in good going order; only £14.—F. Sheppard, Temple St., Swindon. [4529

N.S.U. and Sidecar, 2 speeds, mag., trial run appointment; £14.—A. Speechley, 45, Church Rd., Acton. [4733

10 Gns.—N.S.U. lightweight, Dunlop belt, Michelin tyres, B. and B., engine re-bushed, very fast; enlisted.—309, Queen's Rd., Peckham (after 6). [4491

N.S.U., 6-8h., twin, 2-speed gear, large coachbuilt sidecar, car size tyres, full equipment, an exceptional outfit, in new condition; £45.—Tuke and Bell, Ltd., Motor Department, Carlton Engineering Works, High Rd., Tottenham, N. [4140

O.K.

O.K. Juniors, actually in stock, 2-stroke and 2h.p.—Meeten, Motors, Dorking. [4196

1915 O.K. Junior, 2h.p.; price £33/1/6; actually in stock.—Julian, Broad St., Reading. 'Phone: 1024. [X3123

O.K. Juniors.—Immediate delivery from stock Mark III. 2-speed, £33/1/6.—Alexander's, 115, Lothian Rd., Edinburgh. [4127

O.K. Junior, 2h.p., 2-speed, ridden 20 miles only; owner bought twin; £30, or near offer.—Box 9,450, *The Motor Cycle* Offices, Coventry. (D) [X0545

1915 2¾h.p. O.K., 2-speed, 2-stroke, complete with lamp, horn, Lucas rear light, etc., in thorough good running order; £25.—Robbins, Garage, Rugby. [X0094

Olympian.

OLYMPIAN, 3½h.p., wicker sidecar, Mabon clutch, free-wheel, accumulator, P.H. lamp, horn, speedometer, Palmer corded, spares, good running order; £16; seen any day, Saturday, Sunday by appointment.—Chatelin, Bridgeman Rd., Teddington. [4409

P. and M.

P. and M., 3½h.p., 2-speed, in good condition; £16.—Sanders' Garage, Kidderminster. [X0107

1913 P. and M. and Coachbuilt Sidecar, complete; £48.—Cross, Jeweller, Rotherham. [X0633

P. and M. 2-speed, mag.; £14/10; running order; exchange lightweight.—9, Waldegrave Rd., Teddington. [4554

P. and M., Humber, mag., Druids, speeds, perfect, sidecar machine; £15/15.—Nightingale, Builder, Chorley. [4434

P. and M., 2-speed, free engine, mag., coach sidecar, wind screen, perfect order; £24.—139, Croyden Rd., Caterham. [X0840

PHELON and Moore, 1913½, and P. and M. coachbuilt sidecar, little used; £52/10.—43, First Av., Acton Park, London. [X0734

PHELON and Moore, Ltd., 4, Percy St., W., have several good second-hand P. and M. machines for sale, which have been overhauled, and are in perfect order.—Can be seen at above address. [0131

Peugeot.

PEUGEOT 3½h.p. Combination, chain, belt, 2-speed, excellent condition; £30.—5, Brighton Rd., Newhaven. [X0491

5h.p. Peugeot Combination, wicker Montgomery, Bosch, spring forks, Xl'all seat, B.B., all good order; trial; £22, or exchange.—Pudney, 1, Orchard Cottages, Walton-on-Naze, Essex. [X0636

Premier.

PREMIER, 1914½, countershaft 3-speed, kick, clutch, chain, done 2,300; £57/10; offers.—Otton, Castle Carey. [4551

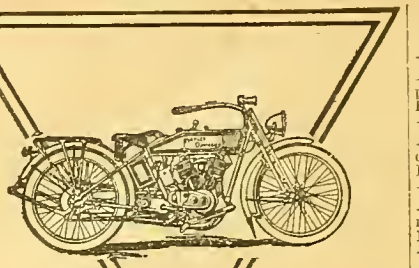
PREMIER, 2h.p., Bosch, Druids, B. and B., splendid smart lightweight; £12/10.—224, Belgrave Gate, Leicester. [X0609

PREMIER, 1914, 2½h.p., 3-speed, perfect lightweight, almost new, cost £46/10; price £32.—Laytons' Garage, Bicester, Oxon. [X0753

PREMIER, 3½h.p., 1911½, N.S.U. gear, and F.N., coachbuilt spring-wheel sidecar, good condition; £27.—Arnold, 85, Suffolk St., Poplar, E. [4592

PREMIER, 3½h.p., Grado multi, Phœnix lightweight, overhauled, new belt, tyres, etc.; immediate sale, £28.—2, Granville Terrace, Bracebridge. [4564

PREMIER, late 1913, 3½h.p., 2-speed gear box, with coachbuilt underslung sidecar, in perfect order; bargain, £35; appointment.—18, Quorn St., Edge Lane, Liverpool. [X0669



HARLEY-DAVIDSON

Sidecar Combinations actually in Stock for immediate delivery

Model IIF, 7-9 h.p., 3-speed, chain drive, kick starter .. **£68 5s.**
Model IIJ, 7-9 h.p., 3-speed, electric dynamo lighting equipment **£76 13s.**

IMPORTANT.—The above prices are now subject to an increase of £10 Import duty—we have a few machines received before the introduction of the Budget, for Immediate Delivery, FREE OF DUTY.

A word about Sidecars—

don't spoil your machine by fitting an inferior or badly designed sidecar. We can supply FROM STOCK the HARLEY-DAVIDSON Sidecar (manufactured by The Harley-Davidson Motor Co.) at **20 Guineas.** Also special GLORIA and CANOELET Sidecars, with Chassis and Body enamelled H.-D. grey, 28 x 3in. Dunlop Rubber Studded Tyre, luxuriously upholstered and sprung, at prices from **15 Guineas to 27 Guineas.**

THE PREMIER MOTOR COMPANY,
Aston Road,
BIRMINGHAM.

MOTOR CYCLES FOR SALE.

Premier.

PREMIER, 1914, 3½h.p., countershaft 3-speed model, Canoelet coachbuilt sidecar, lamps, hooter, complete; any trial given; £53 nett.—Premier Depot, 20, Holborn Viaduct. [4707

PREMIER Combination, 1915, 4h.p., 3-speed countershaft, Matchless coachbuilt sidecar, all accessories, done about 800 miles; £60.—Coates, 88, Griffin Rd., Plumstead, Kent. [4379

PREMIER, 1915, 3½h.p., 3-speed countershaft, latest model, unused, special price for cash; also nearly new coachbuilt sidecar to fit same.—Apply, Miller Bros., Burgate St., Canterbury. [4464

LATE 1914 3½h.p. Premier and sidecar, 3-speed countershaft gear and kick start, perfect condition throughout; £45.—The Falcon Motor Co., High Rd., North Finchley, N. [4420

PREMIERS.—The manufacturers have a few second-hand 1914 3½h.p. 3-speed models for disposal, with or without sidecars. — Call or write, Coventry Premier, Ltd., 20, Holborn Viaduct, E.C. [4705

PREMIERS.—Immediate delivery from stock; 1914 3½h.p. Premier, 3-speed countershaft, new, £60 nett; 1915 3½h.p. Premier, 3-speed countershaft, new, £66 nett. List post free on application. Trials arranged. [4706

Precision.

PRECISION, 1914, T.T. model, 3h.p., overhead valves, good condition; £22.—J. Seabrook, jun., Edgware. [4690

1914 Precision, 3¾h.p., 3-speed, pedal starter, speedometer; any trial; £29.—29, St. Leonard's St., Bow, E. [4616

Quadrant.

3h.p. Quadrant, good condition, suit tradesman or beginner; £10.—Sgt. D. King, 2/6th Sco. Rifles, Stirling. [X0424

QUADRANT 4½h.p. 1914 Combination, 3-speed, kick starter, lamps, etc., in splendid running order, accessories; seen after 5 p.m.; £40.—Read, Rhuwbank, Kentish Rd., Belvedere, Kent. [X0710

Radco.

RADCO, 2-stroke.—Immediate delivery from stock, £25/5 model.—Alexander's, 115, Lothian Rd., Edinburgh. [4129

Rex.

REX Combination, 4h.p., 2-speed, complete, new 1914, lamps, horn, spares; £35.—Smith, 2, Grove Rd., Luton. [X0865

6h.p. Rex, 1912, 2-speed, perfect running order, first-class cane sidecar; trial; £38.—Ellison, Ivanhoe, Coleford, Bath. [X0589

REX, 3½h.p, Bosch mag., spring forks, footboards, foot brake, good condition, low; £12.—14, Brighton Rd., Bedford. [X0765

6h.p. New 1914 Twin Rex Motor Cycle, 3-speed countershaft and chain drive; £59.—Wanchope's, 9, Shoe Lane, London. [X0693

REX.—1912 6h.p. 2-speed Rex de Luxe and coach sidecar; splendid value; £31/10. — Colbert's Motories, Deal St., Halifax. [0707

REX 5-6h.p. Twin, sidecar, Bosch, B. and M., Mabon spring forks, all necessories; £18/10.—Write, 7, Elliott Rd., Thornton Heath. [4609

3½h.p. Rex, 2-speed, handle starter, Bosch, Amac, Whittle, lamp, perfect order; £16; enamelled grey.—Railway Garage, Staines. [4745

GREAT Bargain, £3/15.—3½h.p. Rex, overhauled, B. and B., good tyres, low, fast; trial; full details.—Chappell, Queen's Rd., Nuneaton. [X0631

REX, 3½h.p., new Bosch, B. and B., variable pulley, adjustable pulley, in going order, with Chater-Lea sidecar (wicker); room wanted; £13.—73, Parish Lane, Penge. [4488

3½h.p. Rex, 1911, Bosch, B. and B., adjustable pulley, new belt and back tyre, good condition; £18, or offer.—Bishop, Leith House, Hildaville Drive, Westcliff, Essex. [4625

1913 Rex Twin, 5-6h.p., excellent engine, new spare Hutchinson passenger, lamp set, new belt, £24; with 1914 cane torpedo underslung sidecar, £28/10; close offer considered.—Hudson, 267, Park Lane, Macclesfield. [X0774

Rex-Jap.

1913½ Rex-Jap, 4h.p., fast, climb anything, for light weight and cash, or sell £28.—Corder, Northfield, Bridgwater. [X0599

3½h.p. Roc, 2-speed, handle starter, good order; £17 10 —L. Bird, Daventry. [4567

Rover.

ROVER, 1915, T.T., as new, Philipson; £48, or change.—Pigot-Disney, E. Molesey, Surrey. [4485

3½h.p. Rover-engined Machine, new tyre; bargain £12; call after 6.—70, Kingsley Av., West Ealing. [4506

1914¾ Rover, 3-speed, with or without coachbuilt sidecar; £45.—W. G. Keen, 14, Rock St., Finchley Park, N. [4543

ROVER, 1914, 3-speed, and coachbuilt sidecar, very little used, all accessories, condition equal to new; £55.—W. J. Coe, Crown St., Ipswich. [X0995

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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SOUTH AFRICA.—Central News Agency, Ltd. PARIS.—Smith's English Library, 248, Rue Rivoli.

A Comparison of Old and New Engines.

ALTHOUGH we recently published a letter from a correspondent who wrote in praise of his 1912 machine and compared its performances with those of newer makes, somewhat to the detriment of the latter, it must not, for a moment, be supposed that we agree with the suggestion contained in this letter that new engines are inferior to the models of a few years ago. Possibly our correspondent himself would be slow definitely to make such a statement, but certainly this is the inference to be drawn from his letter.

Just as there are differences between engines of the same make and even of the same year, so also there are differences still more marked between riders, and consequently it must often happen that a good example of a 1912 machine, which has been well cared for and is driven by a rider who knows his engine "inside out," will excel a similar machine of recent make with, possibly, an engine which is hardly "run in," especially if the latter is in the hands of a less skilful rider. It is also true, as pointed out in another letter, which, with others, we publish in this issue on the same subject, that not every motor cycle which stops on a hill has "konked out," nor does every driver who ascends a hill slowly do so simply because he cannot ascend it at speed. It is not difficult to pass another motor cycle on the road when its rider is simply jogging along at his own speed enjoying himself in his own way. In the case of sidecar combinations the weight of the sidecar and passengers has, too, a large influence upon the performance of the outfit, and sidecars have become very much more luxurious, and consequently very much heavier of recent years.

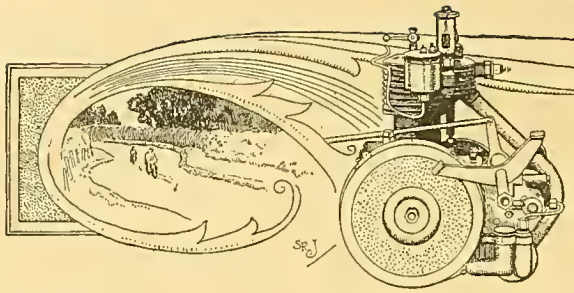
Hill-climbing power is largely a question of suitable gearing, and a really sound machine, which is generally used in flat open country and geared highly in consequence, may in a hilly district find itself at a disadvantage when compared with a less powerful outfit designed more carefully for the work in hand.

A Masterpiece of Mechanical Paradox.

SUCH is the title of an article in the current issue, by a writer of engineering attainments, who criticises very adversely the modern motor cycle engine. We may state, at the outset, that we by no means concur with all the writer's conclusions, though we must confess there is a good deal of sound reasoning in his remarks. Our contributor is severe, particularly concerning the metals used in modern internal combustion engines, and we feel sure that those practical men who take the trouble to study his remarks will be led to consider new paths to possible improvement. After all, the performances of a modern high efficiency air-cooled engine are sufficient answer to many of our correspondent's sweeping assertions. It should be stated, too, that he brings up points of design which were long ago discarded in the leading makes of machines. There are many sides to the question of timing-gear design, but it may be observed here that the external cam has, of late years, been favoured. Large valves are not unknown, and those with a step formation under the valve head have almost sunk into oblivion. But in the matter of inadequate bearing surfaces and undue wear motor cycle engines have undoubtedly suffered for a long time past. His remarks concerning twins are interesting, bringing into the limelight once again the question of the 90° pattern, but the writer does not explain that both this type and the larger size of horizontal twin do not lend themselves to a neat and compact frame construction, though we fully realise that appearance must, in case of necessity, be sacrificed to efficiency.

We commend the remarks to those designers and makers who study all suggestions in a commendable desire to effect improvements wherever they may be possible.

An index to the advertisements in this issue will be found on the page facing the back cover.



Autumn Trips in the South.

A SUGGESTION FOR A SATURDAY AFTERNOON TRIP.

THOSE readers of *The Motor Cycle* who may happen to be on the look out for interesting week-end jaunts cannot do better, should they be Londoners, than try the following route, which is exceedingly attractive at this time of year, when the autumn tints and falling leaves provide such pretty pictorial effects.

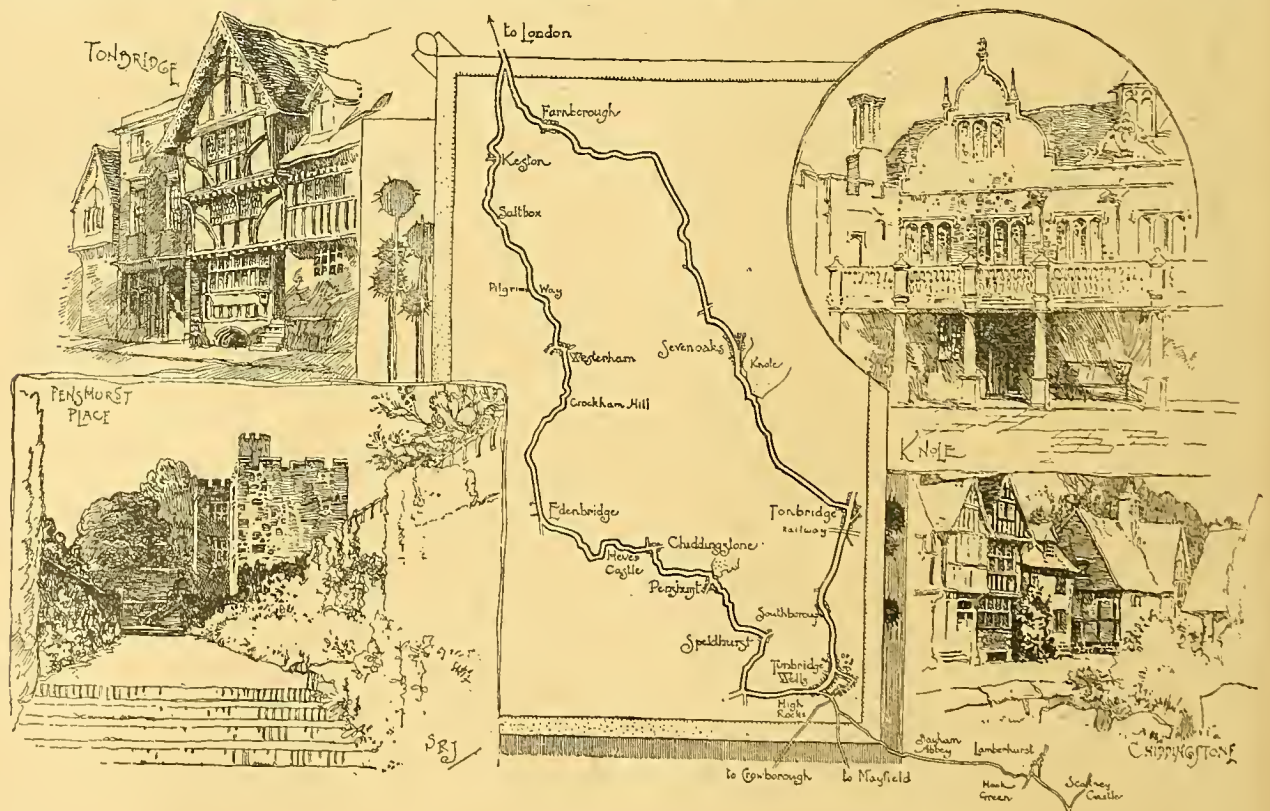
Follow the road to Lewisham Clock Tower, accessible from the West End by way of Camberwell and New Cross. Then take the main Hastings Road through Bromley and Farnborough to Sevenoaks, observing, on the left just beyond Sevenoaks, the magnificent estate of Knole Park, the home of the Sackvilles, one of the most stately mansions and parks in England. Descending River Hill, Tonbridge, with its castle ruins, is approached, soon followed, by keeping to the right at the road fork beyond the station, by Southborough and Tunbridge Wells.

There is much to be seen at Tunbridge Wells—the High Rocks, and the Toad Rock on Rusthall Common, these rocks being of sandstone and assuming large proportions. The Toad Rock is most grotesque, and the Pantiles is a curious promenade in the town. Beyond Tunbridge Wells the road should be taken for Bayham Abbey and Lamberhurst, and then round to Scotney Castle. There is a splendid Trust inn at Hook Green, near Lamberhurst, called "The Elephant's Head," close to the spot where iron was once smelted in days when iron was famous in these parts. There are lovely lanes to explore all round about Crowborough and Mayfield.

The Return Journey.

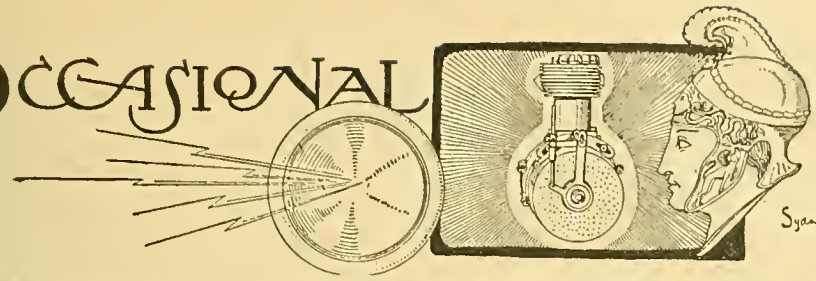
Returning home, the rider should go through Penshurst, with its stately mansion, Penshurst Place, the home of the Sydneys; lovely church and lych-gate. Then there is Chiddingstone, with its quaint cottages and well-known "Castle Inn," and so on to Hever, which castle was the home of Anne Boleyn. From here glorious country continues right away through Edenbridge and Westerham, with its statue of General Wolfe. The way to Bromley and London lies over Westerham Hill, and through Keston, where may be seen some wonderful lakes. Altogether, this run embraces some of the most attractive scenery in the Home Counties

A.B.A.



OCCASIONAL COMMENTS

By 'IXION'



Electrically-started Motor Bicycles.

A reader requests a prophecy on the future of engine-starting, remarking that the modern car will soon be universally fitted with an electrical starter, and that motor cycles cannot lag far behind. I wish I dare make a prophecy on the subject. It would be pleasant to think that as *Anno Domini* gets in its deadly work on my already decrepescent physique, I could look forward to a 1 h.p. (nominal) "baby" capable of climbing Amulree at 40 m.p.h. and fitted with a 2 lb. electric engine-starter operated by a push button on the handle-bar. So far as the immediate future is concerned, I should say the matter is bound up with the survival of the costly high-powered sidecar-puller de luxe; and it is one of the most difficult guesses on earth to say how far a possible cheapening of light cars may knock this pattern of machine off the market. At present, the electric starter does not seem to be making good even on the most luxurious and expensive machines. It increases the strains on the battery (already too large); it adds to the weight, for a dynamo adequate for lighting purposes is barely equal to any additional strains; it complicates the machine—and users are hardly proving themselves worthy of the lighting or lighting-cum-ignition sets as things are; and it pushes up prices. If the big motor cycle *de luxe* loses any ground as the result of competition with light cars, imported or otherwise, the advent of the featherweight electric engine-starter may be far distant. After all, what is the matter with a decent kick-starter? No electric starter can ever hope to compete in first cost, reliability, and cheapness of repair with a device which consists merely of a pedal, a spring, and a few cogs.

Clergy and the Petrol Tax.

It is extremely doubtful whether the Exchequer will listen to the appeals of a few clergy who desire relief from the petrol tax. Their case is by no means on all fours with that of a doctor. The doctor pays, on an average, at least forty visits per diem, so that the time-saving qualities of the motor are invaluable to him. It is frequently necessary for him to reach a patient as rapidly as possible. The time between visits is short, and he must refresh his memory about a case between one door and the next (and dispensary work occupies him till the moment of starting out). In bad weather and at night he should reach the patient with warm hands, as he may have to handle the naked flesh. His visits cannot be confined to a given locality on a given day, but are dotted about all over his round, which usually covers from six to ten ecclesiastical parishes. *Per contra*, who ever heard of a parson who habitually paid from 200 to 300 visits per week; more probably forty is nearer the clerical average. The parson can refresh his memory about his flock before leaving home. It is seldom necessary for him to go out late at night; nor is it then necessary that he should arrive warmer than walking can keep him. His visiting, except in comparatively rare emergencies, can be and is confined to a single corner of a single parish. Or one can put it this way. The doctor's need of a time-saving and protected means of locomotion was such that, prior to the motor era, nine doctors out of ten used horse-drawn vehicles, usually admitting of cover during bad weather, whereas not one parson in a thousand, either then or now, finds anything more ambitious than a bicycle essential to his duties. My own vicar, who is another "Sparting Porson" (to borrow our correspondent's nomenclature), tells me that he uses his motor bicycle on one day in each week for pastoral purposes in order to cram his visits to outlying members of the congregation into a single afternoon, but that his push-bicycle serves the purpose quite as well. In a previous parish, of the straggling rural order, he habitually covered sixty miles per week in pursuit of his pastoral duties, but this mileage was totted up simply in reaching one village or another, where the rest of the afternoon or evening was spent, so that Shanks' pony or a push-bicycle would have been equally serviceable.

Motor Cycles for Professional Purposes.

Our correspondents have, however, raised a much larger question, in that there are a host of minor professions in which the motor bicycle and cheap multi-wheelers, like the Morgan runabouts, are being increasingly used. One Morgan of my acquaintance is used by a wholesale grocer, whose clients are the village chandlers' shops spread over half a county. His work is such that he might conceivably get a pleasure trip on Sundays, but for 313 days out of the 365 it is used exclusively for business. There are others, including itinerant chapmen and canvassers and agents who use similar cheap locomotion in work which is professional to the extent of 75% at least of the mileage. It may seem unfair that an occasional trip for pleasure at the week-end should deprive such users of the rebates extended by law to—for example—large multiple firms owning delivery vans used exclusively for business. The problem of relief is thorny. When Jones, who is a bit of a nut and speed merchant in private life and an insurance canvasser in business hours, is seen gaily tuf-tuffing down the road, who is to say whether he is bent on pleasure or business? Is he going to wring overdue premiums from a reluctant policy-holder, or is he going to sit on a gate in the gloaming with the policyholder's pretty tweenie? Supposing rebates of licence and petrol tax were deemed desirable for all motorists who can prove that 75% or upwards of their mileage is covered on strictly business purposes, how are the claims to be tested and verified? Will the

Occasional Comments.—

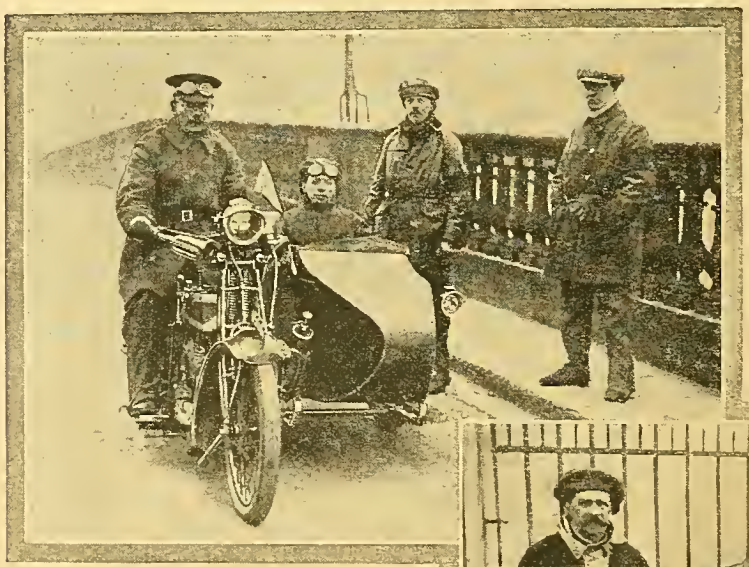
claimants have to keep a precise log book of all their journeyings and show it to a detective on demand, or what? I think it quite possible that the idea may be considered after the war, though from a somewhat different standpoint. Money will be tight, and the Government will desire to cut down luxurious expenditure. Professional users may not get relief, but attempts may be planned to super-tax the pleasure motorist whose petrol is exclusively consumed in joy riding. If such distinctions are made, it is more probable that they will be applied to the licensing process than to the fuel.

Better Now, Thank You.

The other day a low, stertorous moaning was audible throughout the office; the staff rushed hastily into my sanctum, and, after some good work with the sal volatile, I recovered sufficiently to hand our Brooklands expert the cause of my fainting fit. I had hoped that my innate modesty protected my writings from any semblance of omniscience, but it is not so. One of our naval nuts, at present "somewhere in the North Sea," had written asking me to frame handicaps for a timed hill-climb and one and five-mile sprints, to be contested on the next afternoon ashore by a baker's dozen of bicycles, ranging from a 1910 lightweight to a 1916 10 h.p. Some of them had single gears, some of them had three speeds. The timing arrangements were to be of the makeshift order, and no weighing was possible. We rang up Brooklands, and the track bulbous-brains soon scented trouble and regretted they were frightfully busy. In the meantime, ye bespectacled makers of formulæ, here is a problem for your leisure. Given a hill of unknown length and gradient, in the absence of a weighing machine, how much start should a 9 h.p. ported and stripped 1916 solo racer allot to (a) a 1910 two-speed 3½ h.p. with coach built sidecar, and to (b) a 1915 single-geared baby two-stroke? I appreciate the compliment of this letter, but, like Uriah Heep, I very 'umbly confess myself unequal to the occasion.

SCENES IN THE COAST-TO-COAST DESPATCH RIDE.

(See page 399 of the last issue)



(Upper) The 6 h.p. A.J.S. sidecar outfit ridden by "Sergt." Fletcher, of the Sheffield Volunteers (Motor Cycle Section). Fletcher made splendid running, and was the only man to complete the whole journey.

(Lower) "Private" Dover replenishing the tank of his Indian during a brief halt.

ROAD REFORM.

A Central Authority Wanted.

A road may be likened to a carpet spread upon boards, as it consists of a surface laid upon a foundation. Many rural road authorities have displayed an incredible foolishness. No sane householder would be so idiotic as to put down a costly pile Brussels carpet upon naily, worm-eaten and undulating floorboards. But year after year many traffic authorities are guilty of a parallel crime. They calmly deposit extremely expensive tar surfacing upon a road foundation which was barely equal to the slow horsed traffic, which was its sole burden twenty years ago. When the foundation disintegrates the costly superstructure within three months, they lift pious hands in horror and denounce motoring and motorists. Sooner or later we shall have to face the reconstruction of the entire *foundations* of many important roads. But a sane roadway system is hardly practicable so long as the business is entrusted to local enterprise and local prejudice. We stand in crying need of a centralised road authority.

MILITARY NOTES.

Use of Sidecars Extending. Scott Sidecars which Reverse.

SIDECARS INSTEAD OF CARS FOR OFFICERS.

AS we have before hinted, sidecar outfits are now being used in various branches of Army work, in addition, of course, to the motor machine gun batteries. We have a letter before us from a motor cyclist in France who has been driving his Commanding Officer about on tours of inspection on a Clyno outfit, which, he says, is well suited for the work, as it is easy to handle and has a good turn of speed. Improvements suggested to meet the extraordinary condition of some of the roads after heavy shell fire are stronger front fork springing and stronger sidecar springs.

REVERSING A SCOTT.

THE other day a well-known motor cyclist told us that he had seen a Scott motor bicycle with a reverse gear. When we doubted such a thing, he renewed his assertion, and said he saw a Scott actually reversing in a Government yard, and the machine was one of the R.N.A.S. sidecar outfits.

An explanation of the occurrence is now forthcoming from a petty officer in the Royal Naval Air Service, at present in the Mediterranean, who was moved to write us by seeing a copy of *The Motor Cycle* and noting the photographs of many Royal Engineers he had met, and whose photographs were reproduced. He commences, "You can imagine how pleased I was to pick up a copy of *The Motor Cycle* while in hospital at Malta." He informs us that the machines were fitted with Splitdorf magnetos, and with these magnetos it was possible to drive along, put the lever into the free-engine position, advance the spark, close throttle, and just lift the half-compression valves, when on letting in the low gear again the machine would reverse. This method of reversing a two-stroke engine is used on most two-stroke marine engines. It is not easy, however, to do it with magneto ignition, as a magneto only gives the best possible spark when fully advanced; therefore, in order to obtain sufficient advance to reverse the engine, it would have to be only half advanced or even less when running in the ordinary way.

Sergt. H. Karslake, of the No. 1 Squadron Royal Flying Corps. Karslake will be better known as one of the most prominent members of the Motor Cycling Club, and a consistent participator in all the big long-distance trials. Our present duty is to offer him our congratulations upon his engagement to Miss Mary Reid, of Fraserburgh, herself a well-known motor cyclist.

According to our correspondent, *heavy* motor bicycles are not favoured in the countries where the Mediterranean Expeditionary Forces are operating, as the roads are almost impassable, and a number of riders have been injured through having to keep their feet on the clutch continually. "This is where the hand control scores," the P.O. sensibly remarks. It is not possible to use sidecars on the roads in question.

The writer and his friends, together with other members of the R.N.A.S., were trained with their machines, and then at the last moment had to be sent out as infantry, with full equipment and also a tripod and a quick-firing gun.

This is not a man on a motor cycling camping tour, but a despatch rider attached to a cavalry corps with the B.E.F. The rider, Corpl. J. N. Johnson, has covered a big mileage over roads of all descriptions on his Douglas.

BROTHERS IN ARMS.

A fine record—four brothers who are in the Army photographed together in France quite recently. From left to right: Sergt E. P. Williams, A.S.C.; Corporal Eric Williams, despatch rider, R.E.; Corporal G. H. Williams, R.A.M.C.; and Corporal L. J. Williams, despatch rider, R.E. It is hardly necessary to add that the second man is Eric Williams, of Tourist Trophy fame, and the writer of a very interesting article on the work of a despatch rider that appeared in *The Motor Cycle* in the spring of this year.

WELL-KNOWN RIDER AS MILITARY INSTRUCTOR.

CORPORAL W. PRATT, a photograph of whom we published a fortnight ago, is now at an A.S.C., M.T., camp at Catford instructing recruits in the handling of motor lorries. New men are taken all round the Kent hills, such as Cudham, Salt Box, Chalk Pit, and Westerham, and, as Pratt says, a 5-ton lorry is not an easy machine with which to make starting and stopping tests upon on hills of this nature. Despatch riders are, of course, trained on motor cycles, Douglases and Scotts being used at the Catford camp.

Referring to the proposed munition workers' trial, Corporal Pratt considers a one day trial, after the style of the A.C.U. Quarterly Trials, would receive excellent support in the Catford district.

Pratt, by the way, was not invalided home, but sent back to act as a motor cycle instructor after eight months at the Front, and suffered his ankle trouble whilst on service in this country. He is now married to the lady shown in the sidecar in the photograph reproduced on page 574 of *The Motor Cycle* of a fortnight ago.

THE MODERN MOTOR CYCLE ENGINE.

"A Masterpiece of Mechanical Paradox."

FROM the enthusiastic rhapsodies of the technical press, we might reasonably believe that the modern motor cycle engine was a triumph of the engineering science, but there are reasons for not agreeing with this—it would seem—almost universal idea.

Taking the engine part by part and carefully examining each detail, we notice the following peculiarities.

Piston.

The modern piston is unduly heavy, and, in addition to weight, many types have parallel sides, thus bringing into play a large amount of unnecessary friction. The rings are relied upon to such a small extent that even three are sometimes used. It is fitted with a gudgeon pin as small as the designers dare make it in section, and, not content with this, they, having the choice of a bearing surface for the little end of either 2½in. or ¾in. long, choose the latter; finally, to obtain a large output with ease, a material unsuitable for high speed reciprocating motion is used, viz., cast iron.

Connecting Rod.

The importance of weight is here again paramount, so, with characteristic ingenuity, the designer stamps it out of the solid into a shape which bears no very clear relation to the function which it has to perform. At its lower extremity we come to a bearing which, as it takes the full thrust of the engine, is made as small as possible consistent with safety and of a design which requires copious lubrication. Successfully to avoid the undue flooding of the bearing, flywheels are ingeniously applied to each end, and perform their work with gusto in adding pounds of unnecessary weight to the engine, in making very apparent the viscosity of the oil agitated between their peripheries and the crank case, and, as before mentioned, draining by centrifugal force all oil which by chance happens to go near the big end and main bearings. As in the case of the piston and probably for the same reason, cast iron is again the material selected for their construction. In a few cases, one flywheel is adopted and is placed outside, where, however, the section immediately becomes unsymmetrical; one which develops unequal strains on different parts, *i.e.*, the two faces being invariably adopted.

The Main Shaft.

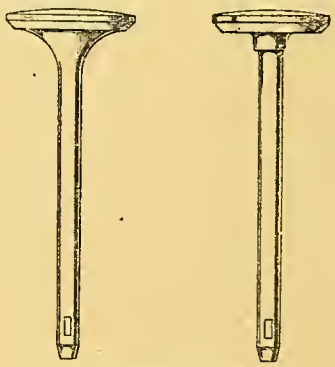
This should be quite rigid, and is again unaccountably made in five separate and distinct parts, the joints of which must be made readily detachable or the machine cannot be dismantled (a very necessary and far too frequent operation); these joints are rather prone to work loose, which, of course, does not improve the running.

Timing Gear.

At present the cam appears to be a necessary evil, but why are inside ones so prevalent? One fails to see any advantage, and the following disadvantages are immediately apparent. The perimeter of the cam face is smaller for the same size of cam, thus causing quicker wear. The cam itself is more costly, it being more difficult to produce than an outside cam. The force of the lift has to be carried round the projecting rim, thus making for unnecessarily strong construction and consequently more weight, and, what is far more detrimental, more inertia in the moving parts. Continuing our survey, we come to the tappets, which, if not of the obsolete, antediluvian and pre-historic non-adjustable type, are still unmechanical, being generally offset. This arrangement, whilst suitable for the non-adjustable type, is totally unnecessary now, a large side strain being imposed on the guides, causing a tendency to bind. Perhaps (dare I whisper it) it is because the makers have not troubled to alter their cylinder or timing gear patterns.

Valves.

Every year we hear of valves being made larger, but why only a millimetre at a time? Small valves mean big lift, big lift means thick heavy heads; this again means thick stems. In turn we get stronger springs to obtain quick drop, and, as a result, broken valves and worn timing gear. The side by side position is an abomination; valves certainly should not be interchangeable, they perform different functions and should be of different design. The exhaust valve cap is a fruitful agent of pre-ignition, and long valve stems and tappet rods are inevitable with this system; besides, think of the distorted cylinder and combustion chamber. One side of the valve chamber supplied with a freezing mixture, and the other traversed by a particularly powerful blow pipe flame; all in one piece with the cylinder, which under these conditions quickly loses any pretension to cylindrical form it once had. Overhead valves are infinitely preferable, and surely they can be prevented from falling into the combustion chamber without being made weaker in the stems. But, although overhead valves are the thing, the method of operating them is really amusing. At present the valves have to be operated from a distance, and as a rod in compression has to be made much stouter than one in tension, the former is selected because it is heavier and more massive (a British characteristic). In using this ingenious system of transmission, power is transferred to a distance by reciprocating motion. (Most mechanical!) Also the pivot for the rocking lever, which is mounted on the cylinder head, is necessarily subjected to twice the strain on the tappet rod. (More weight!) The neck of the valve is a most vulnerable part, and most valves yet are not stout enough here.



Types of valves showing good and bad design.

The Modern Motor Cycle Engine.—

Cylinder.

Now we come to the masterpiece of design, cast iron in tension (ye gods!); this portion of the engine performs the functions of radiator, boiler, compressor, guide bars, frame, and serves to hold rigidly valves, carburetter, and rocker arms, and is wholly and entirely composed of that paragon of all the virtues, cast iron. Admittedly, the fins are now cast with much greater care than formerly, and in a very few cases have been made so deep that the edges are always comparatively cool, but cast iron is not one of the best conductors of heat we possess, and consequently, as the heat cannot be carried away sufficiently quickly, low compression is universal even for Brooklands racing models, and even then konking is not unknown. The fins also have not the right section; a parallel-sided fin is not in accordance with science.

Coming now to the crank case where the otherwise prevalent cast iron could be used with advantage, what do we observe? This: a material is used closely resembling hard cheese in consistency. We have heard it announced that this is permitted on the score of reducing weight (which is apparently neglected elsewhere). As a result, the timing gear is either losing its screws, or else the threads are quickly rubbed over and stripped. Who has not seen loose cylinder studs? Gear boxes are in the same plight, and some makers are finding out that bearings have to be supported by bronze rings let into the aluminium. One specimen has an entire skeleton frame inside.

Balance is also a good point in an engine. Probably this is why so many singles and "V" twins are made. The 90° twin is sometimes noticed, but here we are confronted with uneven firing periods, and also the difficulty of properly building it into a frame. The horizontally opposed twin (with slight alterations from present practice) is undoubtedly the engine of the future.

Other Details.

The magneto governed on the contact breaker; oiling on the hit and miss splash system; carburetter which as far as one can see has two superfluous controls, and not the ones necessary. Exhaust pipe which has either to turn sharp corners, or else run straight into a box, thus doing away with any scavenging action. Gears with arbitrary step ratios, non-weatherproof or inaccessible transmissions, rigid frames, and spring forks which only take shocks in one direction (some models recently improved).

There are a few makes on the market which have been shorn of some of the above defects, but on the whole they are common to the general design of engine and cycle.

There is too much finality of design in the trade at present, and the talking points of new models are rather in the pump clips, back stands, different coloured enamels, and "our vastly improved and unapproachable registered design of compression tap handle," than in any mechanical improvement.

Given time one could pick out many more points of interest to talk about, but there are here sufficient for the time being. Finally, the writer is an enthusiastic motor cyclist. He rides, and enjoys doing so, that "masterpiece of mechanical paradox," a motor cycle.

A. WORSDALE.

MILITARY MOTOR CYCLISTS OUTSIDE THEIR SLEEPING HUTS.

The Overseas batteries at the Motor Machine Gun training centre. These are reserves for those batteries that have already left for active service and they are men who have completed their training. Scott machine gun sidecars may be noticed among the group.

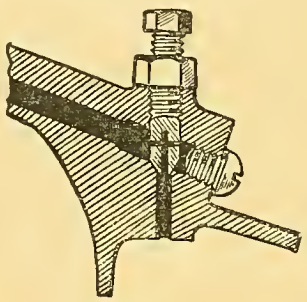
A 21

NEW MODELS

· MANUFACTURERS' PROGRAMMES FOR 1916 ·

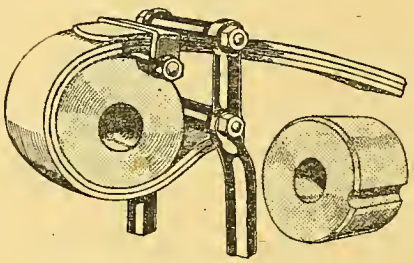
AUTO-WHEELS FOR 1916

THE popular Auto-wheel has only been improved in minor details for the coming year. The accompanying illustration of the power unit clearly shows the construction of this interesting little engine. The section is particularly well made, and all the working parts are clearly exposed to view.



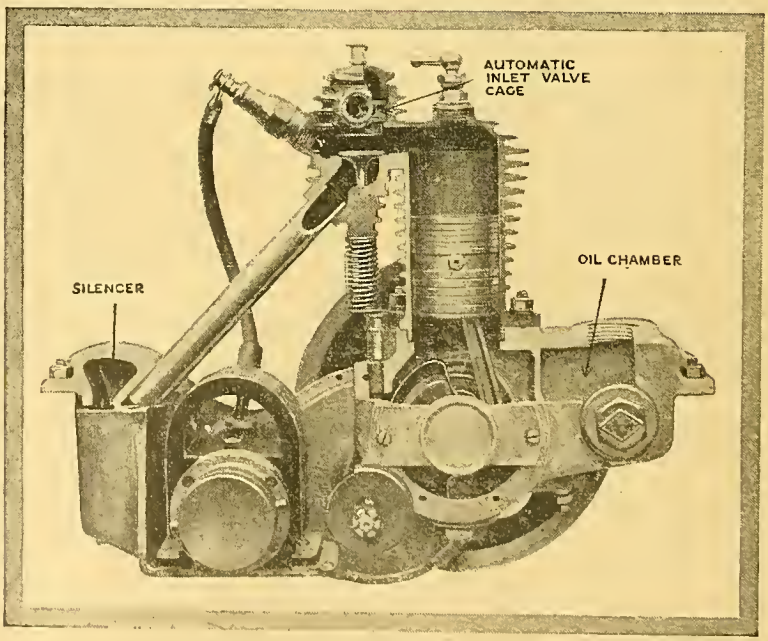
Oil-adjusting screw on the Auto-wheel.

The oil chamber will be seen on the right, while on the extreme left is the silencer, which also forms part of the aluminium casting. One of the most interesting features about the Auto-wheel is the system of lubrication, which is arranged on the bird fountain principle. It is in the lubrication that the chief improvement of the latest model Auto-wheels is embodied. The hole shown in the small screw regulates the quantity of oil which is allowed to pass to the engine. It is necessary that this passage should be cleaned about every 1,000 miles. The new device is claimed to effect economy in oil consumption, while it also enables the engine to be adequately lubricated.



A FRONT FORK SHOCK ABSORBER.

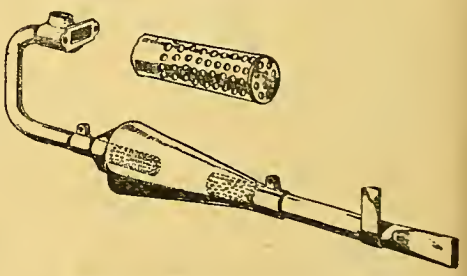
A shock absorber designed by Mr. S. George, the well-known Indian rider. It is made of rubber, and is inserted in the scroll of the front fork of Indian motor cycles. Mr. George is placing the shock absorber on the market from 3, Mornington Place, Mornington Crescent, N.W.



Sectional view of the latest Auto-wheel engine.

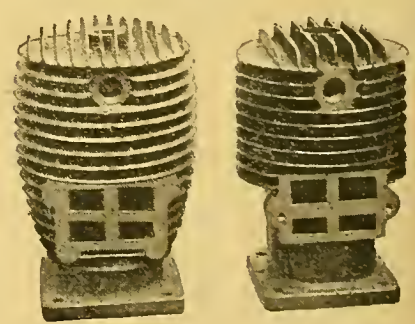
1916 MODEL OMEGA.

THE Omega machines for 1916 are almost identical with those of this year. The firm has made no radical changes, but several minor improvements have been effected. The silencer, as will be seen from the sketch, is of a somewhat unusual shape, and is found to be most efficient. It consists of a cone-shaped expansion chamber into which two pipes are thrust—one at each end. The ends of the pipes which enter the silencer are pierced with holes which, while forming a baffle for the exhaust gases, do not to any extent interfere with their escape. Another improvement has been made to stop the leakage of oil from the crank case by way of the engine-shaft bearing. Oil leaking in this way is caught by a groove which is cut in the bush and passed down a hole bored through the centre thereof, where it meets another hole bored through to the inside of the crank case.



Silencer for 1916 model Omega two-stroke.

The piston has undergone a slight alteration—the top portion, instead of being curved, is now made with a plane slope; this is said to aid scavenging. The Omega machine presents a very pleasing appearance.



1916 (left) and 1915 two-stroke Connaught cylinders compared. Notice that the radiating ribs have been extended. The new Connaughts were dealt with on page 369 of October 14th.

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300 Miles
Record

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The first Motor Bike to attain a speed of 100 miles an hour — has smashed another world's record. In a 300 mile race in Chicago on September 12th, "The Good Old X" finished first in 3 hrs. 29 mins. 57.2/5 secs. — a speed of 87.51 miles per hour — World's Record for this distance.

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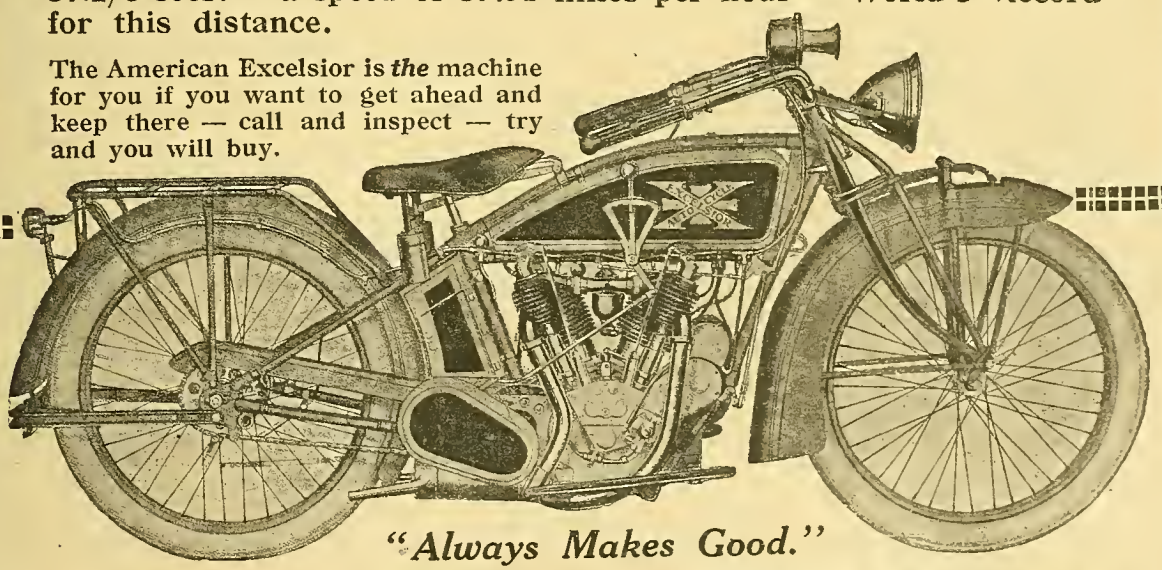

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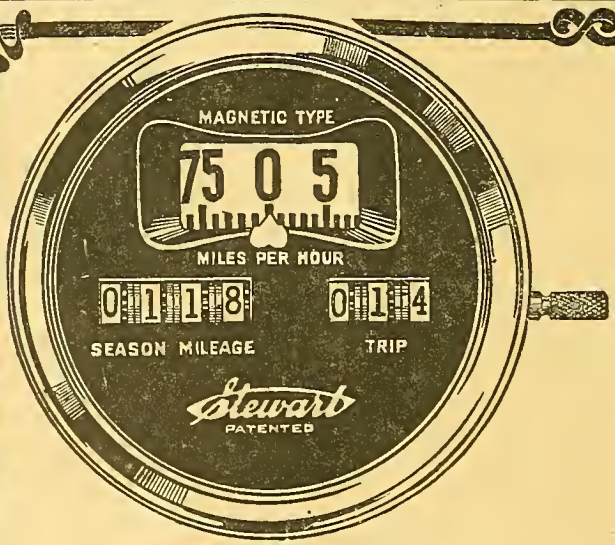

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for the best motor cycle speedometer that money can buy, here it is. It's the "Stewart" model for motor cycles, and is of sturdy build and unimpeachable accuracy. The recording is so accurate, the working so dependable, one can rely implicitly on the correctness of the figures given, whatever be the speed or conditions of travel. The figures, too, are so large and clear that he who scorches can read.

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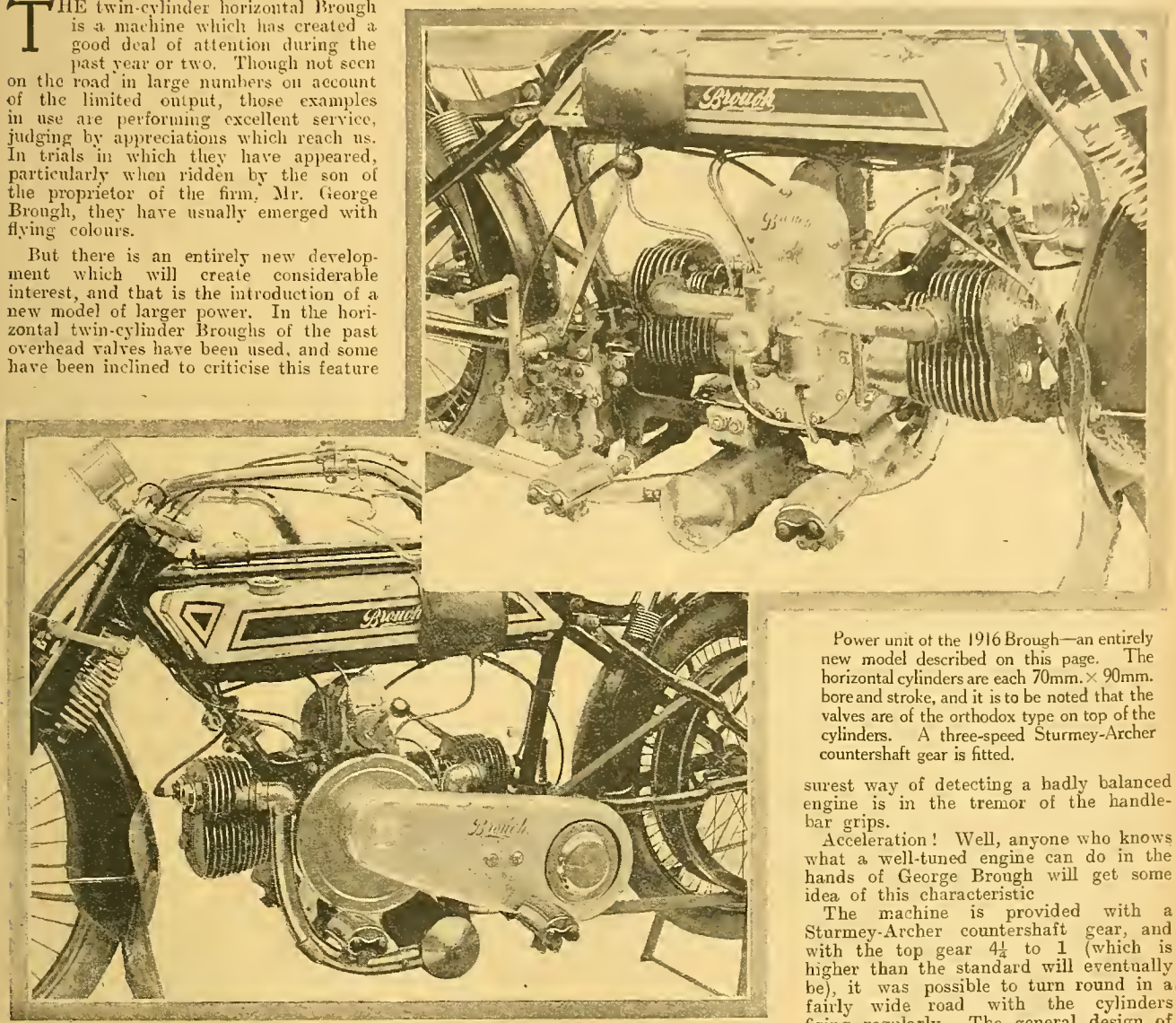
A 6 h.p. Horizontal Twin Brough.

Road Tests and Description of an Entirely New Model.

THE twin-cylinder horizontal Brough is a machine which has created a good deal of attention during the past year or two. Though not seen on the road in large numbers on account of the limited output, those examples in use are performing excellent service, judging by appreciations which reach us. In trials in which they have appeared, particularly when ridden by the son of the proprietor of the firm, Mr. George Brough, they have usually emerged with flying colours.

But there is an entirely new development which will create considerable interest, and that is the introduction of a new model of larger power. In the horizontal twin-cylinder Broughs of the past overhead valves have been used, and some have been inclined to criticise this feature on a touring machine, though their efficiency is well known, but on the new model, which we had the pleasure of inspecting and trying last week, the valves are arranged in the orthodox manner, the valve chambers being arranged on the top of the cylinders. As a matter of fact, the cylinder design closely follows the 6 h.p. V type Brough of a year or two ago. The dimensions of this new twin are 70 × 90 mm., giving a capacity of 346 c.c. per cylinder.



Power unit of the 1916 Brough—an entirely new model described on this page. The horizontal cylinders are each 70mm. × 90mm. bore and stroke, and it is to be noted that the valves are of the orthodox type on top of the cylinders. A three-speed Sturmey-Archer countershaft gear is fitted.

In other features advantage has been taken of the experience gained with the 3½ h.p. twin.

This new engine, though designed as a double purpose mount, is primarily intended to appeal to that section desiring a motor bicycle for passenger work which shall be of moderate weight, and consequently not too cumbrous for occasional solo work. Silence and flexibility are its chief characteristics.

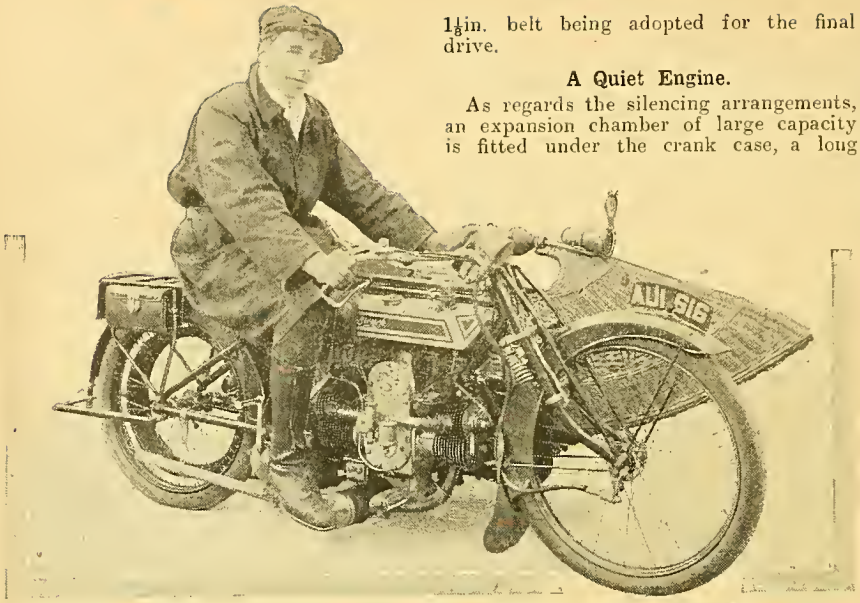
The Result of Experience.

It should be explained that this model, though new to the public, is by no means an experiment, having been on the road for some months past, and being driven under all conditions for many thousands of miles. What impressed us more than anything else during our road test was the absence of effort so noticeable about this wonderfully smooth running engine. We sped along at all speeds with the same comfort and smoothness that one would associate with a high-class car, whilst the handle-bars are noticeably free from vibration, no matter whether it was 20 or 40 m.p.h. at which we travelled. We particularly applied this test while seated in the sidecar, knowing that the surest way of detecting a badly balanced engine is in the tremor of the handle-bar grips.

Acceleration! Well, anyone who knows what a well-tuned engine can do in the hands of George Brough will get some idea of this characteristic

The machine is provided with a Sturmey-Archer countershaft gear, and with the top gear 4¼ to 1 (which is higher than the standard will eventually be), it was possible to turn round in a fairly wide road with the cylinders firing regularly. The general design of the engine will be gathered from the accompanying illustrations. Some minor alterations and improvements will, however, be effected before the machine is ready for the market.

Roller bearings are used throughout, *i.e.*, the camshaft, magneto timing shaft, as well as the magneto shaft, revolve on rollers. The lubrication system is not definitely decided upon at the moment, as a pumping system is under consideration. The countershaft is a splendid piece of work, and is noticeably free running. The pistons, which have flat tops, are provided with two rings, as well as the keeper ring for the gudgeon pin. The flywheel is, of course, of the outside type, the chain sprocket being mounted outside the wheel and driving a three-speed Sturmey-Archer countershaft gear, a



New model 692 c.c. Brough horizontal twin-cylinder sidecar outfit with George Brough at the helm.

1⅛in. belt being adopted for the final drive.

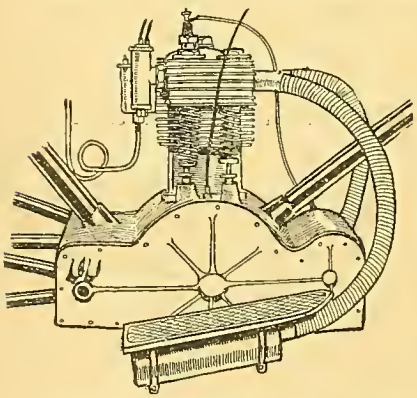
A Quiet Engine.

As regards the silencing arrangements, an expansion chamber of large capacity is fitted under the crank case, a long pipe conveying the gases to the rear. This new Brough twin is of the low compression type—indeed, Mr. Brough has been an exponent of the low compression engine for years past—but nobody could associate inefficiency with low compression, as instance the remarkable performances of Brough riders in the most severe trials of the past. And as to controllability in the hands of ordinary riders, there is no doubt that low compression is to be preferred. As for "revving," it may be mentioned, that on the middle gear of George Brough's outfit a speed of nearly 40 m.p.h. was attained. In the bicycle itself there is very little alteration, the machine following standard lines practically throughout, but in the new engine we feel convinced that Messrs. W. E. Brough and Co. have a proposition which will make a strong appeal to the buyer who desires a passenger machine of moderate weight, easy to start, easy to control, yet smooth and quiet in running. The engine, though well up to its work, is not of such a capacity or weight as would spoil the machine for solo work when desired.

A Monobloc Motor Cycle Engine.

Magneto, Clutch, and Gears under One Cover with Crank Case.

A FEW days ago we had an opportunity of examining a motor cycle the design of which is both interesting and unusual. It is purely an experimental machine, and has been on the road for some time.



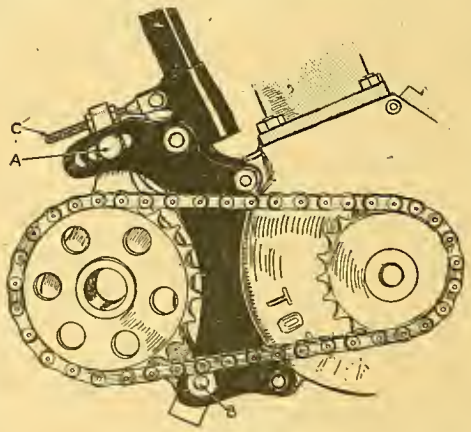
Novel system of design for a power unit. The clutch, gears, and magneto are enclosed in extensions of the crank case. Note also twin exhaust pipes and silencers.

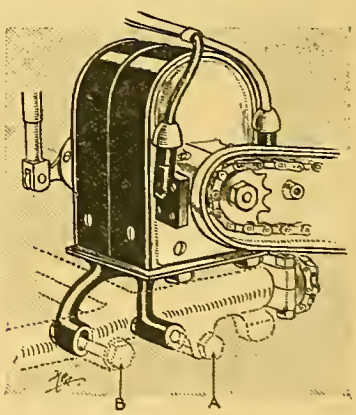
The accompanying sketch shows where the chief interest lies. It will be noticed that the down tube and seat pillar are brazed to lugs cast as part of the crank case; the latter has two extensions, one at the front housing the magneto, and one at the rear containing the gear. Thus the crank case serves three purposes, as its forward compartment conceals and protects the magneto entirely, while the gear box is in the one unit. To make the interior mechanism accessible for adjustment or repair, two large aluminium plates are bolted to either side of the crank case, and, by undoing the securing screws, the whole of the engine and gear box mechanism is exposed.

The flywheels are inside the case, but a train of gear wheels drives the reduction gears instead of the more usual engine to gear box chain. A small sliding cover could make the contact maker of the magneto accessible, and obviously the mechanism of the latter is running under ideal circumstances, as it is free from mud and dust.

It will be noticed that the exhaust pipe is divided and two flexible pipes conduct the gas to twin silencers below the footboards, while the chain stays are duplicated, projecting from the rear of the gear box. A single chain drive is fitted, the sprocket being on the left-hand side of the machine, and the clutch operating mechanism is fitted to the lugs shown on the right-hand aluminium cover.

As at present constructed the machine is heavy, but a few alterations should bring it into competition with the more normal design, and the result might be a machine very much more easy to clean—a good point to aim at, and one that would be appreciated by all riders.





REFINEMENTS IN THE NEW ZENITHS.

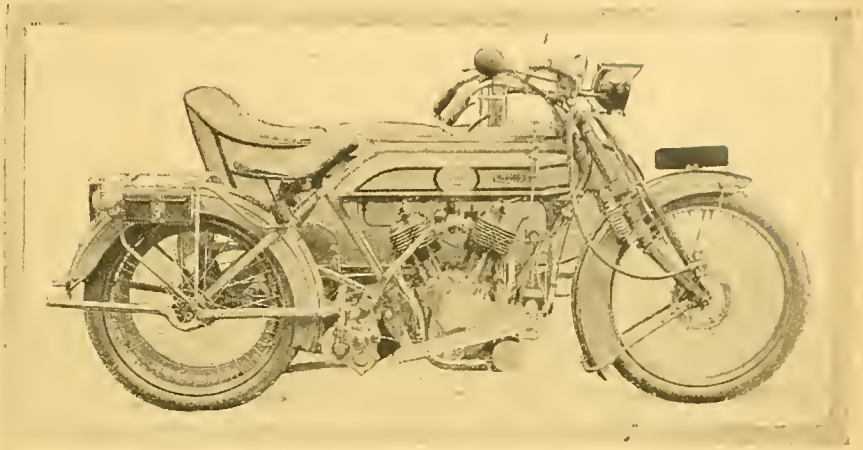
(See description page 402 of the last issue.)

(Left) Transmission chain adjustment. The clutch casing is pivoted at the bolt B. To adjust chain the nut A is unscrewed and the clutch casing moved as desired by means of the adjuster C. (Right) Method of carrying the magneto. The bracket is pivoted on the bolt A. When required to adjust magneto chain the nut B is loosened and the leg of the bracket having a slotted hole, the bracket may be tilted back, and thus the slackness in the chain may be taken up.

6 h.p. Vindec Sidecar Outfit.

A New Design under an Old Name.

ONE of the best motor cycle productions ever placed on the market by Messrs. Brown Bros., Ltd., Newman Street, W., is the 6 h.p. Vindec passenger outfit. This is a remarkably smart combination, well-equipped and well-designed, and sold at quite a moderate price. The motive power is a 6 h.p. J.A.P. engine, which is supplied with gas from an Amac carburetter. Oil is fed into the crank case by a Best and Lloyd lubricator. A priming arrangement is fitted, but only feeds to the rear cylinder, which has been found to be absolutely adequate; in fact, we saw the engine started from cold at the first kick of the pedal. A Dixie magneto is fitted.



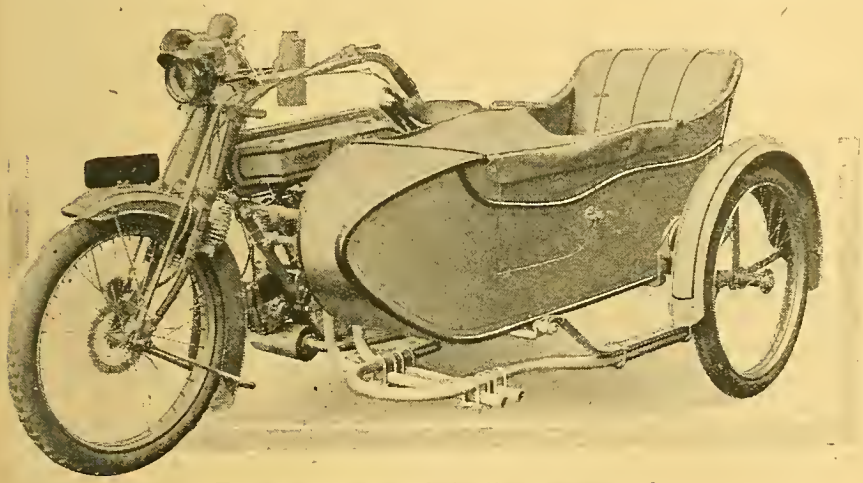
New model 6 h.p. Vindec passenger outfit, showing general design of the bicycle.

Transmission and Fittings.

As regards the transmission, from engine to countershaft the drive is by chain protected by a neat guard, the final drive being by belt. The three-speed gear, kick-starter, and clutch are the well-known Sturmey-Archer, the clutch being controlled by a lever on the handlebars. The gear box is suspended on four bolts, passing through oval holes and sliding in a groove, an arrangement allowing the chain to be adjusted without disturbing the alignment. A comfortable saddle is provided, and Druid forks are fitted. The frame is well designed, and it will be noticed that the top tube is sloped away at the rear, thus giving a low saddle position.

The mudguarding has been well carried out, side wings being fitted to both front and rear guards. All the fittings are good, and such good points as a substantial luggage carrier, an excellent back stand, and efficient front stand are included in the equipment. The tool-bags are metal cased and fixed pannier-fashion each side of the carrier

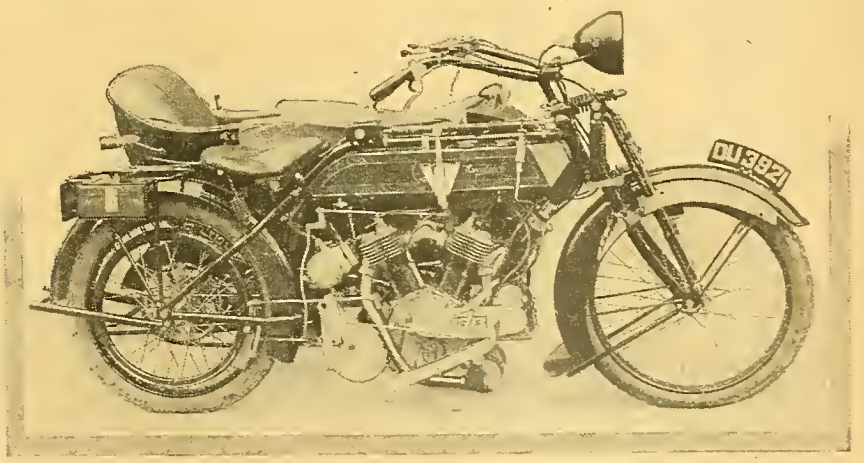
The sidecar is a particularly neat job. It is attached to the bicycle frame at four points, and the main frame is worthy of note. It consists of a single piece of tubing, which is bent downwards at its rearmost ends so as to give a low riding position, and curved round in front. The attachment of the front stays to this portion of the frame will be seen in the illustration. In future models a larger apron than the one shown will be supplied. The whole complete Vindec outfit costs £84, this price not including lamps, horn, and speedometer



The sidecar of the new Vindec 6 h.p. passenger outfit.

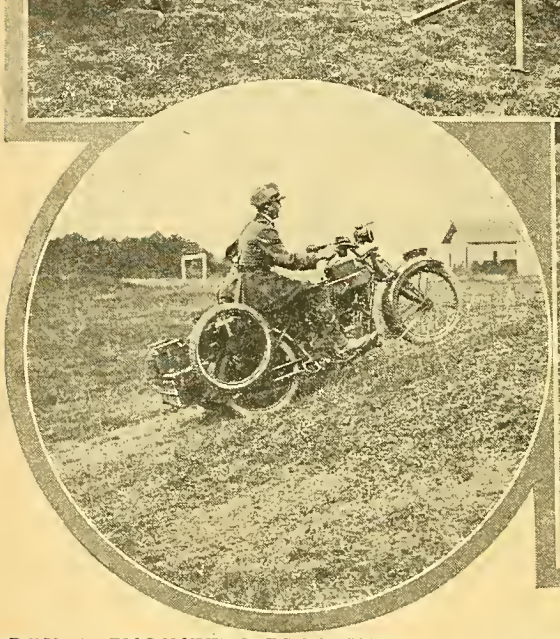
A LIGHTWEIGHT STURMEY-ARCHER GEAR.

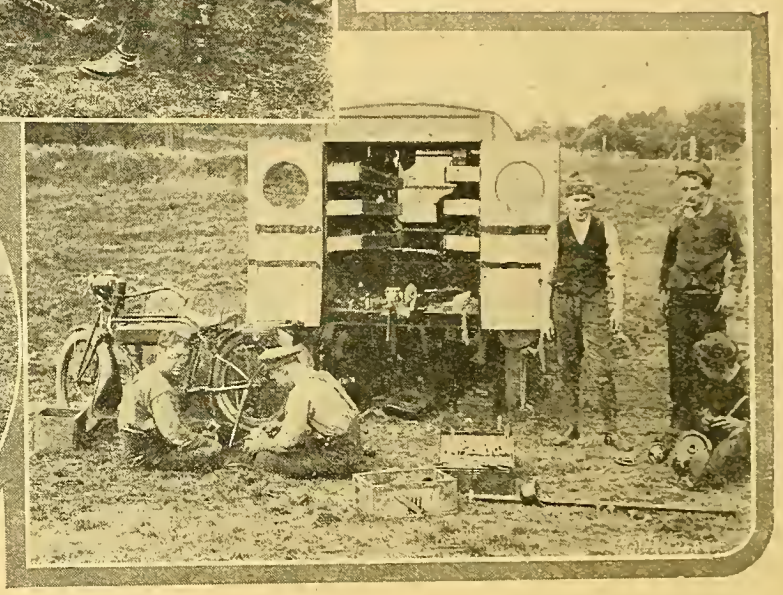
HITHERTO Messrs. Sturmey-Archer Gears, Ltd., have confined their attention to the production of three-speed hub and countershaft gears for the most popular type of motor cycle, but the rapidly extending popularity of the lightweight has led the company to decide upon the production of an entirely new gear of light weight and construction specially for low-powered machines. It will, of course, be fitted in the countershaft. At present practically the whole of the company's resources are engaged on Government work, so that the progress of this new gear may temporarily be retarded. The question as to whether a clutch and kick-starter shall be embodied was discussed with Mr. Harold Bowden, and it seems likely that alternative patterns will be offered.



A fine specimen of a 1916 model 8 h.p. Excelsior passenger outfit, which is fitted with the Lucas dynamo lighting set.

"THE MOTOR CYCLE" RECRUITING SECTION.





MEMBERS OF THE M.M.G.S IN TRAINING

(Left) Receiving instruction in the working of a machine gun

(Lower left) An officer taking a Vickers-Clyno over rough ground.

(Below) One of the travelling workshops. Artificers have taken down the countershaft gear of the Triumph shown

ROYAL ENGINEERS DESPATCH RIDERS.

OWING to the large number of applications which the editor has received daily during the past week, it has been impossible to reply thereto the same day, but the work is being executed as expeditiously as possible. In our issues of October 14th and 21st we published a list of inspecting officers in the United Kingdom, and, to avoid unnecessary work and delay, motor cyclists wishing to join this branch of the service should communicate *direct* with the Inspecting Officer for their district, making an appointment for a riding test, etc.

It is interesting to note that in response to the appeal which appeared in our issue of October 14th, the total number of replies received to date is 276, so it would appear that there is still no lack of recruits.

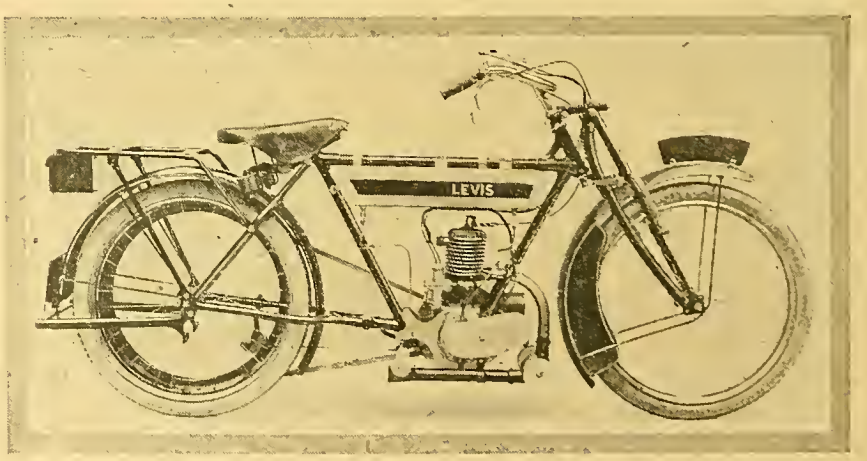
A score of riders were tested for experience in the Coventry Barracks Yard on Saturday, and their names added to the waiting list.

MOTOR MACHINE GUN SERVICE

The following are among the mechanics and car drivers accepted for service last week :

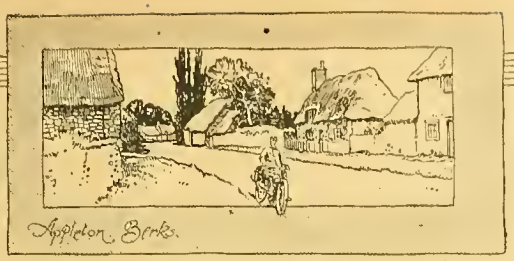
H. Ashton (Doncaster).
J. Baxter (Newcastle-on-Tyne).
E. Doodson (Dewsbury).
F. Gomersall (Dewsbury).
C. Hakeman (London).
G. Howell (Letchworth).
W. H. Meadows (Westerham).
G. R. Smailes (Chilcompton).

Between eighty and ninety names of motor cyclists anxious to join the M.M.G.S. have been sent us whilst recruiting has been closed, and Mr. Geoffrey Smith (Editor, *The Motor Cycle*) has now been instructed to accept about a dozen picked men every week until further notice. Particulars of enlistments in this branch are : Pay 1s. 2½d. per day, usual allowances; foreign service; age 19-38.



A 1916 LEVIS It is a single-geared 2¼ h.p. model with engine of 62×70 mm

CURRENT CHAT



SPECIAL FEATURES

A MUNITION WORKERS' COMPETITION.
THE MODERN MOTOR CYCLE ENGINE.
NEW MODELS.

TIMES TO LIGHT LAMPS

Oct.	28th	... ...	5.42 p.m.
,,	30th	... ...	5.38 ,,
Nov.	1st	... ...	5.34 ,,
,,	3rd	... ...	5.30 ,,

In London half an hour earlier.

"The Motor Cycle" Annual Buyers' Guide

The annual Buyers' Guide of *The Motor Cycle*, which is to appear on Thursday, November 25th, will this year be illustrated. The issue will be greatly enlarged to accommodate the Guide. Manufacturers who may not have received a Buyers' Guide form should apply to the Editor without delay.

An Enterprising Government.

The Russian Government offers some valuable cash prizes to scientists to save the great distilling industry of the Empire. We note some of them below: £7,930, £5,286, £3,172, and £2,114 for inventions and improvements in the use of alcohol for internal combustion motors. Similar amounts for inventions and improvements in the use of alcohol as fuel. The prize winners will retain the ownership of their inventions, which they are allowed to protect by patents and to work if they like.

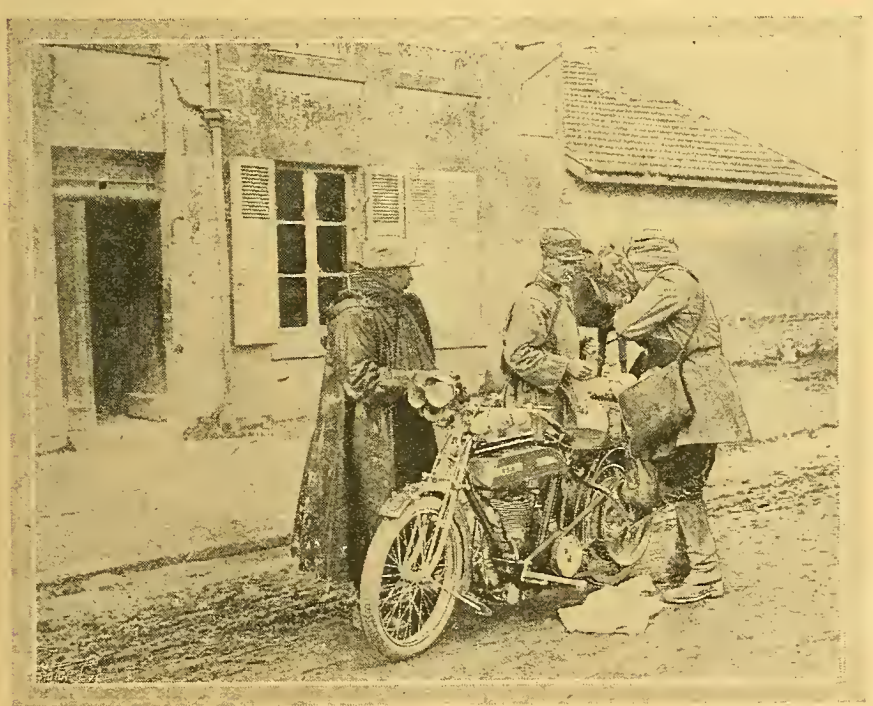
The A.C.U. and Munition Workers.

What do the A.C.U. think of a munition workers' trial now? When the idea was first mooted in these columns the A.C.U. threw out a feeler, expecting to get promises from all likely to compete. Few offers were forthcoming, which *The Motor Cycle* considered quite natural, and gave the reasons why. The A.C.U. decided not to proceed with the organisation of such an event on account of "insufficient support." Yet a single branch of munition workers organised an event at Brooklands on Saturday and 250 entries were the result.

The National War Funds.

On Tuesday morning last the totals of the principal war funds were:

The Prince of Wales's National Relief Fund ...	£5,578,712
The Queen's Work for Women Fund	156,470
The Times Fund for Sick and Wounded	1,811,221
Belgian Relief Fund	1,040,000
Weekly Dispatch Tobacco Fund	87,050
Daily Telegraph Nurse Cavell Fund	256
Daily Chronicle Christmas Gift Fund	2,845



BRITISH MOTOR CYCLES AMONG OUR ALLIES.

A Moroccan despatch rider, whose mount is a B.S.A., handing a despatch to a French officer.

More New Models.

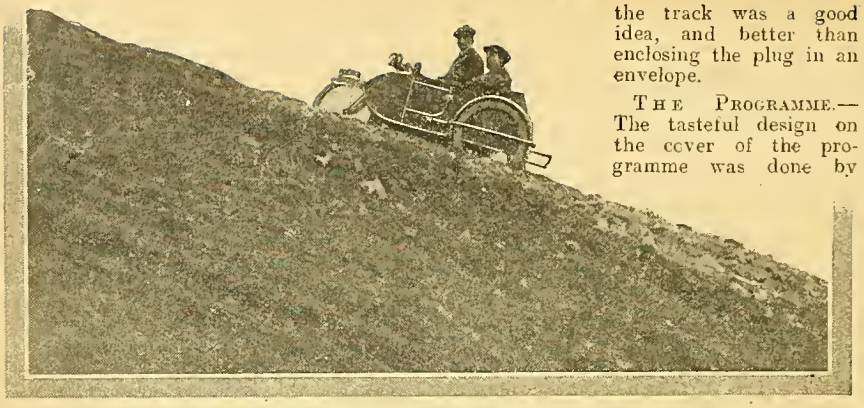
We continue this week our descriptive articles of new model motor cycles, most of the machines being illustrated and described for the first time.

The new model 692 c.c. horizontal Brough with side by side valves, the new twin Vindec, and the announcement of a new Sturmey-Archer gear for lightweights will create general interest.

Average Prices.

We give below the average prices of second-hand machines offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model, the average for the past week is quoted, otherwise the latest average.

Make.	Year.	H.P.	Average for last week.	Latest weekly average obtainable
A.J.S.	1914	6 3-sp. sidecar	£73	—
,,	1913	6 3-sp. sidecar	—	£56
,,	1915	6 3-sp. sidecar	—	£81
,,	1914	2¾ 3-speed	—	£44
Allon	1915	2¾ 2-speed	£30	—
Ariel	1914	3½ 3-sp. sidecar	£53	—
,,	1913	3½ 3-sp. sidecar	—	£43
Bat	1914	6 3-sp. sidecar	—	£60
Bradbury	1913	4 3-sp. sidecar	—	£40
B.S.A.	1915	4¾ 3-sp. sidecar	£70	—
,,	1915	4¼ 3-speed	£54	—
,,	1914	4 3-sp. sidecar	£56	—
,,	1913	3½ 2-sp. sidecar	£42	—
Calthorpe	1914	2 2-speed	—	£19
Clyno	1914	6 3-sp. sidecar	—	£66
,,	1913	6 3-sp. sidecar	—	£52
,,	1914	2½ 2-speed	£26	—
Douglas	1914	2¾ 2-sp. T.T.	£41	—
,,	1914	2¾ 2-sp. kick start	£43	—
Enfield	1914	6 2-sp. sidecar	£61	—
,,	1914	6 2-sp. sidecar	—	£51
,,	1914	3 2-speed	—	£41
,,	1915	3 2-speed	£42	—
Harley-Davidson	1915	7 3-sp. sidecar	£83	—
Humber	1913	3½ 3-sp. sidecar	—	£37
Indian	1914	7 2-sp. sidecar	£58	—
,,	1914	7 2-speed	—	£50
,,	1914	7 T.T., free eng.	£47	—
,,	1915	7 3-sp. sidecar	£75	—
Ixion	1914	2½ 2-speed	—	£25
James	1915	4½ 3-sp. sidecar	£64	—
,,	1914	4½ 3-sp. sidecar	—	£53
Lea-Francis	1913	3½ 2-speed	—	£42
Matchless	1914	8 3-sp. sidecar	—	£75
,,	1913	8 2-sp. sidecar	£55	—
New Hudson	1914	6 3-sp. sidecar	—	£59
New Imperial	1915	2¾ 2-speed	—	£27
,,	1914	2½ 2-speed	—	£28
O.K.	1914	2 2-speed	—	£25
P. & M.	1914	3½ 2-sp. sidecar	—	£59
,,	1913	3½ 2-sp. sidecar	£50	—
Premier	1914	3½ 3-sp. sidecar	£49	—
,,	1913	3½ 3-sp. sidecar	—	£41
Rex	1914	6 3-sp. sidecar	—	£60
Rover	1914	3½ 3-sp. sidecar	—	£58
,,	1913	3½ 3-sp. sidecar	£40	—
Rudge	1914	5 multi sidecar	—	£48
,,	1913	3½ multi sidecar	£35	—
,,	1913	3½ multi	—	£34
Scott	1914	3¾ 2-sp. sidecar	—	£52
,,	1914	3¾ 2-speed	—	£44
,,	1913	3¾ 2-sp. sidecar	£50	—
,,	1913	3¾ 2-speed	—	£38
Singer	1913	4½ 2-sp. sidecar	—	£43
Sunbeam	1914	6 3-sp. sidecar	£80	—
,,	1914	3½ 3-sp. sidecar	—	£73
,,	1914	3½ 3-speed	—	£59
,,	1915	3½ 3-speed	—	£65
Triumph	1914	4 3-sp. sidecar	£52	—
,,	1914	4 3-speed	£44	—
,,	1913	3½ 3-sp. sidecar	£44	—
Williamson	1914	8 2-sp. sidecar	£77	—
Zenith	1914	8 Gradua sidecar	—	£70
,,	1914	6 Gradua sidecar	—	£56



Among the recent achievements of the 4 h.p. Douglas sidecar machine is that of climbing the Great Orme at Llandudno. The picture shows G. L. Fletcher driving his Douglas on the climb with a passenger in the sidecar.

A Kentish Hill-climbing Trip.

Another trial for Southern munition workers is to be held this coming week-end, this time in the nature of an unofficial jaunt. On the 31st inst., Mr. T. J. Ross, of the Woolwich Club, proposes to conduct a party of riders of two-stroke lightweights around the Kentish hills, meeting at Green Street Green at 11 a.m. Any other motor cyclists engaged on Government work are invited to be at the appointed meeting place and to take part in the tour. Mr. Ross is reputed to know every inch of the Kentish hills, and is sure to provide an interesting trip.

Motor Cycling in Australia.

A writer in our American contemporary, *Motor Cycle Illustrated*, giving his impression of motor cycling in Australia, considers there is a good opening for an American machine on similar lines to the 2¾ h.p. Douglas, but with an engine of at least 500 c.c. He speaks of the wonderful results achieved by the little Douglas in Australia, but he is evidently not aware of the fact that the Douglas build a larger machine, *i.e.*, the 4 h.p. model. There are also three other British-made motor cycles answering to the writer's specification, viz., the A.B.C., the Brough, and the Montgomery.

Saturday's "Aircraft" Meeting.—Some Jottings.

THE JUDGES.—Mr. Mervyn O'Gorman, C.B., superintendent of the Royal Aircraft Factory, was a motor cyclist of the very early days. He was one of the original members of the Auto Cycle Club (now the Auto Cycle Union) committee. As Capt. Bagnall Wild was unable to be present, his post as judge was ably filled by the Rev. Basil Phillips, D.D.

THE TIMEKEEPERS.—These were Messrs. F. T. Bidlake and A. G. Reynolds. Mr. A. V. Ebblewhite was down on the programme, but as not long ago he just escaped a very nasty accident, he was unable to be present.

THE RULES.—The rules were noteworthy for their brevity, simplicity, and commonsense.

THE PLUG RACE.—Marking the competitor's number opposite the plug on the track was a good idea, and better than enclosing the plug in an envelope.

THE PROGRAMME.—The tasteful design on the cover of the programme was done by one of the R.A.F. draughtsmen.

A MISSING STEWARD.—One of the moving lights of the meeting, Mr H. D. Teage, now an instructor on R.A.F. engine and formerly on *The Motor Cycle* staff, was unable to be present, owing to Mrs. Teage's illness. We greatly regretted to hear the reason.

What of the Midland Munition Workers' Trial?

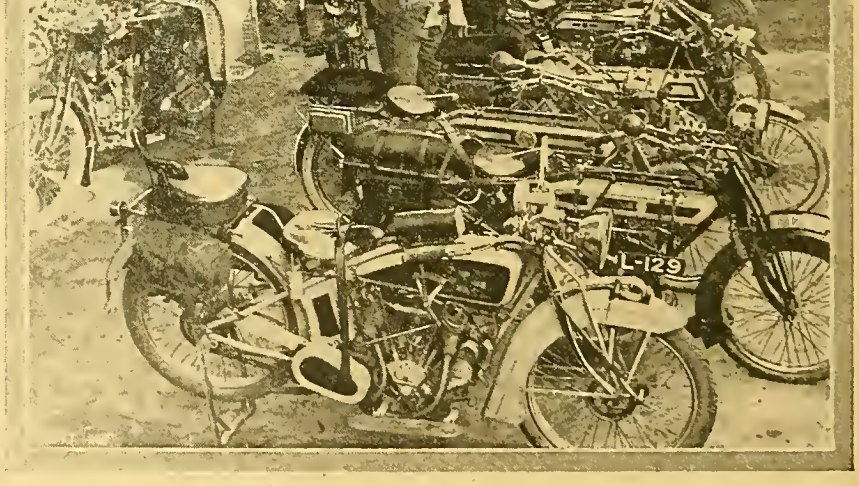
The success of the Southern motor cyclist munition workers' contest at Brooklands should stir the Midland clubs in organising such an event. There seems no doubt about the support such an event would receive, and there are many worthy objects to which the proceeds might be applied. We refer particularly to the provision of winter comforts for our brave comrades on active service.

Great Minds Think Alike.

We were told last week that Mr. Archer, one of the patentees of the Jardine gear, had plotted out on paper a design of spring frame for motor cycles in which a cantilever spring was the principle. The following Thursday *The Motor Cycle* appeared with a description of the Douglas patent springing system—practically identical to Mr. Archer's scheme.

An Indian Opinion of Motor Cycle Progress.

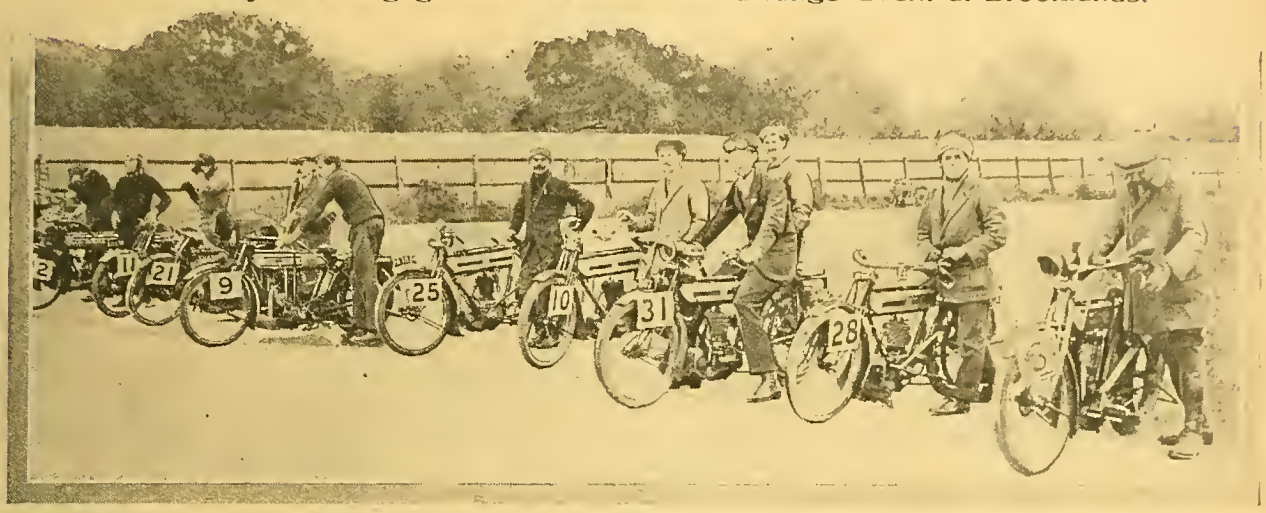
The following extract from *Indian Engineering*, of Calcutta, is interesting as affording an idea of the respective impressions made by early and modern motor cycles in India: "When the motor cycle was first seen on our roads it cannot be said to have been generally welcomed. It was noisy, smelly, uncertain, and a public nuisance, if not a menace. At first also improvements came comparatively slowly, and it was not until the 3½ h.p. engine gave it more power that it was at all a satisfactory machine. Even then there were many difficulties in matters of steering, transmission, and control, which have now been largely overcome. Then came further improvements in ignition, the introduction of the air-cooled and water-cooled engines, the two-stroke type of motor, and the modern machine is no longer despised, and it has done much good work in the war as a means of locomotion for despatch riders. There are several types of motor cycles in use—lightweight machines costing as little as £22 to the heavy four-cylindered machine intended for use with a sidecar, which may cost £100, and which appears to be steadily gaining in popularity."



Examining seats in the Dutch pillion seat trial referred to in the current issue. In spite of the obvious risk of such methods of carrying passengers there appears to be no diminution of the practice, so that a trial to encourage suitable seats appears to be commendable. Dutch, Belgian, American, and British machines will be recognised in the illustration.

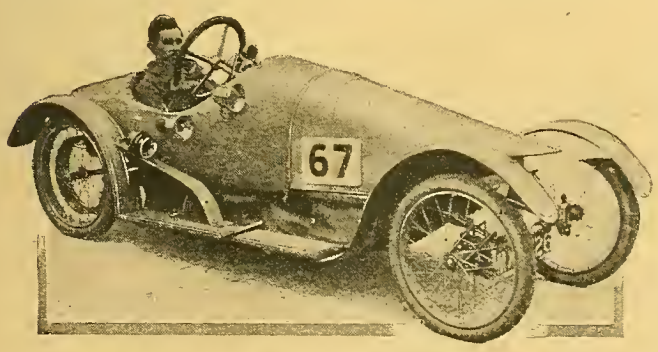
R.A.F. Motor Cycle Race Meeting.

Motor Cyclists engaged on Aircraft Work arrange Event at Brooklands.



Line up for the heavyweight half-mile sprint won by P. Davey (8 h.p. Matchless).

MEMBERS of the staff of the Royal Aircraft factory carried out a most successful motor cycle race meeting at Brooklands on Saturday afternoon last. It was a feat of which the organisers may be justly proud. They only decided to hold the event nine days before the actual date, they were one and all absolutely inexperienced in the conduct of such an affair, yet there were eighty-three competitors—245 motor cycle and twenty car entries, making 265 in all—and though one can hardly say it was excellently organised, it passed off well, and gave an untold amount of amusement and enjoyment to those who took part in it. There was only one name well-known to motor cyclists, and that was W. F. Guiver; but among the officials we noticed the names of Mr. Mervyn O'Gorman, C.B., S.R.A.F., Dr. A. M. Low, D.Sc., A.C.G.I., Sec.-Lieut. R.F.C., Capt. Bagnall-Wild, R.I.E., and Messrs. H. D. Teage and E. M. P. Boilean (*The Motor Cycle*). It was to Mr. J. S. Irving, the clerk of the course and hon. secretary, and to his able committee that the greatest credit was due. It is a pity that the meeting had been arranged in such a hurry, as otherwise it might have been given due publicity, and a large "gate" would have been obtained. However, as it was, the R.A.F. provided not only an excellent entry list but a very fair crowd of spectators. All showed the greatest enthusiasm, which goes to prove how well legitimate motor cycle events can be supported even during the present crisis.



A STRIKING BELT-DRIVEN CYCLE CAR.

A. J. H. Elverson (8 h.p. Crompton), winner of the half-mile sprint race for cars at the R.A.F. Brooklands meeting. The lines of the machine are very attractive, the body being tapered to a point fore and aft. The engine is a twin-cylinder of 964 c.c., and final drive is by belt.

It is really remarkable that one department should produce so many motor cycles and such an excellent entry.

The Track Improved.

As regards the machines, these were a splendid selection, including all types and sizes, most of which were in capital tune and well ridden. There was, however, a lack of novelty and of special features among them, but it is hardly to be expected that this would be otherwise during the present time. Since the United Services race meeting in September the track has been greatly improved, and the road leading thereto is practically finished, but still only half-mile sprint races could be run off down the finishing straight.

The newly made roadway to the flying grounds runs through the paddock, but the paddock itself is not yet fully repaired. It is hoped that the track will be in excellent order in the spring; in fact, better than when it was first laid down. The sprint races were started from the top of the finishing straight, and the handicaps were arranged on distance instead of time, spaces of 40, 80, 120, and 160 yards being measured off from the starting line.

Details of the Events.

EVENT No. 1.—LIGHTWEIGHT HALF-MILE SPRINT FOR MOTOR CYCLES fitted with engines not exceeding 300 c.c. capacity. Result:

	Rider and Machine.	Bore and Stroke.	Cyls.	c.c.	Yds. Start.
1.	N. A. Champion (2¾ Sun-Vitesse)	70×70	1	269.5	40
2.	C. Doczy (2¾ Sun-Vitesse)	70×70	1	269.5	40
3.	— Cook (2¾ Sparkbrook)	70×70	1	269.5	40
	— Payze (2¾ Levis)	64×70	1	215.3	120
	A. H. Bates (2½ Levis)	73×70	1	293	Scr.

N. A. Champion won easily at a speed of 37.1 m.p.h. Time: 1843s.

EVENT No. 2.—HEAVY-WEIGHT HALF-MILE SPRINT FOR SIDECARS (1,000 c.c. limit) AND CYCLE CARS (1,100 c.c. limit). Adult passengers had to be carried (minimum weight 110 lb.)

The event was well supported, and the winner came in an easy first, having covered the distance at a speed of 43.8 m.p.h. Result:

	Rider and Machine.	Bore and Stroke.	Cyls.	c.c.	Yds. start.
1.	F. G. Kennard (5-6 Matchless)	85 ×65	2	737	40
2.	C. Horsfield (6 Humber)	78 ×78	2	745.6	40
3.	A. J. Elverson (8 Crompton c.c.)	85 ×85	2	964.5	80
	A. Andrews (5-6 Enfield)	76 ×85	2	771.2	40
	H. E. Wonham (7-9 Indian)	82.5×93	2	994	scr.
	A. J. Sharp (5-6 Zenith)	76 ×85	2	771.2	40
	J. Aust (5 F.N.)	52.5×57	4	496	160
	G. Haydon (8 Imperial c.c.)	85 ×85	2	964.5	scr.

Time: 41s.

The excellent running of the horizontal twin Humber was worthy of note. The engine on this machine was fitted with a large leather covering extending right over the carburetter, as this, though already warmed by the exhaust, had to be further protected so as to maintain the correct temperature.

EVENT No. 3.—MEDIUM-WEIGHT HALF-MILE SPRINT FOR TOURING MOTOR CYCLES fitted with engines up to 550 c.c.

This event was so well supported that it had to be run off in two heats, of which the following are the results:

HEAT 1.—G. T. Taylor (Douglas), time 39⅘s. M. E. Holroyd (Rudge), W. P. Savage (Rudge), W. J. Bird (Triumph), and F. Sawyer (Douglas).

MOTOR CYCLIST MUNITION WORKERS

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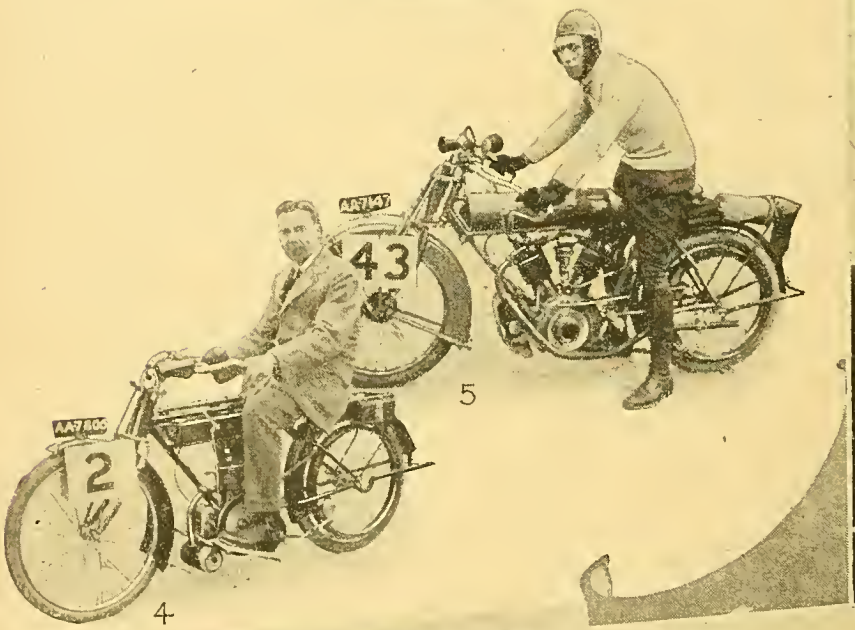

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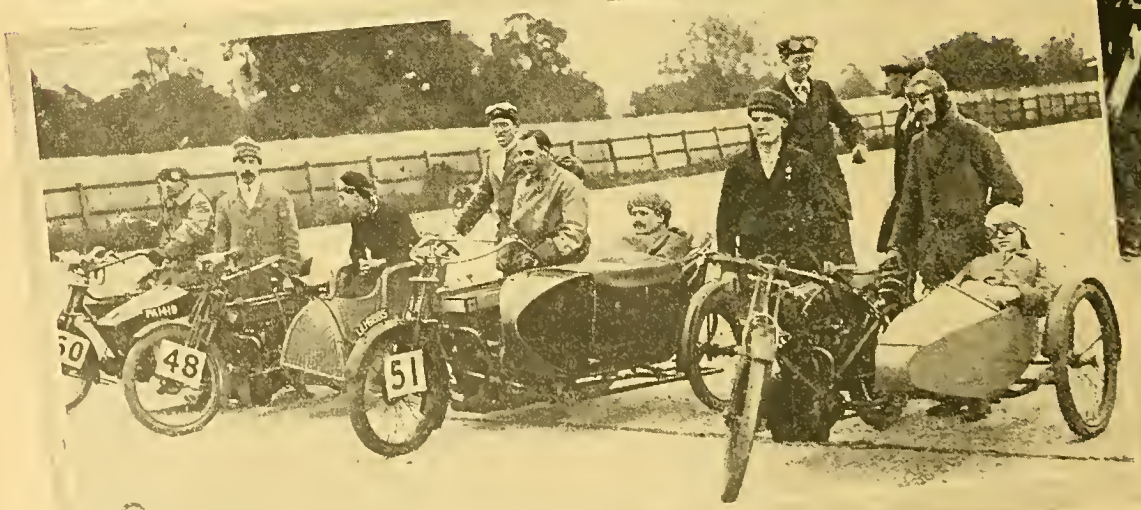

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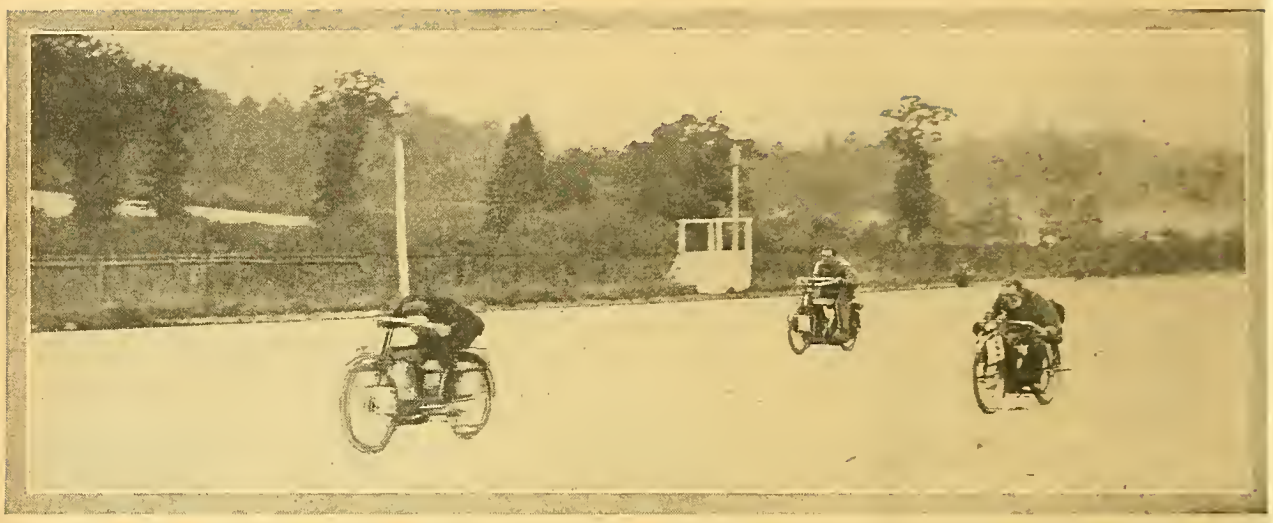
1. Start of a race.
3. Finish of the race to
(8 h.p. Crompto
4. N. A. Champion (S
5. P. Davey (8 h.p. M
6. E. G. Perrott (Dougl
7. S. O. Turner (Do
machines up to
8, 9, 10. General view

ENJOY A RESPITE AT BROOKLANDS.

2. A busy scene at the paddock.
for four-wheelers, won by A. J. H. Elverson
ton cycle car).
(Sun-Vitesse), second in the hill-climb.
Matchless), a star performer at the meeting.
uglas), winner of the quick-change plug race.
Douglas), first in the half-mile sprint for
o 550 c.c.
ews.



The final yards of one of the races at the "R.A.F." Brooklands meeting on Saturday. This was the first organised competition held for men on Government work.

Heat 2.—S. O. Turner (Douglas), time 3.1⅜s.; E. G. Perrott (Douglas), E. Swain (Rudge), — Cotterell (Douglas), and W. F. Guiver (Ariel).

The winner of the first heat could not be found when the final was run off, and it was then decided that this should be run again. In the final, however, Taylor was so excited that he covered the whole course on second speed, and forgot to change up, and so only finished sixth.

A Wonderful Flying Display.

It was during this event that the most exciting incident of the meeting took place. Lieut. Goodden, R.F.C., chief experimenter to the R.A.F., flew over from Farnborough in one of the very latest Army airplanes. Never since the time when poor Pegoud came down to the track and looped the loop has Brooklands witnessed such marvellous flying. His control of his machine was wonderful, and his turns, twists, and gambols in the air momentarily took all interest from the meeting. Then while the competitors were waiting to be sent off on the first final, he swept down the track at a tremendous speed, just clearing the string of flags that marked the finish. We kept our eyes upon the wires which run across the finishing straight. Goodden seemed to clear them, but when he had passed they lay in a tangled mess on the ground, and the Paddock clock stopped at 2.2n p.m. This is apparently all the damage done, the poor timepiece, which is worked electrically, being thus deprived of its source of energy. Goodden then swept sharply up, banked at a seemingly impossible angle, swept down the straight again, just skimming the track, and hurtling towards the anxiously awaiting competitors at the start. At the last moment he raised his elevator and shot up into the air. He terminated his exhibition with a brief spell of "hands off" flying.

Final of Event 3. Result:

Rider and Machine.	Bore and Stroke.	Cyls.	c.c.	Yds. start.
1. S. O. Turner (2¾ Douglas)	60 ×60.5	2	347	120
2. E. G. Perrott (2¾ Douglas)	60.5×60.5	2	349	120
3. — Cotterell (2¾ Douglas)	60.5×60.5	2	349	120
M. E. Holroyd (3½ Rudge Multi)	85 ×88	1	499	40
E. Swain (3½ Rudge)	85 ×88	1	499	40
G. T. Taylor (2¾ Douglas)	60.5×60.5	2	349	120

The winner's speed was 51.1 m.p.h. Time: 35⅛s.

Event 4.—Heavy-weight Half-mile Sprint for Touring Motor Cycles of any description.

As in the preceding event, the number of entries necessitated it being run off in two heats, and P. Davey won the final at a speed of 56.12 m.p.h.

Heat 1.—F. G. Kennard (Bradbury), time 36s.; E. G. Perrott (Douglas), C. Horsfield (Humber), H. E. Wonham (Indian), and N. Legge (Matchless).

Heat 2.—P. Davey (Matchless), time 33⅜s.; S. O. Turner (Douglas) F. Edney (Matchless), W. F. Guiver (Ariel), and T. P. Mears (Ivy).

The final result was as follows:

Rider and Machine.	Bore and Stroke.	Cyls.	c.c.	Yds. Start.
1. P. Davey (8 Matchless)	85 ×85	2	964.5	Scr.
2. C. Horsfield (6 Humber)	78 ×78	2	745.6	40
3. E. G. Perrott (2¾Douglas)	60.5×60.5	2	349	120
F. G. Kennard (3½ Bradbury)	89 ×89	1	553.8	80

The winner's speed was 56.12 m.p.h. Time: 32s.

The only car race to be run off during the meeting was

Event No. 5.—Motor Cars Half-mile Sprint for Touring Cars of unlimited capacity. This was won by A. J. H. Elverson (8 Crompton cycle car) in 43⅜s., 41.5 m.p.h.

The sprint races were now concluded, and there ensued a series of hill-climbs the results of which were worked out on *The Motor Cycle* formula.

Event No. 6.—The Lightweight Motor Cycle Hill-climb for Touring Motor Cycles up to 300 c.c. Result:

Rider and Machine.	Bore and Stroke.	Cyls.	c.c.	Fig. of Merit.
1. C. Doczy (2½ Sun-Vitesse)	70×70	1	269.5	317.9
2. N. A. Champion (2½ Sun-Vitesse)	70×70	1	269.5	325.4

There was one failure. C. Doczy also made fastest time, 17s.

Event No. 7.—Medium-weight Hill-climb for Touring Motor Cycles fitted with engines up to 550 c.c.

In this event there were three failures. Hounsome (Triumph) caused some amusement by stopping halfway up the test hill and dropping his machine. Swain (Rudge) got up quite well, which was a wonder, as his petrol pipe was coupled up by means of a piece of rubber tubing, from which the two and a penny a gallon fluid was simply streaming. Turner (Douglas) managed to stop just before reaching the summit. Taylor (Douglas) had his machine catch fire just before starting, but it was quickly extinguished by the caps of numerous brave volunteers. Excellent starts by means of the clutch were made by Guiver (Ariel) and Manning (A.J.S.) Result:

Rider and Machine.	B. and S.	Cyls.	c.c.	Time.	Fig. of Merit.
1. W. F. Guiver (3½ Ariel)	86.4×85	1	499	8⅜s.	77.28
2. R. J. Hampton (3½ Matchless)	70 ×64.5	2	496.4	8½s.	99.17
3. E. G. Perrott (2¾ Douglas)	60.5×60.5	2	349	9⅜s.	99.8

The fastest time was made by R. J. Hampton.

Event No. 8.—Heavy-weight Hill-climb for Touring Motor Cycles of unlimited capacity. Result:

Rider and Machine.	B. and S.	Cyls.	c.c.	Time.	Fig. of Merit.
1. E. V. Perrott (2¾ Douglas)	60.5×60.5	2	349	8s.	83.79
2. W. F. Guiver (3½ Ariel)	86.4×85	1	499	9s.	84.80
3. P. Davey (8 Matchless)	85 ×85	2	964.5	5⅛s.	96.21

Guiver's Ariel (on which he won both on time and formula) was a handsome chain-cum-belt drive countershaft model with the change speed lever at the side of the tank.

Event No. 9.—Heavy-weight Hill-climb for Sidecars and Cycle Cars (up to 1,100 c.c.) carrying adult passenger (minimum weight 140 lb.)

Rider and Machine.	B. and S.	Cyls.	c.c.	Time.	Fig. of Merit.
1. C. Horsfield (6 Humber)	78 × 78	2	745.6	7⅜s.	117.3
2. A. J. Elverson (8 Crompton c.c.)	85 × 85	2	964.5	12⅛s.	163.7
3. A. Andrew (5-6 Enfield)	76 × 85	2	771.2	13⅝s.	190.8

The winner on formula also made fastest time.

Gymkhana Events.

Event No. 10.—Quick Change Plug Race for Touring Motor Cycles of unlimited capacity.

In this event, spare plugs were placed opposite the competitor's number, which was chalked on the track opposite the grandstand. The men started from the finishing line, changed a plug, proceeded about 200 yards, changed the plug again, and sprinted to the finish. The first three men to get away after the first stop finished first, second, and third. Result:

Rider and Machine.	Bore and Stroke.	Cyls.	c.c.
1. E. G. Perrott (2¾ Douglas)	60.5×60.5	2	349
2. P. Davey (8 Matchless)	85 ×85	2	964.5
3. F. Edney (5 Matchless)	85 ×65	2	737.7

Event No. 11.—Serpentine Race. The competitors were started some 200 yds. away from the grandstand, raced to a series of barriers round which they had to ride serpentine fashion, and then sprint to the finish. The percentage of successes was about equal to that of the failures, thus showing that the barriers were placed the right distance apart.

Rider and Machine.	Bore and Stroke.	Cyls.	c.c.	Time. secs.
1. M. E. Holroyd (3½ Rudge Multi)	85 ×88	1	499	40⅜
2. V. Walker (2¾ Douglas)	60.5×60	2	347	41⅛
3. F. Edney (5 Matchless)	85 ×65	2	737.7	44⅜
W. P. Savage (3½ Rudge)	85 ×88	1	499	45
T. P. Mears (4¾ Ivy)	67 ×95	2	669.8	47⅜

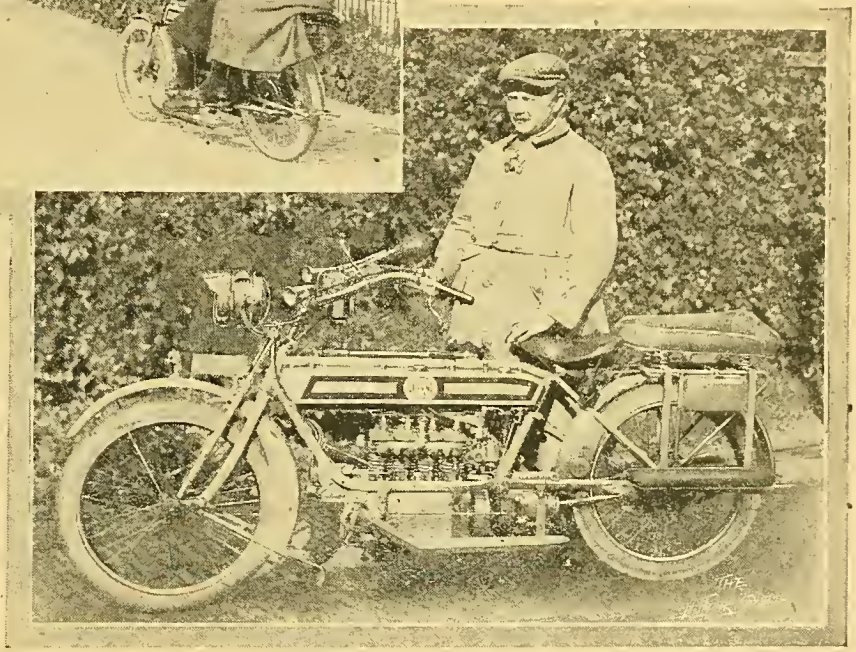
This concluded the meeting, as the weather, which had been dull and cold throughout the afternoon, broke up altogether, and it began to rain, while the light was failing badly. One car event was, therefore, not contested.

A TRIAL OF PILLION SEATS.

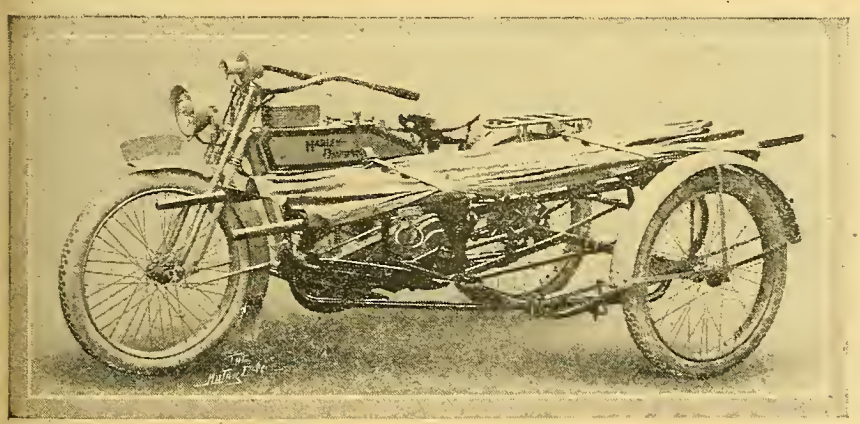
CARRIER or pillion riding has always been looked upon as a very dangerous method of carrying an extra passenger on a motor cycle. In order to try and prove that this is not so, and also to find out the best type of pillion seat, a Dutch motor cycle club organised a reliability trial for this type of machine, most of the passengers being ladies. The trial was organised at so short a notice that it had been expected that some of the fitments would not stand up to the test, but much ingenuity was displayed in the construction of the seats, and all proved practical.

The course was seventy miles in length, and had to be covered at a scheduled speed of just under 20 m.p.h. There were nine competitors, whose machines had various types of pillion seats, and the first prize was awarded to the F.N. ridden by M. P. B. L. Maas. The pillion consisted of an upholstered seat with low back and side, supported on four spiral springs attached to a flat metal frame which was clipped to the cycle carrier by four clips, and carried the platform for the passenger's feet.

The second place was gained by Mr. Wyngaarder, whose pillion consisted of a round cushion with back rest, while a sprung footboard was provided for the passenger's feet. Provision for the passenger's feet was made in most of the designs, and was a point where they scored over those usually used in England. In addition to some of the machines being English, some of the seats were also of British origin.



(Upper) A competitor in the Dutch pillion seat trial. The passenger appears most comfortable.
(Lower) The winning pillion seat. The machine is a four-cylinder F.N.



Harley-Davidson sidecar ambulance, many of which have been supplied to the Russian Government.

THE HARLEY-DAVIDSON AMBULANCE.

MORE attention, it would appear, is now being paid to the motor cycle ambulance, and we illustrate the Harley-Davidson sidecar ambulance, which is an extremely neat piece of design. It will be noticed that a special bracket has been fitted to the existing sidecar chassis for the purpose of carrying the stretcher, which is held in position by means of four bolts and wing nuts, rendering it easily detachable. The strength of the sidecar frame and its excellent design render it suitable for this sort of work. It is interesting to note that the bracket which carries the stretcher is sprung in the same efficient manner as the ordinary sidecar body, namely, on two Cee springs. Many of these ambulances have been supplied to the Russian Government.

LETTERS TO THE EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle" Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Engine Rattle in Two-strokes.

Sir,—Like your correspondent Mr. Kontweit I have owned one of the 1915 Levis popular models and experienced the identical troubles he refers to, excepting that, in my case, the cause of the machine not firing nor giving a splutter was short circuiting in the magneto, which is American, and the same make has played the same trick on a friend's machine. Otherwise, but for belt slip, you could not have a nicer machine nor one easier to handle.

J. L. BARLOW.

Sir,—I notice with interest that this question is again occupying the columns of your valuable paper.

At the present time I am the possessor of a single-speed two-stroke, which persistently rattles at a speed of over 20 m.p.h. When new it would do 25-30 m.p.h. with hardly any effort, but after 1,500 miles it developed a peculiar sound, as if the engine were working with difficulty.

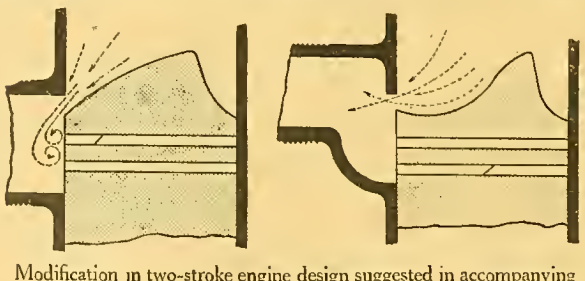
The motor has done about 5,000 miles to date, and I have already taken the engine down several times, but with no better result. One thing I notice, however, is that after the engine has been cleaned the rattle disappears for about 100 miles.

I have fitted new piston rings and magneto chain, but these effected no cure. I am certain the piston is the cause of the noise, because when I lift the compression lever there is immediately a loud hammering sound.

Personally, I have given up trying to cure this trouble, as I think once an engine has developed it there is no remedy.

SCUD.

Sir,—Mr. A. C. Byrne's letter (issue October 14th), giving his experience of two-stroke engines, has suggested to me a possible cause and its remedy. I do not wish to dogmatise, but sometimes a slight change in design may remove a great trouble. Mr. Byrne says the trouble comes with change in road speed, otherwise power exerted in relation to change of pressure in cylinder or velocity of the exhaust through the port. He also says the top piston ring is stuck and carbonised on the exhaust side.



Modification in two-stroke engine design suggested in accompanying letter from Mr. W. F. J. Simpson.

This suggests to me that perhaps when the exhaust begins to open an eddy may beat against the side of the piston and piston ring, carbonising the oil around the piston ring, and causing a hot dry patch on the piston, which may cause uneven friction resistance to the lifting piston.

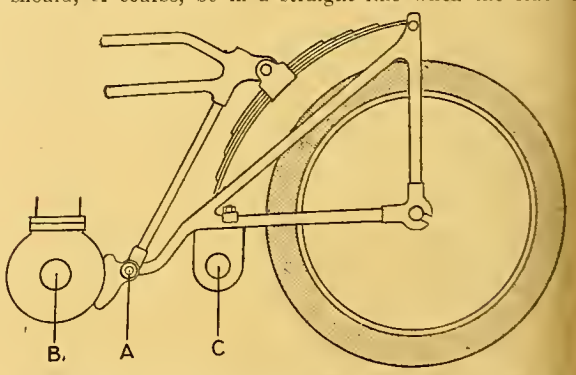
I suggest a remedy which might possibly be worth trying. Bring the exhaust pipe higher up on the cylinder so that the top edge of the port comes in the middle of it, and shape the top of the piston so that it is concave instead of convex. This arrangement would also have the tendency of causing the exhaust to part with some of its remaining energy by transferring some of its velocity to the piston, and though it might not be of much potential value it would assist to cause an easier flow through the port and cause less noise.

WILLIAM F. J. SIMPSON.

Cantilever Rear Springing.

Sir,—I am sending you a sketch, thinking it may be of interest to others, of a design for a rear sprung frame, which, I believe, differs from any previously shown in your paper. It makes use of the cantilever principle, which is now coming into favour with cars.

The chief advantages that I claim for it are that the working joints, of which there are four, are well away from mud splashes, and that it would be comparatively easy to adapt it to any of the usual types of single-cylinder or V twin machines as now made. By placing the gear box on that portion of the frame which acts as a radius rod, the hinge joint A is relieved of belt or final chain strain. With a tight belt this strain is considerable. The points A, B, and C should, of course, be in a straight line when the rider is



Cantilever suspension applied to a motor cycle frame. See letter from Corporal Hudson on this page.

in the saddle. A might very well be a ball bearing, as in the Triumph front fork, so as to be easily adjustable. The two ends of the spring might have either sliding joints or shackles, the former being probably cheaper and occupying less room.

One slight disadvantage of the design is that it would probably necessitate a slightly higher saddle position than the usual. The carrier and anything on it is, of course, unsprung weight, and that is a good reason for putting tool bags elsewhere. I have seen them slung on either side of the tank, just forward of the rider's knees, with complete success.

(CORPL.) J. C. HUDSON.

B.E.F.

THE MOTOR CYCLE

BUYERS' GUIDE OF 1916 MODELS.

THURSDAY, NOVEMBER 25th!

This issue will be considerably enlarged and will contain an illustrated review of the various new pattern motor cycles.

The Tight Spot in a Chain.

Sir,—"Ixion's" correspondent is quite correct about tight spots in chains on new machines. The countershaft and other sprockets are always turned and milled for the teeth before they are fixed to their respective shafts. It depends on the construction whether the sprocket is slightly out of truth after mounting on the shaft or not. If the sprocket is machined while on a mandrel, and the hole in the sprocket is accurately bored before mounting, the hole being the same diameter as the shaft on which the sprocket is to fit, then it cannot very well run out of truth vertically. If it has a small hole in the boss, and is made to key direct to the shaft, the keying process may easily throw it out of truth if at all weak. One of the best methods of mounting the sprockets is to key or cotter a boss on the shaft, true each boss on its own shaft, and provide the boss with a flange, to which the sprocket is riveted by pressing the heads of the rivets in a powerful press. The large hole in the sprocket is made dead true with the flange on the boss, and the sprocket is machined on a large mandrel.

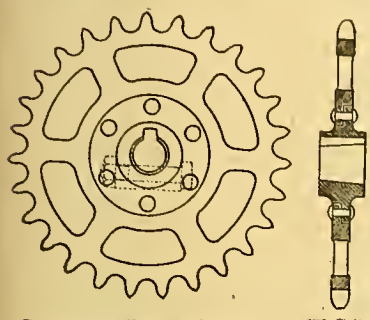


Diagram to illustrate letter from "W.G." on the tight spot in chains

Again, difficulty crops up when the large driven sprocket is between clutch plates. The boss on the shaft in this case must also be quite true, and the ball or other type of bearing, on which the sprocket is free to revolve when the clutch is out, must be true. There is more difficulty in getting a true running driven sprocket in this latter case than when it is rigidly attached to the countershaft, as in the case of the driving sprocket to rear wheel. W.G.

The Army and Navy Hill-climb.

Sir,—I notice you refer to my action in competing at the Army and Navy Hill-climb when I was also acting as chief marshal as being "incompatible with the A.C.U. rules."

If you will look at No. 52 of the open competition rules, you will see that the only officials prohibited from competing at an open meeting are the following, namely, the judges, the measurer, the timekeepers, and the handicappers.

Not only is no embargo laid on the remaining officials, but the appointment of temporary officials, who may be competitors, is expressly provided for in the last paragraph of the above rule.

I trust therefore that, in justice to me, you will publish this letter. F. L. BASSETT (SEC-LIEUT.),
Chairman Streatham M.C.C.

[Mr. Bassett claimed that he was Clerk of the Course as well as Chief Marshal. We abstract the following from the A.C.U. open competition rules under "officials":

Recognised Officials.—52. The following are the recognised officials of a meeting, and their appointments shall be subject to the approval of the Union, viz., three or more stewards of the meeting, and such numbers of the following as may be required.

A clerk of the course, judges, a starter, a clerk of the scales, a measurer, a chief marshal, timekeepers, handicappers, marshals, and observers. Of these the judges, the measurer, the timekeepers, and the handicappers must each, as a qualification for his office, hold the formal authorisation of the Union, *and none of such officials appointed for any open meeting shall be eligible to compete in any competition at such meeting.*

The italics are ours.—ED.]

Foot-operated Exhaust Valve.

Sir,—In reference to "Occasional Comments" by "Ixion," I would like to mention that my machine happens to be a F.N., clutch model (handle-bar controlled). In this instance the operation of the clutch is as easy as that of the exhaust valve lifter; also it *does* operate in a jiffy, and requires *no* muscular effort.

Also it would be rather interesting to know how "Ixion" intends to start the four-cylinder Henderson, which he admits to being of "unpromising length and weight," fitted with a pedal exhaust valve lifter such as he advocates. Does he intend to run it along against compression? Or perhaps we shall see him hopping along with one leg, the other being engaged in depressing the exhaust valve lifter pedal. F.N. SHAFT DRIVE.

Tubing for Acetylene Gas.

Sir,—In your paper of October 7th I notice that on page 340 your contributor states "that it has been advocated in the motor cycle press that copper tubing is the best thing to carry gas from the head light generator to the rear light.

I am under the impression that copper and acetylene gas are best kept apart, as I understand that between them they manage to form a very explosive compound, which is liable to explode at any moment. I believe that several home-made generators which have caused serious consequences have been made of copper, and that the explosion has been traced to the action of the gas on copper. If you could ascertain this fact (no doubt some of the makers of generators could enlighten you on the matter), then, if I am correct, it would be in the interests of your readers to publish it, and save them from committing this error.

I notice that your correspondent has used Bowden tubing with satisfactory results. This I am pleased to know, as my experience of the ordinary rubber tubing (both bare and armoured) has been most unfortunate. The rubber either cracks and lets you down at an awkward moment, or else the armoured gets choked up owing to the small bore.

I have used with success for the past two years a length of ordinary ⅜in. flexible gas tubing in conjunction with the rubber nozzles used for connecting to gas rings, etc.
A. B. COUSINS.

[We believe our correspondent is quite correct respecting the use of copper with acetylene gas, but brass is perfectly safe; we have not tried Bowden casing.—ED.]

CUMBERLAND LADY MOTOR CYCLISTS.

Mrs. W. T. Smith, of Workington, and her sister Miss Crane, of Cockermouth, who have both covered over 3,000 miles this year on their Royal Ruby two-stroke lightweight motor cycles

Infant Phenomena.

Sir,—May I have the privilege of using your valuable columns to make a suggestion? Some people seem to be in doubt as to the capabilities of boy motor cyclists. Could some club not arrange some item in a hill-climb or some other test be kept for boys under a certain age? The reason that boys do not appear more in club events is, I think, that it is hardly worth while for a schoolboy to join any club, as he is at school most of the year.

W.G.H.B.

The Modern Sidecar Outfit Compared.

Sir,—In reading your paper I saw E. C. Palmer's letter referring to the efficiency of three-year-old sidecar mounts, and I should like to say that I, too, have undergone similar experiences. I have a 1913 3½ h.p. Triumph, and I use a James canoelet sidecar with it. Last summer I went up the "struggle" outside Ambleside over the Kirkstone Pass and down to Ullswater. I returned up Kirkstone Pass and back to Windermere again, and not once during the run did the passenger (who weighed eleven stone) or myself have to dismount. I carried a full travelling equipment, including luggage and a full petrol tin. On going up the "struggle" I passed a lady who had evidently dismounted from a sidecar, and a little further I passed a 6 h.p. twin and heavy sidecar which had failed to mount the hill. This, I think, speaks well for the old mounts, although before going up I pulled the exhaust out of the silencer. The hill mentioned is, as you know, a good two miles long, and is considered the stiffest main road hill in the Lake District, I am told.

I only add I have no connection with the Triumph firm. I can run the machine at any speed from 5 m.p.h. to 45 or 50 m.p.h.

F.H.A.

Sir,—In *The Motor Cycle* of the 14th inst. a correspondent rather depreciates the modern three-speed gear sidecar outfit. As a happy possessor of a 6 h.p. 1915 A.J.S. sidecar combination, I should like to state the following facts, having no interest in the firm of Messrs. Stevens other than that of a highly satisfied customer.

This summer my wife and I had a ten days' tour in the Highlands, on nine of which it rained. On our way to Grantown-on-Spey from Edinburgh we encountered the worst weather over the Grampians—that is from Struan to Dalnaspidal—a very stiff climb even in good weather. We went the whole way up on top at a good bit over 20 m.p.h., notwithstanding luggage for two, and hood, screen, and side curtains up. The only occasion I have had to use bottom gear (except, of course, when starting) was on the test hill between Grantown and Tomintoul at the Bridge of Brown, where one is faced with a climb of 1 in 8 after a right-angle turn on a bridge. The machine has done about 4,000 miles and has never given any trouble. The petrol consumption is most satisfactory. With hood and screen up, 60 m.p.g.; with both down and good weather conditions, 76 m.p.g.

M. G. GREIG.

6 h.p. 1915 A.J.S. passenger outfit referred to in letter from Mr. M. G. Greig on this page.

Sir,—In *The Motor Cycle* of the 14th inst. I read with astonishment the letter on "The Modern Sidecar Outfit Compared." Your correspondent must be of a very observant order from his remarks *re* procession of modern motor cycles which failed to climb various hills with sidecar and passenger. In the first place, he apparently fails to understand that usually a wicker sidecar is only just about half the weight of a coachbuilt sidecar. Secondly, sensible people who travel with a motor cycle and sidecar for pleasure are not in the least concerned whether your correspondent cares to show off the racing powers of his machine or not. Thirdly, he does not appear to appreciate the fact that many people with a new mount often desire to carry out experiments, and find out the capabilities of the machine under varying conditions on the first convenient hill.

I believe it is generally understood that very few people properly understand a new make of machine until its peculiarities are mastered.

Bury Hill in Sussex, with a gradient averaging 1 in 11, is specially mentioned. I am not an expert, but I guarantee I will take any modern machine of 4 or 4¼ h.p. of reputable make with a three-speed gear up this or any other similar hill with a loaded coachbuilt sidecar at any time.

I am the owner of a 1915 4¼ h.p. chain-driven B.S.A., and use a coachbuilt sidecar weighing 125 lb. I can take this over almost any hill in Kent on second gear with sidecar and passenger with ease. Plenty of these hills, as is well known, average about 1 in 7 to 1 in 9 and even less, and are of considerable length, such as Boxley, Steed Hill, Star Hill, Trossley Hill, Chevening Hill, and many others. Those mentioned, with others, were specially surveyed for gradient, and used for War Office trials. I have ridden several modern outfits of the power mentioned or thereabouts, and have, so far, absolutely failed to find such a disreputable mount as any which your correspondent describes. It would give me very great pleasure to have a trial run with him as to speed or hill-climbing capabilities under the same conditions, or rather I take the modern heavy mount with sidecar and passenger, and he take his 1912 light mount with wicker sidecar and passenger.

E. J. DAVIES.

Belts.

Sir,—There is one improvement for the perfection, or rather towards the perfection, of motor bicycles which seems to have entirely escaped the notice of motor cycle manufacturers, and that is the construction of driving belts of a commonsense design. During several years experience of motor cycling I have noticed that the only place where a belt gives is at the fastener. The remedy is obvious. Why not make the belt one and a half times the ordinary depth for, say, three inches from each end, the extra depth coming on top, *i.e.*, on the outer or broader edge of the belt?

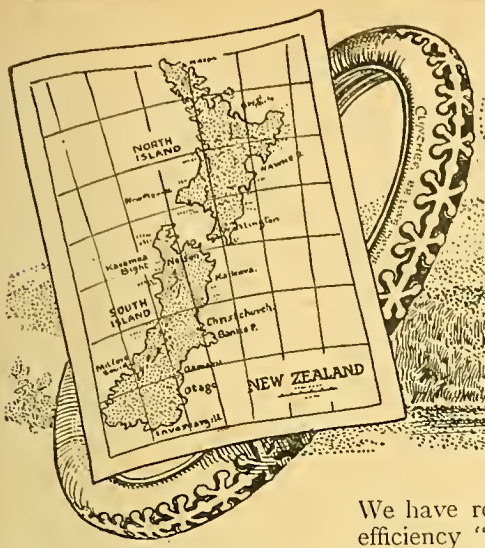
EDWARD T. WARREN, Indian Police.
United Provinces, India.

Scott Lubrication.

Sir,—With reference to "T.E.D.'s" letter in the issue of October 7th, I do not think the mixing of the petrol and oil in the Scott machine will make any difference, as the result must be the same as if the oil is fed direct to the crank case.

I have not ridden a Scott for some time, but when I had one the hand pump was fitted. On several occasions I carefully pumped oil into the crank cases to the correct level, when the engine was hot, and removed the covers to see that the level was correct. After five miles running I used to dismount (this was the distance recommended by the makers as the interval between charges), and after waiting for the oil to drain I would again verify the level. Invariably, the oil had almost all disappeared, obviously through the exhaust, therefore I can see no difference between crank case lubrication and mixing the oil with the petrol. I should, however, recommend "T.E.D." to keep a little oil in the crank case to lubricate the big end bearings, but not enough to make a splash, as the pistons will be sufficiently lubricated by the other method.

SCOT.



A NEW ZEALAND SUCCESS

We have received some gratifying results of Clinchers efficiency "down under" which go to prove that for hard wear and service there are no motor cycle tyres to approach them.

The New Zealand motor cyclist photographed below mounted on a

"L.M.C." Motor Cycle

pulled off the following in quick succession:—

Jan. 20.—Southern Hawkes' Bay Motor Cycle Club:—
Swing Bridge Hill—Fastest Time, 1st on Formula.

Feb. 9.— " " " " " " " "
" 15.— " " " " " " " "
" 17.— " " " " " " " "
Reliability Run to Webber and back to Dennevirke, 1st, gaining 96 points.

Mar. 1.—Swing Bridge Hill. Fastest Time—2nd on Formula.
" 8.—Adelaide Road Hill. " " (A RECORD).
" 15.—Swing Bridge Hill. " "
" 19.—Adelaide Road Hill. 2nd Fastest time on Formula.

April 5.— " " " Fastest Time.
At St. Patricks, Day Sports, Dennevirke, 1st in Thread and Needle Race, half mile.

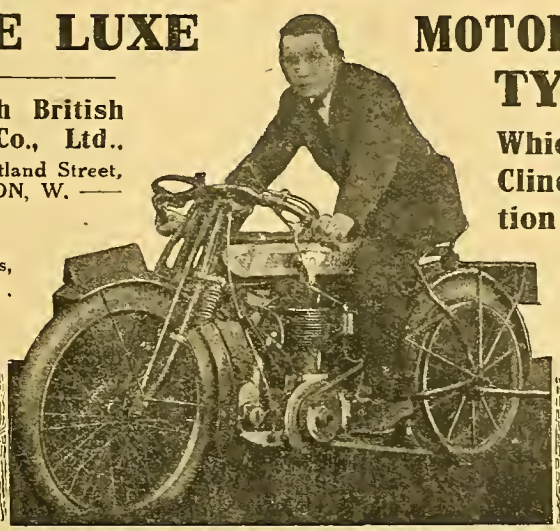
His machine was fitted with

CLINCHER

THE FIRST DETACHABLE PNEUMATIC TYRE

DE LUXE MOTOR CYCLE TYRES

Which upheld the Clincher reputation to the last.



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Ordinary Quality.

Weighs only a few ounces. Waterproof. Windproof. Completely protects the vital organs: does not impede movement. Fits any figure from 34in. to 48in. waist or chest. Sweater can be worn underneath.

Ordinary quality. **Price 12/6**
Superior quality, glove leather, "V" front. **Price 15/-**

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With sleeves in glove kid, latest model. **Price 35/-**

Fingers and thumb entirely free.

The MIT-GLOVE.

A new pattern of gloves allowiog free use of the fingers when required.
PRICE—
In woollen material, palms lined leather, **5/6.**

Mit-Glov closed.

Extra Special Quality—with sleeves.

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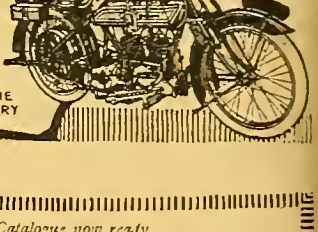

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Chain Drive	£62	0	0
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¶ Its contents embrace a multitude of subjects relating to motor cycles, their care and management. It is clearly written and well illustrated. Every motor cyclist—whether beginner or experienced rider—should keep a copy handy for reference.

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A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Testing Oil.

(1.) I have had a quantity of engine oil given to me. How can I test its suitability for an air-cooled motor, and what will happen if used and not suitable? (2.) When is an air-cooled engine considered too hot to run with safety, and how can I prevent overheating when climbing long hills on a low gear? (3.) Will a windscreen and hood on a sidecar attached to a 3½ h.p. three-speed machine be too much for the engine?—C.S

(1.) The testing of engine oil is not within the capabilities of the amateur, unless he is an expert chemist and has some knowledge of lubricating oil. Exercise great care in selecting oil for an air-cooled engine, and avoid unsealed tins. If the oil were not suitable it would carbonise badly, and your engine might seize. (2.) When the engine loses power through overheating, it knocks, and stops on hills; you can prevent overheating by driving with spark advanced, as little gas and as much air as possible, and using plenty of lubricating oil. (3.) The windscreen will, of course, make some difference when you are driving against a headwind, but we think the engine would manage it all right suitably geared.

Enamelling at Home.

Is it possible to enamel my motor bicycle and sidecar myself and make a good job of it? What is the best enamel to use (of course, I should not be able to bake it), and what is the best way of starting?—L.A.S.

Yes, it is possible to enamel a bicycle and sidecar yourself, but it requires some considerable care and trouble to make anything of a job. The machine should be taken to pieces, and the parts to be enamelled should have all old enamel removed and thoroughly cleaned with emery cloth. Really good enamel should be obtained, preferably one which does not dry too rapidly, such as Robbialac, or similar preparation. This should be applied carefully with a soft brush, and care should be taken to paint in one direction only. The parts should then be hung up in some clean dry warm place where they can be left to dry, after which one or two more coats can be applied. After applying the final coat, they should be left for at least a week to get thoroughly dry. It is very necessary that the place where the work is done, and especially where the parts are left to dry, should be as free as possible from dust.

Fitting a Long Exhaust Pipe.

I should be much obliged if you would tell me if, by fitting long exhaust tubes to a 1915 2¾ h.p. T.T. Douglas, I should obtain more speed and better results?—J. de F.

There is not much object in fitting a long exhaust pipe, unless there is a proper expansion chamber. This is necessary, both to deaden the sound of the exhaust, and also to assist the passage of the gases. Provided you place the expansion chamber fairly near the exit port, this has the result of reducing the pressure of the gases and of quietening them, while a long pipe further aids cooling, and consequently further lessens the pressure. The best plan is to remove all baffle plates from your silencer, and fit an extra pipe about two feet long.

A Badly-fitted Speedometer.

I have a 4¼ h.p. single-cylinder motor bicycle of well-known make. (1.) After attaching a speedometer the fitting caused eventually seven spokes to snap. Does this often happen when the drive is attached to the spokes? (2.) If I fit a hot air inlet pipe to my carburetter, shall I have to use the air lever much, or will it make it semi-automatic?—T.A.C.

(1.) Either the spokes are too slender, or the speedometer drive was badly fitted. We think the latter is more likely to be the case. The great secret is to get the wheels to mesh deeply enough to drive properly without being too deep to jam, and what we think has happened is that the driving sprocket was not set truly. (See article issue of Sept. 2nd, page 230.) (2.) Fitting a hot air pipe to your carburetter will not make it semi-automatic, but probably will result in your not having to alter the air lever so much. It will certainly improve the running of your machine.

THE MOTOR CYCLE Buyers' Guide

OF 1916 MODELS.

THURSDAY, Nov. 25th, 1915.

Since 1906 the Buyers' Guide has proved a much appreciated feature of this journal. In the absence of a Show, a Buyers' Guide of 1916 models becomes an urgent necessity. Thursday, Nov 25th, has been selected as the date of this issue.

Valve Timing.

I have a 3½ h.p. old Rex machine. The timing wheel slipped on the cone. In taking the gear plate down the timing wheels got mixed. There were no marks on the cogs. Will you please tell me the best way to set the valves properly?—NOVICE.

The valves should be timed as follows: Set the exhaust valve to close just after the completion of the exhaust stroke. It will then commence to open when the piston is about one-seventh of the length of the stroke from the bottom of the firing stroke. The inlet should commence to open as the exhaust closes, and remain open for one complete stroke of the piston, or while the flywheels turn through 180°.

Misfiring.

I look after an officer's motor cycle, and have recently been in trouble, and have been unable to rectify it. The machine is a 3½ h.p. 1914 model, with three-speed countershaft gear (5 to 1 on top). After about a speed of 27-28 m.p.h., it commences missing, and will not go above this speed. This occurs either straightaway from a cold start or after prolonged running. I have cleaned the engine, carburetter, and valves. The platinum points have been filed and different heights of petrol have been tried, but without avail. The trouble occurs with a person on the carrier or solo. The engine seems gradually to fade off and miss until the speed drops. I have tried a new plug as well. It seems to point to drying up, but there is plenty of petrol. The magneto fitted is a C.A.V. Ruthardt magneto, and the fibre bush which touches the cam is a wheel, and is very loose on the pin. Could this be the cause? It misses as badly on the lower gears, only, of course, at a relatively lower speed.—J.H.M.

We do not think the trouble would be caused by the contact breaker. It is possibly due to the valve sticking in its guide, owing to the stem of the former being too tight a fit. We should recommend you to take out the valves and see that they are working freely in their guides. Also, if the springs are weak fit stronger ones, and try increasing the gap of the plug points. Clean the magneto carbon brush and try a new plug. It would be advisable to fit a new fibre wheel.

Winter Riding.

(1.) I am anxious to continue to use my motor cycle through the winter for business purposes, which necessitate being out in all kinds of weather; but I do not relish the arduous task of cleaning the machine after a wet or muddy ride, yet if not cleaned it so quickly rusts. Is there any preparation that can be rubbed over the plated parts and enamel to keep the wet and mud from causing rust, so that there need be no need to be constantly cleaning; and if there is any such preparation, how often should it be renewed? (2.) What are the most practical accessories on the market for keeping hands and feet protected from the weather?—H.C.S.

(1.) We can only suggest vaseline, which you put on and do not clean off until the spring. Vaseline should be smeared over all the bright parts. (2.) There are numerous devices for keeping the hands and feet warm. For the hands, warm gloves and handle-bar protectors which fit over the handle-bar grips, while for the feet wear woollen socks, good easy fitting boots, and over these you may wear snow boots or Hutchinson boots.

A Choked Jet.

Three or four months ago I purchased a new 1915 twin. Soon after I was unfortunate enough to run into a carelessly driven taxi. In consequence I had to get a practically new frame, but the carburetter, engine, and magneto were overhauled (in a hurry) and declared in good order. (1.) The engine occasionally refuses to take top gear and knocks badly; then it suddenly runs as usual again. The plugs are clean, and the points the necessary distance apart, and everything else is in order. (2.) The engine suddenly refuses to take any air, and since the accident has taken less air than previously. As before, the fault gets right again suddenly. The petrol pipes and jets are clear. I suspect a crack in the carburetter at the junction of the pipe to cylinders. Would this be likely to cause the trouble, and how could it be remedied simply? I notice petrol escaping there when I flood the carburetter; should it do so? (3.) In the booklet I am told to inject paraffin as opposed to petrol. What is the reason of this? Would there be any disadvantages in using a mixture of petrol and paraffin?—T.L.

(1-2.) Both these symptoms lead one to suppose that the engine has a temporarily obstructed jet. This would account for the engine refusing to take top gear, knocking, and refusing to take air. There may be some foreign matter in the tank, petrol pipe, or carburetter, which obstructs the jet for a few seconds, and then is drawn into the engine. If there were a crack at the junction of the inlet pipes and the cylinder this would render the machine difficult to start, and unable to run slowly, and would also prevent it taking any air. (3.) The theory is that petrol washes away the oil on the cylinder walls, but paraffin acts to some extent as a lubricant. There is not very much in the theory; either petrol or paraffin will do.

Petroil.

I find a difficulty in properly lubricating the engine of my 2¼ h.p. two-stroke, and I have decided to mix the oil with the petrol. Is this possible? The carburetter is B. and B., but in place of a jet there seems to be a disc with four or five small holes in it. I should be pleased if you would kindly let me know the correct proportion of oil and petrol, also if there should be a certain amount in the crank case with which to start. I believe this would solve the problem.—J.H.K.

Mixing oil with petrol does not necessitate a special carburetter. The proportion is one of oil to sixteen of petrol. A slightly larger jet would be advisable. Evidently your jet is fitted with some sort of adapter. Possibly an ordinary jet will have to be substituted for this.

READER'S REPLY.

Two-stroke Lubrication.

One of your readers ("F.J.W.M.") asks you whether he would be wise to fit a Knight lubricator in place of "petroil" lubrication. I should strongly recommend him to do so as soon as he can. I had a Knight lubricator fitted to my Connaught in the spring, and I would not be without it on any account. The lubrication is perfect, I use less oil, can keep almost perfectly clean, and get no involuntary four-stroking, like I used to. Further, the carburetter will now take a smaller jet, No. 23, and I can get ten to twenty miles more to the gallon than I could before. Also starting is much easier, because the oil does not gum up in the carburetter when the engine gets cold and the petrol evaporates. I was often troubled in this way before the alteration, the carburetter sometimes refusing to take any air. Time, trouble, and expense are saved. My attitude towards the disgusting mixture known as "petroil" may be described in two words—Never again! I am much surprised that no firm appears to have yet adopted this simple device as a standard. I have no interest whatever in the firm, but I recognise its members as experts.—H. LEWIS.

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"L.S.K." (N.B.)—6 h.p. Enfield as a double-purpose machine.

"H.O.W." (London).—3½ h.p. Triumph for solo and sidecar work.

"E.P." (Southsea).—1914 two-speed Douglas with clutch and kick starter.

"T.R.M." and "J.C." (Birmingham).—Philipson governor pulley for sidecar work.

"A.B." (Cheshire).—1915 No. 1 Grand Prix Morgan. Comfort, reliability, maximum speed, and consumption.

"M.F.A." (Somerset).—5-6 h.p. Ariel. Efficiency of chain-cum-belt drive compared with chain drive for sidecar work.

RECOMMENDED ROUTES.

LONDON TO FISHGUARD, and distance.—M.J.K.

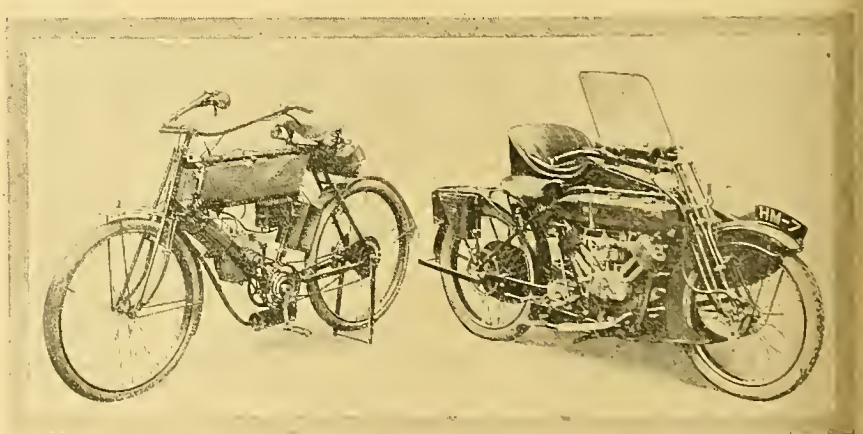
London, Brentford, Hounslow, Colnbrook, Slough, Maidenhead, Henley, Wallingford, Wantage, Faringdon, Fairford, Cirencester, Gloucester, Cinderford, Coleford, Monmouth, Raglan, Abergavenny, Crickhowell, Llandovery, Llandilo, Carmarthen, St. Clears, Haverfordwest, Fishguard; or Llandovery, Swargate, Newcastle Emlyn, Cardigan, Newport, Fishguard. Distance is approximately 246 miles.

WINDSOR TO SEVENOAKS, and distance.—J.R.

Windsor, Staines, Hampton Court, Kingston, Sutton, Croydon, Westerham, Sevenoaks. Approximately 47 miles.

TORQUAY TO LONDON.—W.C.S.

Torquay, Teignmouth, Dawlish, Exeter, Sidford, Colyford, Lyme Regis, Bridport, Dorchester, Bere Regis, Wimborne, Ringwood, Cadnam, Totton, Shirley, Bassett, West End, Botley, Bishop's Waltham, West Meon, East Tisted, Alton, Farnham, Hog's Back, Guildford, Ripley, Cobham, Kingston, London.



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A 1900 1¾ h.p. P. & M. motor bicycle which is in excellent order, and up till quite recently in use, and the very latest twin-cylinder four-speed P. & M. sidecar.

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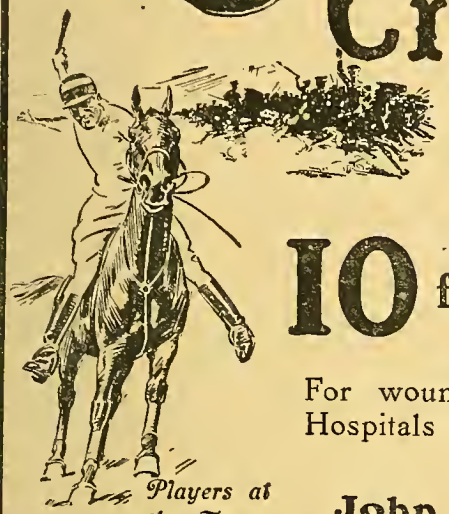

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P578

PURE PARA JACKETS.

Pure Para Jacket - - - - - Price 39/6

Trouser Overalls, of finest quality
Price (without seat) 22/- (with seat) 22/6

This Suit is made of the very best material, and the quality is unobtainable elsewhere.

For cheaper quality see our catalogue.

Perfect comfort in winter riding can best be secured by lining your Overalls with Camel Fleece. Most of the waterproofs we send to Officers at the Front we line with fleece. They ought to know what is best to keep out wet and cold.

Price of Lining Jacket 15/-
Price of Lining Overalls 12/6

Dunhills Ltd.,

359-361, Euston Road, LONDON, N.W.
2, Conduit St., W. 42, Lombard St., E.C.
Manchester: 90-92, Cross St. Glasgow: 72, St. Vincent St.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to ILIFFE & SONS Ltd., and crossed ~~& Co.~~

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, 2d. will be charged for registration, and three stamped and addressed envelopes must be sent for forwarding replies. Only the number will appear in the advertisement. Replies should be addressed, "No. 000, c/o 'The Motor Cycle,' Coventry"; or if "London" is added to the address, then to the number given, c/o "The Motor Cycle," 20, Tudor Street, E.C.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

Abingdon.

ABINGDON, 3½h.p. Kerry, 1913, clutch model, hardly soiled, absolutely perfect, all on; £28/10.—Cox, 85. Church Rd., Willesden. [5093

A.J.S.

A.J.S., 6h.p., complete with sidecar; just delivered; £95.—Turpins, 22 and 29, Preston Rd., Brighton. [0716

1916 A.J.S. Models, ready November; order now.—Williams, Chapel Ash Depot, Wolverhampton. [X1463

1913 A.J.S., and sidecar, speedometer, wind screen, spares; £55.—6, Hollingbury Terrace, Brighton. [X1461

A.J.S., 2¾h.p., new June, 1915, only done 700 miles, lamp, horn, and spares; £48.—Hopkins, New St., Ledbury. [X1419

A.J.S.—Prompt delivery of all models, 6h.p., 4h.p., and 2¾h.p.—P. J. Evans, Birmingham and district agent, 87-91, John Bright St. [4909

A.J.S., 1913, 2-speed countershaft clutch model, all accessories, excellent condition; trial; £28, bargain —239, Bristol St., Birmingham. [X1609

1914 2¾h.p. A.J.S., 2-speed, free engine, kick starter, hand clutch, enclosed drive, tyres good, condition excellent; £38/10.—12. Gladstone Place, Stirling. [X1307

Halifax Motor Exchange

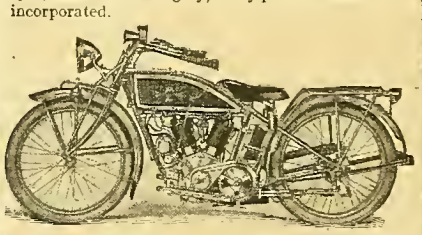
68, HORTON ST., HALIFAX.
Phone—766. Telegrams—"Perfection."

A MILE IN 36 SECONDS.

EXCELSIOR.

THE GOOD OLD X

7 h.p., Twin 84 × 89, mechanical and hand lubrication, kick starter, high-tension magneto, spring forks, 2-gallon petrol capacity, 3-speed countershaft gear, multiple-disc clutch with hand and foot control, handle-bar control, spring seat-pillar, 3in. non-skid tyre, finish Excelsior grey, every possible refinement incorporated.



STANDARD MODEL £80
With electrical equipment £90
Exchange liberally considered.
We are sole Yorkshire distributers. Yorkshire dealers supplied.

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1915 (new) **DIAMOND**, 2½ h.p., 2-stroke ...	£28 13
1915 2¾ h.p. 2-speed **CONNAUGHT** (new) ..	£39 18
1915 2½ h.p. 2-speed **WOLF-J.A.P.** (new) ..	£37 0
1915 2½ h.p. **ROYAL RUBY**, 2-speed	£36 10
1915 2½ h.p. 2-speed **RUBY-J.A.P.** (new) ..	£39 10
1912 3½ h.p. magneto **N.S.U.**	£23 10
1912 3½ h.p. 2-speed F.E. **BRADBURY**	£29 10
2¾ h.p. 2-speed **DOUGLAS**	£26 10
8 h.p. 3-speed **CHATER-LEA** and coach Sc.	£39 10
1909 3½ h.p. 2-speed **REX**	£16 10
3½ h.p. magneto **REX**, spring forks	£15 10
1910 3½ h.p. tourist **TRIUMPH**	£22 10
KERRY, 3 h.p., magneto, Saxon forks	£12 10
TRIUMPH, 3½ h.p., magneto, spring forks..	£19 19
5½ h.p. magneto **REX**, spring forks	£15 10
M.M.C., 3 h.p., magneto	£11 10
N.S.U., twin, 2-speed, spring forks	£15 10

£145 RITZ LIGHT CAR. £145

The last word in light car values; 10 h.p., 4-cylinder, mechanical lubrication, electric horn and lighting, hood, screen, tools; luxuriously sprung, and a grand top gear car. Deliveries from stock.
Second-hand RITZ, only done about 600 miles, almost as new; 110 guineas.
Exchanges quoted.

SIDECAR COMBINATIONS.

1914 7-9 h.p. twin **PREMIER**, chain drive, countershaft gear, coach Sidecar	£59 10
1914 6 h.p. **REX** Sidette, nearly new	£59 10
1914 (late) w.-c. **WILLIAMSON** (new)	£99 5
1912 3¾ h.p. 2-speed twin **PREMIER** and smart coach-built Sidecar	£34 10
1913 6 h.p. 2-speed F.E. **REX**, chain drive, smart coach Sidecar	£45 10
1912 6 h.p. 2-speed **REX** and Sidecar	£34 10
1910 3½ h.p. 2-speed **REX** and Sidecar	£24 10
1910 5-6 h.p. 2-speed **REX** and Sidecar....	£27 10
1909 5-6 h.p. 2-speed **REX** and Sidecar....	£25 10
6 h.p. 3-speed **PEUGEOT**, fine condition ..	£26 10

Cash offers wanted.

MISCELLANEOUS.

1914 Grand Prix Morgan, water-cooled engine, luxuriously equipped	£98 10
Lucas Large Motor Cycle Horn	16/-
F.R.S. Large Head Lamp and Generator ..	27/6
Lucas King of the Road and Generator ...	32/6
Miller's Head Lamp and Generator	29/6

DEFENCE OF THE REALM ACT

Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade Labour Exchange, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

MOTOR CYCLES FOR SALE.

A.J.S.

1915 4h.p. A.J.S., 3-speed, Stevens coachbuilt side car, 4½ months old, as new; £70, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0731

A.J.S. New 6h.p. Combination actually in stock for immediate delivery; sidecar is fitted with hood and screen; combination complete, £100.—Hopkins, Market, Ledbury. [X1418

A.J.S. 1915 6h.p. Combination, splendid condition, Lucas head and rear lamps, Lucas horn, wind screen; any trial; £85 cash.—Griffiths, Chemist, Kidsgrove, Staffs. [X1465

1915 6h.p. A.J.S. Combination, absolutely in stock; this luxurious outfit complete only costs £97.6; exchanges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X1485

A.J.S., 1913, 6h.p., 3-speed, perfect condition, just overhauled; 45 gns., very great bargain; exchanges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [0728

A.J.S., 1913, 2¾h.p., countershaft 2-speed gear, hand controlled clutch, kick starter, Lucas lamp, Cowey speedometer, new Dunlop cover on back wheel; £30.—Dickinson, 1, High Town Rd., Luton. [X1347

A.J.S. 6h.p. Combination, 1914½, complete with hood, screen, Lucas and Miller lamps, speedometer, horn, mirror, watch, spare tyres and tubes, and numerous spares, little used; 75 gns.—Bartlett, Arcade, Aldershot. [4785

A.J.S. 6h.p. 1915 Combination, Lucas head light, dip for sidecar, rear lamp, horn, Stewart speedometer, sidecar fitted glass wind screen, 700×75 Avon tyres all wheels, only run 1,500 miles; £90.—Howard, 175, Castle Rd., Bedford. [4877

A.J.S. 1914½ 6h.p. Combination, all disc wheels, hood, screen, lamps, horn, tools, storm apron, sprung saddle-pillar, 1915 forks, spare tyre, chains, tube, valve, and spring, fast, climb anything; any trial; capital condition; 70 gns.—Hardcastle, Draper, Darlaston, Staffs. [4664

6h.p. A.J.S., 1914, 3-speed countershaft gear and free engine, fitted with Gloria sidecar, fitted with Lucas lighting set, Lucas horn, rear light, tools, and spares, any severe trial given, mechanically sound, as new; 70 gns.; rare opportunity.—Wauchope's, 9, Shoe Lane, London. [X1534

A.J.S., 1913, 2¾h.p., kick start, 2-speed countershaft, clutch (hand controlled), enclosed transmission, splendid condition, and 1915 2-speed countershaft O K Junior, enclosed transmission, Lucas lamp, tools, and horn, new July, little usage; what offers?—Fletcher, Craigrule, Pleckgate Rd., Blackburn. [X1300

A.J.S. 1913-14 6h.p. Combination, coachbuilt sidecar, Lucas head, rear, sidecar lamps, new horn, Cowey speedometer, new front and back heavy 650×65 tyres, complete spares and tools, all recently overhauled by makers, fully insured A.A., M.U. to June, 1916; £59.—Baker, 16, Smithdown Rd., Liverpool. [X1491

Alldays.

ALLONS from stock, 2-speed £38/17, and single speed £31/10 models; cash, easy terms.—Wauchope's, 9, Shoe Lane, London. [X1515

ALLDAYS Allon, 1915, 2¾h.p., 2-stroke, 2-speed, not done 500, absolutely as new; £34/10.—Railway Garage, Staines. [513

WHAT ABOUT THAT

Motor Cycle you are looking for? Is it in this List?

1915 4 h.p. **A.J.S.** Can be supplied with **A.J.S.** Sidecar.	£69	8
1915 3½ h.p. **ROVER**, countershaft Com'n	£84	7
1915 4½ h.p. 3-speed **JAMES** Combination, hood and screen, and lamps	£76	0
1915 3 h.p. **T.T. ENFIELD**	£52	10
1915 4½ h.p. **B.S.A.** and Sidecar	£65	0
1915 **SUN**, 2-stroke, 2-speed, and clutch	£32	0
1913 2½ h.p. **GALCOTT**, just overhauled	£20	0
1912 2½ h.p. 2-speed and clutch **A.J.S.**	£30	0
1914 2½ h.p. **PREMIER**, 3-sp., fine condition	£26	0
1914 3½ h.p. **T.T. SINGER**, like new	£38	0
1912 4 h.p. **REX**, 2-speed	£20	0
1911 3½ h.p. **TRIUMPH**, overhauled	£25	0
1910 F.E. **TRIUMPH**, overhauled	£27	0

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1915 **JAMES**, 2-speed	£38	10
1915 Lady's **METRO**, 2-speed	£38	10
1915 **IVY**, single geared	£29	10
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1915 T.T. **SPARKBROOK**, 2-speed	£37	16
1915 **EXCELSIOR**, single-geared	£30	16
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STEWART SPEEDOMETERS from stock	£2	10	0
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N.S.U. 2-speed, practically new, fits Triumph	£4	0	0
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Douglas.

DOUGLAS T.T., 1912 2¾h.p., 2-speed; £27.—Moody, 4, Poplar Grove, Hammersmith. [5060

2¾h.p. Douglas, 1911, overhauled, re-enamelled; £15.—205, Spring Hall Lane, Halifax. [X1579

1911 Douglas, nice condition, fully equipped, Miller lamp set; bargain, £17/10.—133, Park Av., Barking. [X0961

1913 Douglas, 2-speed, lamp, just overhauled; £35.—Blencathra, Highfield Rd., Walton-on-Thames. [X1481

DOUGLAS, 2¾h.p., 1914, delivered March, 1915; a snip; owner active service; £42.—331, Fulham Rd., London. [4933

1913 2¾h.p. Douglas, 2-speed, lamp, spare belt, necessories, overhauled; £32.—Childs, Park Rd., Blandford. [X1407

TRY Us.—Probably we can supply.—Gibb, Oough, the Douglas Specialists, Gloucester. Douglases our speciality. [X3538

2¾h.p. 1914 Douglas, 2 speeds, speedometer, lamp, £38; Douglas, 1913, £29.—Corpl. French, Fenny Stratford. [X1341

DOUGLAS, 1914, 2¾h.p., 2-speed, kick start, splendid order; £39; all accessories.—Washington, Middlewich. [X1460

DOUGLAS, 2¾h.p., 1914, Colonial, all accessories, £42; also 1913 model R, £36.—Earl, 5, Heath St., Hampstead. [X1468

DOUGLAS, 2¾h.p., 1914 U model; net cash £33, no offers.—Apply, Buller Pratt, Highcliffe House, Bradford, Yorks. [4048

1914 Douglas, 2-spped, free engine, and kick starter; 42 gns.; absolutely perfect condition.—Juliau, Broad St., Reading. [X9192

1911 Douglas, new tyres, lamp, excellent condition; £22.—Write, Alec Holt, R.E. Mess, Gibraltar Barracks, Aldershot. [4862

DOUGLAS, 1915, almost new, 2 speeds, run 400 miles, fully equipped; £45.—Percy and Co., 337, Euston Rd., London. [5017

DOUGLAS, 1915, immediate delivery any 2¾h.p. model, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [9203

DOUGLAS, 1914, 2-speed, free engine, kick starter, lamp, horn, 900 miles; £45.—W. H. J. Willis, 29, Newton Rd., Faversham. [X1298

1915 Douglas, 3-speed, semi T.T. or touring bare, lamps, horn, etc., only used 8 weeks, as new; £52.—Motor Mart, Eastbourne. [4787

DOUGLAS, 1914, 2-speed, speedometer, lamps, horn, tyres perfect; £43.—Poole, 131, Holden Rd., North Finchley. 'Phone: 329. [4927

DOUGLAS, 1915, 2¾h.p., 3-speed, and Rally lightweight coachbuilt sidecar; £54; will separate.—Salmon, Market Place, Banbury. [4763

1915 Douglas, T.T., 2-speed, very latest model, large tyres, just arrived; cash offers, or exchange.—Deane, Matlock Bath, Derbyshire. [X1545

DOUGLAS, 4h.p., 1915, new condition throughout, speedometer, lamp set, horn, tools; accept £48.—Peacock, 274, High Rd., Bulham. [5061

DOUGLAS, 1914, 2-speed, clutch, kick start, accessories, does 44 with flapper on bracket; 40 gns.; after 6.—15, Gubyon Av., Herne Hill. [4816

1914 Douglas, 3½h.p., clutch, spare belt, chain, F.R.S. lamp, tyres excellent, fast, powerful; £42.—Glazebrook, Castle Rd., Kenilworth. [X1597

DOUGLAS, 1915, 4h.p., 3-speed, kick starter, clutch, speedometer, accessories, spares; offers over £55.—Apply, 122, Bromyard Rd., Worcester. [X1314

1915 4h.p. Douglas Combination, lamps, horns, speedometer, practically new; £69, lowest.—Lieut. Bridge, Sobraon Barracks, Colchester. [4956

DOUGLAS V. 1914, 2 speeds, £43/10; 1911 2-speed Douglas, £29/10; exchanges entertained.—Motories, 68, Horton St., Halifax. [0707

DOUGLAS, 1915, new model U's. 3-speed gear; also model V's, 2-speed gear; delivery from stock.—Wauchope's, 9, Shoe Lane, London. [X1512

1914 T.T. Douglas, good tyres, engine recently overhauled, Lycett saddle, in excellent condition; £35.—Robinson's Garage, Green St., Cambridge. [0613

DOUGLAS, very late 1912, drip feed, 2-speed and free, lamps, etc., tyres good, topping condition; £35; by appointment.—16, King's Av., Clapham. [4852

DOUGLAS T.T., new tyres, 2 speeds, speedometer, all spares; buying sidecar combination; condition perfect; £35.—Piercy, 255, High St., Hounslow. [X1325

DOUGLAS, clutch, kick-starter, lamp, horn, spare belt, tube, etc., done 4,000, perfect condition; £40.—Sergt. Jennison, 3/1 Bucks Batt., Aylesbury. [X1474

1915 2¾h.p. Douglas, 2-speed, lamps, and horn, tools, etc., not ridden 400 miles; price 44 gns.; seen after 7 p.m.—30, Fulham Place, Paddington, W. [X1636

DOUGLAS, brand new 2¾h.p., just received from makers, and actually in stock, for immediate delivery, latest pattern all-black machine; £56/10.—Hopkins, Motors, Ledbury. [X1417

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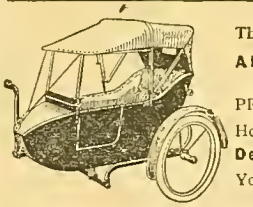

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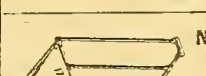

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Cox Cycle Car Carburetter	10/-
Spare Belt Carrier	3/6
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FOR Sale, 1915 Douglas, 2¾h.p., 3-speed gear, Stewart, horn, tyres in good condition, ridden 1,500 miles; £43, or near offer.—Northgate Motor Works, Chichester. [4821

DOUGLAS, T.T., 2¾h.p., 2-speed, 1912, F.R.S. 800ft. beam, new tyres, belt, large assortment spares; appointment; £28.—481, Moseley Rd., Birmingham. [X1300

DOUGLAS, 1914, 2¾h.p., T.T. model, like new, very little used, complete with first-class lamp, horn, and speedometer; £44.—Laytons' Garage, Bicester, Oxon. [X1677

DOUGLAS, 1915, 2¾h.p., 3 speeds, T.T., all accessories, in splendid order, very fast machine; must sell, best over 40 gns.—123, Queen's Rd., Finsbury Park, N. [X1466

DOUGLAS War Office Models, £54/12; on the premises, no waiting. Send the cash. T.A.: Bicycles. Tel.: 388.—Robinson's Garage, Green St., Cambridge. [6864

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1913 2-speed Douglas, hardly used this year, just overhauled, perfect condition; owner in army; £33, lowest.—Smith, c/o Newson's Garage, Palace Parade Hornsey, N. [X1564

DOUGLAS, 1913, model R, 2-speed, free engine, speedometer, horn, lighting set, very carefully used, in very good condition, and trial; £35.—31a, Broomfield Rd., Chelmsford. [X1562

DOUGLAS, late 1914, 2¾h.p., T.T., only done 1,000, special guards and handle-bars, adjustable pulley, lamps, complete, as new; £44.—Motor Cycle Depot, High St., Purley. [5025

2¾h.p. Douglas, 1915, model U, not ridden 50 miles, just as new, 3-speed countershaft gear and free engine, complete with all tools and accessories; £50.—Wauchope's, 9, Shoe Lane, London. [X1531

1915 2¾h.p. Douglas, T.T. model, 2-speed, 26×2 Hutchinson tyres, as new, exceptionally fast machine, lamp, horn, and tail lamp; £45.—The Premier Motor Co., Aston Rd., Birmingham. [5126

DOUGLAS, T.T., 2¾h.p., 2-speed, Indian red, long exhaust, do over 50, perfect condition, £44; late 1914 ditto, do 50, perfect order, as new, £46, spares; trial arranged.—Box L1,673, *The Motor Cycle* Offices, 20, Tudor St., E.C. [5078

DOUGLAS.—We can deliver the famous Douglas from stock, with no waiting. Send us your requirements and we will gladly give you all information. Don't forget, we are the people for Douglases.—The Colmore Depot, 31, Renshaw St., Liverpool. [4642

DOUGLAS, late 1913, mileage 3,500, very good condition, recently overhauled, speedometer, horn, lamps, mirror, new cover and tube, spare cover and tube, repair outfit, 2 suits overalls, goggles, insurance, spare valves, plugs, chain, etc.; £33; seen 27th 10-1, 30th 2-5.—Hancock, 10, Hewitt Rd., Hornsey, N. [4759

1914 T.T. Douglas 2-speed. This is a very fast and reliable mount, in absolutely perfect condition, and is offered at the ridiculously low price of 38 gns. This machine is many pounds cheaper than its fair market value, but is offered at a specially low price to clear.—Julian, Broad St., Reading. Biggest dealer in the South. 'Phone: 1024. [X0799

Elswick.

ELSWICK Combination, 3¾h.p. Precision, 3-speed Sturmey-Archer, lamp set, spares, etc., good condition; 29 gns.—Dale, 26, Powis St., Woolwich. [X1488

Enfield.

ENFIELD 2¾h.p. Twin, 2-speed; £21.—E. Sandilands, 2, Windermere Rd., Ealing [4901

ENFIELD 1916 Combination in stock; £84; order now.—Batchelor, Clarence St., Kingston. [X1444

1915 Enfield, 3h.p., 3-speed, kick starter, etc., in stock, new; 50 gns.—Motor Mart, Eastbourne. [4786

1915 3h.p. Enfield, done 300 miles, absolutely as new; £47.—169a, Lower Clapton Rd., N.E. [X1613

ROYAL Enfield, 1911, 2¾h.p., good condition, complete; £20.—Laytons' Garage, Bicester, Oxon. [X1678

ROYAL Enfield, 3h.p., 1915, only done 400 miles; £45, or nearest offer.—Vincent, Brentwood, Bexley, Kent. [4855

ENFIELD 1915 6h.p. Combination, C.B. sidecar, all complete; 80 gns., in stock.—Motor Mart, Eastbourne. [4792

1912 2¾h.p. Royal Enfield, just overhauled, perfect condition; first offer above £16/10; must sell.—Jarmain, Harwich. [4988

ENFIELD, 1915, 3h.p., 2-speed twin, condition as new, one month old; buying larger model; £47.—Wilson, Hartley Wintney, Hants. [4780

ENFIELD 1914 6h.p. Combination, complete with lamps, horn, and numbers; £58.—Wallace, 36, Clarence St., Kingston-on-Thames. [X1442

ENFIELD, 1914, 6h.p., Cowey speedometer; 65 gns.; very fine order.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [4843

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1915 **NEW DIAMOND,** 2-stroke (new)	£28 13
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1912 6 h.p. 2-speed free-engine **REX**	£33 10
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1912 3½ h.p. **LINCOLN-ELK**	£19 10
1912 3½ h.p. 2-speed **BRADBURY** and S'car	£32 10
P. & M., 3½ h.p., 2-speed, grand condition..	£29 10
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1910 5-6 h.p. 2-speed **REX** and Sidecar	£26 10
PEUGEOT, 5-6h.p., 3 speeds, twin	£19 19
F.N., 4-cylinder, magneto, spring forks	£12 10
P. & M., 3½ h.p., 2-speed, and Sidecar	£24 10
N.S.U., 2-speed, F.E., twin, spring forks ...	£13 10
REX, 5¼ h.p., twin, magneto, tourist	£15 10
REX, 3½ h.p., magneto, spring forks	£14 10
5½ h.p. F.E. twin **REX,** specially good	£17 10

£58 10 0

7-9 h.p. 2-seater PREMIER Light Car, chain drive, light, fast, and good hill-climber, hood, screen, horn, and lamps. Any trial or examination.

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ENFIELD, 3h.p., kick-starter, 2,000, speedomet Lucas lamps and horn, spares, unscratched; £ without accessories £45.—See "Exchange." [X1

1912 6h.p. Enfield, special wide coachbuilt sidecar seat 2, accessories, etc.; £45, cash or easy ter —R. E. Jones (Garages), Ltd., Swansea, London, Card [C7

ENFIELD 6h.p. Combination, late 1915, run miles, new condition, coachbuilt sidecar, all ac sories, Clair silencer; trial; £80.—Saunders, Bir Over, Weybridge. [X1

3h.p. Enfield Twin, 1913½, 2-speed, kick start, au matic oiling, special mudguards, usual accesso splendid condition; £31; approval.—Ranking, Fernh Vicarage, Haslemere, Surrey. [X1

ENFIELD 1915 6h.p. Combination, coachbuilt si car, the finest combination made, new, but slig shop-soiled; special price, £78/10.—Wilkins, Simp and Co., 11, Hammersmith Rd., London. [4

ENFIELD £84 Standard Combination, just arri special deferred payments for 3, 6, and 9 in ments.—Lamb's, Enfield Specialists, 151, High Walthamstow, and 50, High Rd., Wood Green. [4

ENFIELD 1913 6h.p. Combination, 2 lamps generator, mirror, speedometer, watch, horn, sp tyre, tools, and sundry spares; a bargain, £48 10 Wilkins, Simpson, and Co., 11, Hammersmith Rd., L don. [4

ROYAL Enfield Combination, £84; 3h.p. twin, gns.; 2¼h.p. 2 stroke, 38 gns; immediate livery all models.—Exeter Motor Cycle and Light Co., Ltd., 7, Bath Rd. Exeter, and 28,-Tavistock R Plymouth. [05

6h.p. Royal Enfield Motor Bicycle and sidecar, 19 2-speed combination, property of an officer go to the Front, includes all necessaries and speedom £67/10; opportunity.—Seen at Wauchope's, 9, Lane, London. [X1

ENFIELDS, all models actually in stock.—6h combinations, 3h.p. 2-speed twins, T.T. touring models, also 2¼h.p. 2-speed 2-stroke.—P. Evans, 87-91, John Bright St., Birmingham. trolling district agent. [4

ROYAL Enfield and sidecar, 6h.p., 1915, purcha new in July last, complete with lamps, generat mirror, watch, horn, and mechanical horn, perfect new; any trial by appointment.—W. Golf, The H Edgware. 'Phone Gerrard 179. [4

ENFIELD 1914 6h.p. Coach Combination, Watford trip and watch, large F.R.S. set, L hooter, electric side and gas tail lamps, tyres perf whole outfit good as new; £70, cost £100.—Fernh Manchester Rd., Thornton Heath. [4

ROYAL Enfield Combination, 6h.p., 1913, new 1 frame, and sidecar chassis only just fitted, Frodsham speedometer, and lighting set, 3 lamps, s did condition; a bargain; £50, or close offer.—Can seen by appointment with F., 30, Sisters Av., Clap Common. [4

Excelsior.

EXCELSIOR (American), 1915, 3-speed model; livery from stock; £80; favourable excha quotations.—Layton's Garage, Bicester, Oxon. [X1

EXCELSIOR (American), 1915, 7-9h.p., 3 sp coachbuilt sidecar, electric equipment, in pe running order; 50 gns.; sacrifice.—Percy and Co., Euston Rd., London. [5

EXCELSIOR (American), standard £80, de l £90; exchanges quoted; sub-agents wante Yorkshire distributors, Halifax Motor Excha Horton St., Halifax. [0

FOR Sale, or part exchange, 3½h.p. Excelsior m cycle, thoroughly overhauled, brand new mag., c tyres, stand, new handle-bars, footboards, and brake; offers nearest £12 secures.—Walker, Bradenh Thetford. [4

Forward.

FORWARD 2¾h.p. Twin, 1914 model. 3-sp gear, complete with all accessories, exceedi fast; price £28.—Wauchope's, 9, Shoe Lane, Londo [X1

F.N.

F.N., 2¾h.p., seen running, must sell; bargain, £5 —45, Church Rd., Acton. [X1

F.N., late 4½-5h.p., 4 cyls., mag., runs well; £12 —1, Ebner St., Wandsworth. [X1

F.N., 4-cyl., 1912, 2-speed, clutch, kick-starter; £ —Earl, 5, Heath St., Hampstead. [X1

F.N., 4-cyl., perfect running order; £16; offers, change.—60, St. Stephen's Rd., Enfield Wash. [4

F.N., 1911-12, 4-cyl., 4-5h.p., excellent running or clutch model; 14 gns.—Leagman, 1, King Acton. [4

F.N., 4-cyl., just thoroughly overhauled by mak perfect condition; £18.—Cherry, Leinster Pl Bayswater. [4

LIGHTWEIGHT F.N., Bosch, undergeared 1m B B., good condition; bargain, £9.—Brook, Skil Poulton-le-Fylde. [X0

F.N., 5h.p., 4-cyl., 1912 model, 2 spares, clu lamp, horn, and all tools, good tyres, has b ridden very little; would accept £25.—Mrs. R Hermongers, Rudgwick, Sussex. [5

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LEVIS No. 1's and Popular, and 2 speeds in stock; special deferred terms.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [4835

LEVIS, 2¼h.p., 2-speed, December, 1914, splendid condition, Lucas lamps, horn, speedometer, footrests, spares, complete; £30.—Simpkin, 32, Steade Rd., Sheffield. [X1239

LEVIS 2-stroke Motor Cycles, latest 1915 models.—Sole London and district agents, Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W.C. Phone: 1432 Regent. [0711

1918 Levis Popular, 2¼h.p., as new, run 200 miles, Lucas lamp, generator, horn. Harcourt radiators; £26; satisfactory reason selling.—Hughes, Meadowside, Trentham, Staffs. [X1489

LEVIS 1915 Model de Luxe, 2¾h.p., 2-stroke, 2-speed, good tyres, Pedley lamp, horn, speedometer, Best and Lloyd, new condition throughout; cost over £50; climb anything, very economical; £36.—Baker, North Surrey School, Anerley, S.E. [5043

Lincoln-Elk.

LINCOLN Elk, 1913½, 2¾h.p., lightweight, excellent condition; trial any time; £14; owner enlisted.—Mostyn Garage, Akerman Rd., Brixton, London. [5065

L.M.C.

L.M.C., March, 1915, 3½h.p., 3-speed Sturmey-Archer countershaft, in good condition; £45.—Fairchild, Lavenham, Suffolk. [5009

L.M.C. 3½h.p. Combination, Bosch, spring forks, engine just overhauled by makers, strong wicker chair; £15.—Jennings, Sampford Peverell, Tiverton. [X1580

Matchless.

8h.p. Matchless-Jap, 1913½, 2-speed, with or without sidecar.—Buckworth, Hunstanton. (D) [X1305

MATCHLESS Combination, 8h.p., 2-speed, lamp, speedometer, etc.—216, Lake Rd., Portsmouth. [X1689

8h.p. Late 1912 2-speed Matchless, all accessories, and new coachbuilt sidecar; £42/10.—Newton, Barnet Hill, New Barnet. [5118

3½h.p. Matchless, 1912, renovated, overhauled 1915, new Dunlops, complete, perfect; £25.—5, Priory St., Stockingford, Nuneaton. [X1607

1913 7h.p. Matchless, Canoelet sidecar, all accessories; £55, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0721

1913 8h.p. Matchless Combination, speedometer, accessories, oversize tyres, lovely condition; £47/10. —3, Dingwall Gardens, Golder's Green. [X6138

MATCHLESS, 7h.p. J.A.P., F.E., 3 speeds, coach sidecar, wind screen, 2 lamps, horn, and accessories; £37.—107, Lea Rd., Northampton. [X1619

MATCHLESS, 1912, 6h.p., excellent condition, 2-speed V.S. gear and clutch, just overhauled, lamps; £30.—Capt. Miles, R.M.L.I., H.M.S. Impregnable, Devonport. (D) [X1302

MATCHLESS 1915 Combination, model 8B, sidecar with hood, screen, lamps, generator, speedometer, horn, spare tyres, etc., nearly new; price £80.—Boutfield, Torrington. [X1500

1913 Matchless, 8H, 2-speed, with Matchless sidecar, as new, not soiled, owner unable to use same owing to ill-health; offers wanted. — Millard's Motors, Guernsey. [4964

MATCHLESS-J.A.P., 8h.p., 1914, chain drive combination, kick starter, new tyres, speedometer, screen, spares; cost £95; everything like new; sacrifice £62.—Chinery, 33, London Rd., Wembley. [4858

MATCHLESS, 3½-4h.p., 1913, late, and coach sidecar, 2-speed, kick start, speedometer, lamps, horn, accessories, splendid running order; £36; after 6.30.—Fiacham, Rhiewbank, Kentish Rd., Belvedere, Kent. [5050

MATCHLESS Combination, Easter, 1915, 8B 7h.p. M.A.G. engine, Lucas dynamo set, electric horn, all accessories, fast and perfect; trial given; £90, no offers.—Smith, 70, High Lane, Chorlton-cum-Hardy, Manchester. [4923

MATCHLESS, 7-8h.p., 2-speed countershaft, chain, Milford Empress 1915 sidecar, speedometer, Lucas acetylene lamp, P. and H head lamp, long horn, brand new tyres on cycle; bargain, £59.—Lawrence, 30, Harriet Mews, Sloane St., Knightsbridge. [5053

3h.p. 1912¾ Matchless-Jap, Armstrong VII. 3 speeds, free engine, kick starter, 26×2½ rims, Dunlop tyres new condition, 16in frame, very powerful, perfect order, 1in. belt, tools, Neptune quickfit sidecar; £39.—5, Charles St., Commercial Rd., London, E. [X1581

MATCHLESS 1914½ 8B Combination, fitted with hood, screen, lamps, generators, Matchless tandem sidecar, Pillion with back-rest, Dunlops nearly new; £80; seen by appointment.—Corpl. Archer, 58th (London) Div., Redhouse Park, Ipswich. Tel.: 727. [4847

Minerva.

MINERVA, 3½h.p., mag., running order; £12.—61, Kennington Park Rd., S.E. [4765

1½h.p. Minerva, just re-bushed and re-bored, Bosch, Senspray, Druids, new E.H. Dunlops and belt, dropped frame, perfect running order; £20.—Johnson, Fireside, Cark-in-Cartmel. [X1612

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CONNAUGHT, standard model	£36 16
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JAMES, 4½ h.p., 3-speed Combination	£80 9
HARLEY-DAVIDSON, Model F	£78 5
Ditto Model J	£86 13
J.H., 2½ h.p., 2-speed	£38 4
SERVICE Miniature, 2½ h.p., 2-stroke, 2-sp.	£33 0
SERVICE, 2¾ h.p., 2-speed, Sidecarette	£52 10
METRO, Sporting model	£28 10

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686.	**EXCELSIOR,** 1915, 2¾ h.p., 2-stroke, with 2-speed gear and clutch, lamps	£35 0
635.	**ROVER,** 3½ h.p., 1912, free engine model, nice order	£28 0
470.	**BAT-J.A.P.,** 6 h.p., 2 speeds and cane side-entrance Sidecar	£32 10
622.	**NEW IMPERIAL-J.A.P.** (late 1914), 2-speed, with spares, etc.	£30 0

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MOTOR CYCLES FOR SALE.

Moto-Reve.

MOTO-REVE, 2½h.p., new belt, overhauled; £12/12 —1, Manor Rd., Stoke Newington. [4819

MOTO-REVE for sale, mag. ignition, in running order; £6/10.—Brook, Burnham, Som. [4773

Motosacoche.

MOTOSACOCHE, good order, ready to ride away; £6/10.—21, Burnley Rd., Stockwell. [4890

2½h.p. Motosacoche, 1913, Bosch, B. and B., good tyres; £14.—Hawkins, 18, Tennyson Rd., Luton Beds. [4973

MOTOSACOCHE, 1¾h.p., mag., jockey pulley; £10/10, or near offer.—Seen after 7 o'clock, 32, King's Av., Clapham, S.W. [4899

MOTOSACOCHE, 2½h.p., 1912, free engine, fine condition, good tyres, lamp, horn; photo; £17 —G.N.G., Waldeck, London Rd., Newcastle, Staffs. [X1548

New Hudson.

3½h.p. New Hudson and Sidecar, 1914; £55.—Green, Hoverfordwest. [X1328

6h.p. New Hudson and Sidecar; cost 80 gns. 1914. £58.—Green, Hoverfordwest. [X1329

1914 New Hudson Combination, 3½-4h.p., 3-speed, just been overhauled; £45.—26, Digbeth, Walsall. [X1411

1913½ 3½h.p. New Hudson, cane sidecar, good condition, spares; £38.—H. Johnson, 89, Church St., Whitby. [X1573

NEW Hudson Lightweight, single-speed, 1915 model, very little used; £24.—Pullen, The Garage, Sittinghourne. [5037

1914 New Hudson, 6h.p., grey combination; cost £90, with accessories and speedometer; £65.—Flint, 158, Church Rd., Hove. [X1406

NEW Hudson, 3½h.p., 3 speeds, 1914, in ideal good order, speedometer, lamps; 30 gns.—Percy and Co., 337, Euston Rd., London. [5018

2¼h.p. New Hudson, 2-stroke, 2-speed model, in extra good condition and running order; price £32/10. —Wauchope's, 9, Shoe Lane, London. [X1528

NEW Hudson, 2-stroke, from £36; all models from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0603

4h.p. New Hudson and Mills-Fulford Coachbuilt Sidecar, 1913-1914, 3 speeds and clutch, excellent condition throughout; any trial; £40.—Ling, 35, Ditchling Rd., Brighton. [X1567

NEW Hudson.—Four lightweights in stock, big six due first week November; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [4839

NEW Hudson, 3½h.p., countershaft 3-speed gear £63; delivery from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0570

NEW Hudson-Jap, 4h.p., 3-speed, F.E., drip feed, with new Watsonian sidecar, with wind screen and apron, lamps, all accessories; £41/10, or separate. —Lucas, 390, High Rd., Chiswick. [X1632

6h.p. New Hudson, 3-speed, and free engine model, fitted with a 2-seat coachbuilt Bowser sidecar, speedometer, lamp, Lucas rear light; the complete turnout, £57/10.—Wauchope's, 9, Shoe Lane, London. [X1527

NEW Hudson Combination, 6h.p. twin, 3-speed gear, clutch, kick starter, new car outer cover back wheel, with new Dunlop inner tube, everything in thorough good order, lamp, horn, etc., 1914 model, put into use March this year; accept £58/10.—Arthur Bell, High St., Marlborough. [4025

NEW Hudson Big 6h.p. 3-speed Combination, specially built sidecar, speedometer, horn, wind screen, hood, luggage carrier, 2 F.R.S. Major lamps, and spares, perfect order; cost £90 last year, accept £65; seen any time by appointment.—25, Landgrove Rd., Wimbledon Park. [5029

New Imperial.

1915 New Imperial, 2½h.p., 2 speeds; £36/15; delivery from stock.—Nightingale and Co., Crawley. [X0941

NEW Imperials, single-speed, bought June, 1915, like new; £27.—Woodcock, Mineral Cottage, Low Moor, Bradford. [X1344

NEW Imperial-Jap, 2½h.p., 2-speed, variable mag., adjustable footboards, slightly used; £33.—Latham, Lodge Rd., Southampton. [X1643

NEW Imperial-Jap Light Tourists, both models in stock, with and without clutch and kick starter.—Crow Bros., 190, High St., Guildford. [4596

1914 New Imperial-Jap, 2-speed, very little used, in splendid condition, complete with lamps, and horn; £28.—Reynolds, Arcade, Bognor. [X1100

NEW Imperial-Jap, 1915, 2½h.p., 2-speed, lamps, horn, new spare cover, tools, etc., splendid condition; £30.—Latham, Lodge Rd., Southampton. [X1642

NEW Imperial-Jap, latest model, in stock, 2½h.p. 2-speed, variable mag., adjustable footboards, improved chain cover, etc.; £37/18.—Latham, Lodge Rd Southampton. [X1641

MOTOR CYCLES FOR SALE.

New Imperial.

2½h.p. Imperial-Jap, 2-speed, almost new, speedometer, etc.; £27/10.—Brown, 1, Heather Cottages, South Rd., Haywards Heath, Sussex. [4960

1915 2¾h.p. New Imperial J.A.P., 2-speed, actually in stock; price 35 gns.; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6408

NEW Imperial-Jap, November, 1914, 2½h.p., 2-speed, P. and H. lamp and generator, excellent condition; £25.—Box L1,670, *The Motor Cycle* Offices, 20, Tudor St., E.C. [5075

NEW Imperials in Stock for immediate delivery, light tourist, kick-starter, and ladies models; prices from 35 gns.—P. J. Evans, Birmingham and district agent, 87-91, John Bright St. [4905

NEW Imperials.—The motor cycles of guaranteed reliability, fitted with J.A.P. engines and fool-proof countershaft gears; prices from 35 gns., and delivery from stock.—The Colmore Depot, 31, Renshaw St., Liverpool. [4640

1915 New Imperial-Jap, 2-speed, lamp, horn, etc., all in beautiful condition; owner going to Front, must sell at once; machine cost £40, and is honestly worth £35, great bargain, 27 gns.—Owner, c/o Julian, Broad St., Reading. 'Phone: 1024. [0736

New Ryder.

NEW Ryder-Villiers, 2½h.p., 2-stroke, 2-speed, August, 1914, lamps, footboards, etc., complete; £25.—Ransom, 11, Whittam St., Burnley. [X1630

Norton.

FAMOUS T.T. Norton, just arrived; £50, or T.T. Douglas and cash adjustment.—Jones, 69, Eign St., Hereford. [X1645

1915 Norton, 3½h.p., T.T., Philipson pulley, absolutely in stock; £54; exchanges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X1486

1915 Norton Big Four, Sturmey-Archer 3-speed countershaft, chain and belt, absolutely in stock; £64/10, plus 5%; exchanges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X1487

N.S.U.

N.S.U., 6-8h.p., twin, 2-speed gear, large coachbuilt sidecar, car size tyres, full equipment, an exceptional outfit, in new condition; £45.—Tuke and Bell, Ltd., Motor Department, Carlton Engineering Works, High Rd., Tottenham, N. [4140

N.U.T.

1914 N.U.T. 3½h.p. Twin, complete with lamp, horn, and tools, very fast machine; £33/10.—Young and Herbert, Evesham. [X1536

O.K.

1914 O.K., 2-speed, very good condition, splendid running order; £22.—Moorhouse, Joiner, Melton. [4932

O.K., 2h.p., 2-speed, 1915, Druid forks and mudguards, capital condition; £22.—Millard's Motors, Guernsey. [4962

O.K., new 1915 model; customer having purchased and paid for machine, is now unable for private reasons to take delivery, and offers the machine complete with horn at the specially low price of £28.—Apply, O.K., c/o Julian, Broad St., Reading. [0737

Omega.

OMEGA, 1915, run 40 miles, 3h.p., 2-speed, absolutely as new, perfect; £32.—Webb, Belmont, Surrey. [4986

Peco.

1915 (June) 2¾h.p. Peco, 2-stroke, 2-speed, all-black finish, coachbuilt lightweight sidecar, Lucas lamps, carefully used, perfect everywhere; any trial; 42 gns.—Cole, 77, Barlow Moor Rd., Didsbury, Manchester. [X1405

P. and M.

P. and M., 1912, 3½h.p., 2 speeds, good condition; trial; £32.—J. Dibb, Albion St., Otley. [X1392

LATE 1913 P. and M. and accessories, in good condition; £43.—223, High Rd., Kilburn. [4991

1909 P. and M., 3½h.p., splendid condition; trial; £19.—Hole, 129, Park Lane, Carshalton. [4940

1915 P. and M., 2-speed, new condition; £40; approval.—39, Belmont Park Rd., Leyton. [5034

LATE 1912 P. and M., 3½h.p., 2-speed, and Montgomery sidecar; £34.—6, Cairns Rd., Redland, Bristol. [X1568

P. and M., 1914, 3½h.p., 2-speed gear, chain drive, complete, condition as new; £48.—Colmore Depot, Colmore Row, Birmingham. [5110

1911 P. and M., and coachbuilt sidecar, smart and reliable, fully equipped, many spares; £30, rear bargain.—41, Ashford Rd., Cricklewood. [4941

1909 P. and M., 2 speeds, free engine, excellent running condition; trial by appointment; £18, lowest.—Rigby, Mulgrave Rd., Sutton, Surrey. [X1472

PHELON and Moore, 1913½, Canoelet sidecar, apron, Watford speedometer, lamps, spare valve, tube, etc., just overhauled; £50.—Smith, 131, Queen's Rd., Wimbledon. [X1620

P. and M., 1913, 2-speed, kick starter, underslung sidecar, luggage and petrol carrier, had little use; £44, or near offer.—Spurling, The Cottage, 2, Brondesbury Park, N.W. [4865

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JAMES, 1916, 4½ h.p., combination - £78 13
B.S.A., 1916, model K, belt-cum-chain, 3 speed - - - - 62 0
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INDIAN, model C, sidecar to suit, 14 and 22 gns. - - - - 78 0
NEW-HUDSON, model C, 2-stroke, 2-speed, lightweight - - - 36 0
Model A - - - - 29 10
Model E - - - - 31 0
HARLEY-DAVIDSON, model F - 78 5
Model J, electrically equipped - 88 13
All pre-Budget models now sold.
SUN de Luxe, 2¾ h.p. - - - 28 8
CALTHORPE, 2-speed, 2-stroke - 31 7
2-str., single sp. £27 14 6
Jap 2-speed - £38 15
Single speed - 26 15
ALLDAY'S ALLON, 2-sp., 2-stroke 38 17
Single sp. 2-str. 31 10
IMPERIAL-JAP, 2-speed, if with variable magneto, 23/- extra - 35 gns.
CONNAUGHT, 2-stroke, standard models, 2¼ h.p., semi T.T. bars - £38 3
WOLF 2¾ h.p., 2-stroke - - 25 8
LEVIS, No. 1's - - - - 35 17
Popular - - - - 28 1
ARIEL, 5-6 h.p., combination - - 80 18
HUMBERIES & DAWES, O.K. mark 4 junior - - - - 31 gns.
NEW-HUDSON de Luxe, 2-speed - £40 0

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OUTFITS FOR SALE.

HARLEY-DAVIDSON, 11J, elec. equipped, 7-9 h.p., Bramble sidecar, nearly new - - - - £85 0
ARIEL, 3½ h.p., 1913 3-speed, Swan sidecar, very good order - - 38 10
TRIUMPH 1913-4, clutch model, fine condition - - - - - 37 10
BAT-JAP, 1913, 8 h.p., 2-speed, coach combination - - - - 80 0
F.N., 1914, 7 h.p., 2-seater sidecar, speedometer, ridden only 1500 miles, D.A. lighting set - - - - 75 0
TRIUMPH 1911, fixed gear model - 23 10
INDIAN, 1913, clutch model, T.T. bars, Lucas horn, large Miller lamp set 80 gns.
CLYNO, 1914 3-speed combination, 2-seater, sidecar accessories, ridden wee ends only - - - - £69 10
SUNBEAM, 1915, 3½ h.p., 3-sp. combination electric and Stewart horn, genuine Sunbeam sidecar - - - 75 0
ENFIELD, 1914, 6 h.p., with Cowey speedometer - - - - 65 gns.
TRIUMPH, 1914, 3-sp., all accessories, fine condition - - - - £45 0
WOLF-JAP, ridden only 700 miles 22 gns.
LEVIS, Popular 1915, ridden approx. 700 miles - - - - £24 10
CONNAUGHT, 1915, 2-seater, ridden approx. 400 miles - - - 30 gns.
CHATER LEA, 1912, Jap, 6 h.p., 2-speed, Premier coach sidecar, all red finish - - - - 40 gns.
CHATER LEA car, 8 h.p., 3-speed, water-cooled, hood, screen - 90 gns.

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MOTOR CYCLES FOR SALE.

P. and M.

P. and M., genuine, late 1913, 3½h.p., re-enamelled, overhauled, and tuned by P. and M. expert, new Kempshall covers, guaranteed; £48.—193, Broomwood Rd., Clapham Common, S.W. [5098

P. and M. Combination, 4h.p., F.E., 2-speed, strong, smart, good going order, complete with spare tyres, tools, acetylene lamp, and give any examination and trial; £26.—Fisher, Stoke Manor, Cobham, Surrey. [4961

Peugeot.

6h.p. Peugeot, sidecar, mag., Mabon, Druids; £19, bargain.—53, Three Colts St., Limehouse, E. [5120

PEUGEOT, 3½h.p., new Bosch and tank, B. and B., fine running order; £18.—20, Empress Av., South Chingford. [4954

Precision.

3¾h.p. 1913 Precision, wicker sidecar; £32.—Dyball, 70, Market Place, Great Yarmouth. [X1435

PRECISION, 8h.p., excellent condition, 3-speed gear box, 700×80 back tyre, Phœnix sidecar with child's seat, splendid hill-climber; 50 gns.—Tigg, 14, Bigwood Rd., Golder's Green, N.W. 'Phone: Finchley 944. [4916

Premier.

PREMIER, 1913, 2½h.p., excellent condition; £17/10 —74, Wrentham Av., Willesden. [4883

1914 Premier, 3½h.p., 3 speeds, excellent condition; £36.—Nightingale and Co., Crawley. [X0936

2½h.p. Premier, 1913¾, 3-speed hub, clutch, 1,500 miles, excellent condition; £25.—Edwards, 22, Brackenbury Rd., Hammersmith. [4750

PREMIER, 1914, 3½h.p., perfect order, all accessories; absolute bargain, little used, 35 gns.—Box 9,491, *The Motor Cycle* Offices, Coventry. [X1402

PREMIER, 3½h.p., 1912, overhauled, perfect condition, lamp, etc.; £23.—Sergeant Colquhonn, Rumgally, Cupar, Fife. 2-speed gear clutch, 70/-. [X1234

3½h.p. Premier, 1914, just overhauled, good tyres, Jones speedometer, lamp, horn, single gear; £35 —Box 9,490, *The Motor Cycle* Offices, Coventry. [X1403

1914½ Premier, 3½h.p., fixed gear, sound climber, excellent condition, lamp, horn, speedometer, done 2,000 miles; cost £55, sell £38.—T.G.M., 26, Croxteth Rd., Liverpool. (D) [X1401

PREMIER, date 1913, 3½h.p., 2-speed countershaft, free engine, clutch, with 1915 gear box and attachments, Millford coachbuilt sidecar, lamps, spare tyres, one new, splendid condition; £45.—Stone, Glencairn Park Rd., Cheltenham. [X1506

1913 2½ h.p. Premier, engine overhauled, and frame re-enamelled by makers in January last, tyres and plating as new, speedometer, front and rear lamp, spares, a nice, fast, little machine; £20.—Sergt. Wharton, East Cavalry Barracks, Aldershot. [X1397

P.V.

P.V., 6h.p. J.A.P., 3 speeds, F.E., clutch, spring frame, coachbuilt sidecar; £36.—66, Honley Rd., Catford. [4762

Quadrant.

4¼h.p. Quadrant, 1914, 3-speed, splendid condition, all accessories; £37/10.—169a, Lower Clapton Rd., N.E. [X1611

1910 3½h.p. Quadrant, £12, "some goer"; trial Saturday afternoon, or any time Sunday.—Grey, 4a, Hythe Rd., Willesden Junction, London, N.W. [4781

Radmill.

RADMILL, 3½h.p. free engine, pedal start, condition as new; £30, complete.—Colmore Depot, 31, Colmore Rd., Birmingham. [5104

Rex.

REX, 3½h.p., battery, good tyres, wants overhauling; £5.—Lewis, St. Mary's St., Monmouth. [X1330

3½h.p. Rex, free engine, Bosch mag., good condition; £15.—Layzell, 44, Victoria Rd., Chelmsford. [4815

LATE 1913 Rex, 4h.p., 2-speed, F.E., and sidecar, in perfect condition; £33.—Clark, 48, Burke St., Scunthorpe. [X1434

REX and sidecar, 1912, twin-cyl., 2 speeds, F.E., handle starter, all accessories; £35.—77, Tyrwhitt Rd., St. John's, S.E. [4818

6h.p. New 1914 Twin Rex Motor Cycle, 3-speed countershaft and chain drive; £59.—Wauchope's, 9, Shoe Lane, London. [X1526

3½h.p. Rex, spring forks, B. and B. carburetter, h.b.c., mag., in running order; £7.—T. Martin, Gosberton, Spalding. [X1696

1913 Rex, 6h.p., and sidecar, 2 speeds, free engine and accessories; £36, bargain.—Colmore Depot, 31, Colmore Row, Birmingham. [5114

3½h.p. Rex, 2-speed, handle starter, Bosch, Amac, Whittle, lamp, perfect order; £16; enamelled grey.—Railway Garage, Staines. [5132

REX, 3½h.p., mag., B.B., new T.T. bars, lamps, horn, new Dunlop belt, very low, good condition; 15 gns.—274, Derby Rd., Chesterfield. [X0943

REX Combination, 1913, 5-6h.p., 2-speed, handle starting; £34; exchange lightweight.—Bird, White House, Amersham Vale, New Cross. [5067

MOTOR CYCLES FOR SALE.

Rex.

EX 6h.p. 2-speed Coachbuilt Combination, delivered August, 1915, only done 150 miles; cost 7/10, accept £59/10.—Collier, Deal St., Halifax. [0706

EX Late 1913 6h.p. Combination, 2-speed, accessories, spares, speedometer, condition excellent; 5, or near offer.—Bradley, 226, Chaddock Lane, othstown. [X1452

1914 Rex 6h.p. Combination, 3-speed, chain drive, coachbuilt sidecar, purchased October, 1914, in fect condition; list price £85, what offer?—Caldicott l Feltham, Cross Cheaping, Coventry. [X1261

Rex-Jap.

h.p. Rex-Jap Combination, coachbuilt sidecar, and accessories; £35.—Colmore Depot, 31, Colmore w, Birmingham. [5108

Roc.

h.p. Roc, Bosch, Druids, good order; £12.—Quertier, Slingfold, Horsham. [X0969

h.p. Roc, 2-speed, torpedo sidecar, overhauled; £17/10.—205, Spring Hall Lane, Halifax. [X1578

OC, 1911, 6h.p., sidecar seats 2, 2-speed, F.E., Bosch, recently overhauled, owner active service, e any time; £23.—26, Shaa Rd., Acton. [4913

Rover.

1915 Rover, 3 speeds; immediate delivery; £66/10.—Nightingale and Co., Crawley. [X0942

ATE 1913 Rover, free engine, only been running 2 months.—Buckworth, Hunstanton. (D) [X1304

OVER, 1914, 3-speed, free engine, very good condition; £42.—Norman, Stansted, Essex. [X1299

1915 Rover, T.T., Philipson, speedometer, lamps, not 900 miles; £43.—Nightingale and Co., Crawley. [X0940

OVER, 3½h.p., 2-speed, free engine, lamps, coach-built sidecar; £38.—124, Hambrough Rd., Southall. [4885

1915 3½h.p. Rover Motor Cycle, countershaft gear, excellent condition; £54, complete.—Haynes Bros., t., Maidstone. [X1241

OVER, 1912 frame, 1913 engine, 3-speed, clutch, just overhauled, all accessories; £29.—D. H. West, Holybead Rd., Coventry. [X1403

S new, 3½h.p. Rover combination, complete with full range of accessories; £69.—Colmore Depot, Colmore Row, Birmingham. [5113

OVER Combination, late 1913, 3-speed, clutch, speedometer, and accessories; splendid condition; 5.—15, Park Parade, North Finchley. [4918

1913 3½h.p. Rover, 3-speed gear, lamps, horn, accessories, with Wolbrown sidecar, exceptional condition; £38.—Gilpin, Garage, Gildersome, Leeds. [X1570

1914 Rover, 3-speed, free engine, complete with lamp, horn and numerous spares, in splendid condition; £45.—Dodwell, 35, Queen's Rd., Coventry. [X0519

OVER, 3h.p., B. and B., U.H. mag., Armstrong Mark V., good mechanical condition; £16, or rest.—Powell, "Beaufort," Hawkesbury, Upton, s. [5012

OVER, 1915, 3½h. p., T.T. models, in stock, with hand-controlled Philipson pulley; £56; exchanges extended terms.—Elce and Co., 15, Bishopsgate Av., nomile St., E.C. [0481

OVER, 1913, 3-speed and free engine model, fitted with a Rover coachbuilt sidecar; the combination plete, including accessories; 40 gns.—Wauchope's, Shoe Lane, London. [X1525

OVERS.—Immediate delivery all models, 3½h.p. sporting models, with Philipson pulley, de luxe chbuilt combination, 2 and 3-speed countershaft dels.—P. J. Evans, controlling Birmingham and district agent, 87-91, John Bright St. [4906

Royal Ruby.

½h.p. Royal Ruby, 2-stroke, 2-speed, new; £33/10, 2 or part exchange for cycle car or combination. atten Bros., Alphington St., Exeter. [5064

Rudge.

½h.p. Rudge, clutch model, T.T. bars; great bar-2 gain, £21.—94, Adelaide Rd., Leyton, E. [X1616

UDGE Multi, late 1912, 3½h.p., wicker sidecar, lately overhauled; cheap.—62, Broughton Rd., pton. [X1640

UDGE, new, 1915, clutch model, 3½-4h.p., mag., 3 speeds, clutch, soiled; £52/10.—1, Ebner St., ndsworth. [X1553

12 3½h.p. Rudge, free engine; £27; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea. don, Cardiff. [0724

12 3½h.p. Rudge, with T.T. and Roadster handlebars, lamp, horn; approval; £20.—Young and bert, Evesham. [X1540

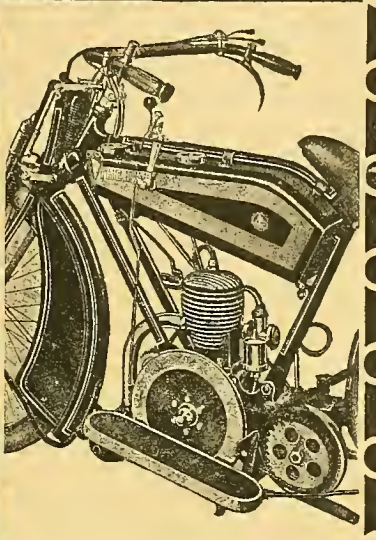
½h.p. Rudge, late 1914, speedometer, and fittings 2 big end just re-bushed.—Cook, 73, Lordship Rd., te Newington, N. [4814

½h.p. Rudge, N.S.U. 2-speed gear, fitted with light 2 sidecar, speedometer, lamps, etc.; £28/10.—uchope's, 9, Shoe Lane, London. [X1509

UDGE, 3½h.p., free engine, late 1913, excellent running order, new back tyre and tubes, lamp 1; £25.—Graves, Marshall Place, Perth. [X1343

The "IVY" TWO STROKE

TRADE MARK



Above illustration shows our new pattern frame, that will from now be fitted to our "De Luxe" Model Two-Stroke machines only. It is our registered design No. 531848, and the principle is as follows:—Instead of the usual round down tube coming from the ball head, we bring two oval blades from a specially designed ball head down on each side of the exhaust pipe to the crank case. Each of these blades is double the streugth of the ordinary round down tube, and is made of a specially toughened steel which will stand being twisted a number of times without breaking. This frame is no heavier than the ordinary diamond frame, and is

ABSOLUTELY UNBREAKABLE.

Other exclusive features of our "De Luxe" model are—

Special shaped tank, holding 1¾ galls. petrol, ½-gall. oil; comfortable footboards; machine enamelled khaki-grey: marvellously efficient engine, etc.

It is no wonder the machine is called

THE ARISTOCRAT OF ITS TYPE

S. A. NEWMAN, Ltd., Aston Cross, Birmingham. | Send for List, post free.

MOTOR CYCLES FOR SALE.

Rudge.

RUDGE, 1913 Brooklands model, clutch, kick start, Watford speedometer, new rear tyre, fast, all spares; £32.—Lieut. D. Macaskie, Oak View, Byfleet.

1913 Rudge, T.T., fast machine, in nice condition, splendid hill-climber, nearly new rear tyre and belt; bargain, £20.—Ratcliffe, 73, Horsa Rd., Erith, Kent. [5069

RUDGE Multi, T.T., 3½h.p., late 1913, new £12 cane torpedo sidecar, Cowey speedometer, Lucas lamps and horn, all spares; £40.—Lieut. Jolly, Farm Camp, Epsom. [X1394

RUDGE, late 1912, 3½h.p., free engine, 1914 Sen-spray, exhaust whistle, perfect order throughout; sidecar machine wanted; £28.—Frank Marshall, Hagg, Spilsby. [X1473

3½h.p. Rudge and Sidecar, exceptional bargain; 2 seen Baker's Cycle Works, Dighton St., Bristol; £24, or sell separately.—Bishop, c/o Automobile Association, Baldwin St., Bristol. [5089

1912 3½h.p. Rudge, clutch, countershaft 2-speed, absolutely sound, cane sidecar, apron, luggage carrier, lamps, etc., belt and tyres good; £30, no offers; private.—111, Meanley Rd., Manor Park, E. [4959

RUDGE Multi, 5-6h.p., complete with Gloria £25 sidecar, all lamps, wind screen, Lucas horn, speedometer, bought July, 1914, in excellent condition, not done 6,000; trial given; £70.—Bentley, Bolton St., Chorley. [X1454

RUDGE, 3½-4h.p., late 1914, 3 speeds, clutch, thoroughly overhauled, plating and enamelling unscratched, new tyres and belt, lamps, horn, accessories, carefully, used, almost like new; trial and approval willingly; open expert examination; £40; wicker sidecar, canoe shape, apron, 50/-.—Andrews, Hatfield Broad Oak, Essex. (D) [X1621

Scott.

SCOTT.—Immediate delivery touring model from stock. —Lightstrung Motor Co., Rushden. [X0959

1913 Scott, in perfect condition, and in good tune; £34; easy payments arranged.—Jones, Broadway, Muswell Hill. [4826

SCOTT Canoelet Combination, splendid condition; owner joining Flying Corps; £35, or near.—Shilcock, 100, High Rd., New Southgate, N. [4920

1914 Scott and Canoelet coachbuilt sidecar, all accessories, 2 speeds, kick starter, splendid condition; best offer above £48; must sell.—Jarmain, Harwich. [4937

SCOTT, early 1912, and Gloria sidecar, 2-speed, free engine, speedometer, lamps, Binks, sound condition; reason, trial; £38, or near offer.—Adams, 9, Belmont Hill, Lewisham. [4800

LATE 1913 3¾h.p. Scott and cane sidecar, 2-cyl., 2-stroke, 2-speed, Rushmore head light, speedometer, horn, tools, and spares originally cost £82, take £42.—Linington, 54, Commercial Rd., Portsmouth. [4934

1913¾ Scott, 2-speed, 2-stroke, kick start, Xl'all saddle, with Canoelet coach sidecar to match, 3 gn. lamp set, horn, etc., as new; nearest to £40; owner has 2 machines; be sharp over this bargain.—25, Zoar St., Lower Gornal, Staffs. [4919

SCOTT (1914) and Canoelet, little used, fine condition, just overhauled, new chains, new F.R.S. lamps, new tyres (all 2½in.), new speedometer, spares, apron, etc., smart, reliable; cost £90, sell £58; seen by appointment.—Leng, 1, Braithwaite Rd., Birmingham. [X1446

SCOTT, 1915 (June), 2-speed, Binks damping jet, F.R.S. lamp, Lucas horn, Stewart speedometer, guaranteed mileage under 1,000, insured till May, 1916; owner joined A.S.C., Mechanical Transport; £68, no offers.—Write either Denton, Eastfields, Rushden, or Lightstrung Motor Co. [X0958

SCOTT and Montgomery underslung sidecar, purple, lined French grey, with luggage and can racks, D.A. cylinder, and 3 lamps, large Xl'all saddle, horn, exhaust whistle, new tyres and spares; cost over £95 this spring; £68; new condition; any trial.—Houghton, London Rd., St. Albans. [4881

Singer.

2½h.p. Singer, fine order, all accessories; £18/10.—2 Washington, Middlewich. [X1459

SINGER Combination, 1914, 4½h.p., Lucas lamps and horn, perfect running order, condition as new; £54.—275, Uxbridge Rd., Shepherd's Bush. [5046

Sparkbrook.

SPARKBROOK, 1915, 2-speed, 2-stroke, 80 miles, perfect; cost £43, sacrifice £33.—Webb, Belmont, Surrey. [4984

Sun.

1914 Sun-Villiers, 2-stroke, 2-speed, with lamps, cyclometer, new Dunlop spare belt, done about 1,000 miles; £23.—Dr. Hall, Hope Hospital, Salford. [X1546

SUN-VILLIERS, 2¾h.p., 2-speed, as new, done 1,000, lamps, tools, etc., owner gone abroad; £30, or offer.—Davy, 53, East St., Faversham. [X1482

SUN-VILLIERS, 2-stroke, splendid condition, complete, Lucas lamp, footboards, extra tank fitted, magneto just overhauled; 19 gns.—Poytress, Gaia Lane, Lichfield. [X1550

SUN, 2½h.p., 1915, 2-stroke, with Dunlop tyres and belt, Brooks saddle, very little used, V.T.S. engine; only £23.—Millard's Motors, Guernsey. Also 1915 2-speed 2-stroke, new, in stock. [4963

MOTOR CYCLES FOR SALE.

Sunbeam.

SUNBEAM, new 3½h.p. 1915 combination, actually in stock.—Moss, Wem. [X1673

1914 Sunbeam, 2¾h.p., Lucas accessories, spare valve, etc.; £42.—Waddington, 23, Algiers Rd., Lewisham. [X1303

3½h.p. 1915 Sunbeam, 3-speed, footboards, semi T.T. bars, absolutely perfect; £62.—Motor Mart, Eastbourne. [4788

1914 3½h.p. Sunbeam and sidecar, hood and screen, fully equipped, accessories, and spares; £65.—Lee, 6, White Cross Rd., York. [4778

1914 Sunbeam, 6h.p., Gloria sidecar, hood, speedometer, accessories; first cheque secures, £80.—Manby, 258, Kirkgate, Wakefield. [X1336

SUNBEAM, 2¾h.p., 2-speed, clutch, kick starter, electric lamps, horn, etc., scarcely used, excellent order; £55.—Bassett, 14, Elms Buildings, Eastbourne. [4809

SUNBEAM, 1914, 3½h.p., 3 speeds, kick starter, with coachbuilt sidecar (Mills-Fulford chassis); any trial given; 52 gns.; appointment only.—Roseville, 11, College Rd., Reading. [X1441

SUNBEAM, 2¾h.p., 1914, good condition, new Dunlops (first replacement of tyres), little used, original driving chains never adjusted; £45.—F. Kilpatrick, 34, Shadwell Rd., Portsmouth. [X1410

SUNBEAM, 1915, 3½h.p., 3-speed, with Sunbeam sidecar, and 5 gn. speedometer, electric and Stewart horn, spares; £75; deferred terms if desired.—Lamb's, 151, High St., Walthamstow. [4842

SUNBEAM, 6h.p., and Gloria sidecar (£24/12/6), late 1914, not gone 5,000 miles, lamps, horn, speedometer, tools, perfect condition; cost £120, complete, £95; trial.—S., 4, Old Heath Rd., Colchester. [5045

1915¾ Sunbeam 6h.p. Combination, not run 500 miles, absolutely new condition, lamps, speedometer, spares, etc.; cost £125 August, nearest offer £110.—Owner, 214, St. Margaret's Rd., Twickenham. [X1323

1915 Sunbeam, 3½h.p., new end of June, excellent condition, Jones speedometer, lamp, long horn, spare lower gear sprocket, steel-studded Dunlop and Bates tyres; £63.—Jackson, Aldersyde, High Wycombe. [X1593

SUNBEAM, 1914, 3-speed, 3½h.p., Gloria coachbuilt sidecar, wind screen, hood, Lucas lamps, horn, Klaxon, speedometer, splendid condition; 60 gns., cost £100.—Write 2nd Lt. M. H. Jewell, 7749, Royal Flying Corps, Polytechnic, Regent St., W. Or on view at Blake's Garage, 216-218, Westbourne Grove, W. [4853

SUNBEAM, 1915 model, 3½h.p., countershaft 3-speed gear, and free engine model, been used but little and carefully, includes speedometer, Lucas lighting set, Lucas horn, complete set of tools, and some spares, condition as good as new; £68; unprecedented opportunity; first cheque secures.—Wauchope's, 9, Shoe Lane, London. [X1524

Triumph.

TRIUMPH, 1914, 4h.p., 3-speed, excellent condition; £40 for immediate sale.

TRIUMPH, 1907, really nice sound machine, lamp, etc.; sacrifice, £12/12.—Longman, 1, King St., Acton. [4893

3½h.p. Triumph, B.B., fine running; £15.—Cullen, 35, Graham Rd., Worthing. [4915

BABY Triumph, only ridden few hundred miles, like new; £37.—Green, Haverfordwest. [X1327

1913 Triumph, 3 speeds, lamps, absolutely as new; £38.—Nightingale and Co., Crawley. [X0938

1915 Junior Triumph; £42; immediate delivery.—Mason, Midland Rd., Wellingborough. [5022

T.T. Triumph, late 1913, Grado, £37; also cane sidecar.—Brandon, Furnisher, Berkhamsted. [4817

1915 Junior Triumph, 2-stroke, little used, condition as new; £35.—Kirk, Pannal, Harrogate. [X1622

1913 Triumph, free engine model, splendid condition; £36.—Braby, 68, Redington Rd., Hampstead. [4752

TRIUMPH, 1913, Sturmey-Archer, accessories, spares; £38.—Earl, 5, Heath St., Hampstead. [X1469

TRIUMPH, 4h.p., new April, 700 miles, very fast, perfect; nearest £43.—5, Parade, Belmont, Surrey. [4985

£30.—1910 Triumph combination, Kempshall, 3-speed and clutch, engine perfect.—2, Ash St., Walworth. [4767

TRIUMPH, 1914, 3-speed, all accessories, fine condition; £45.—Lamb's, 151, High St., Walthamstow. [4841

TRIUMPH, 1912, good as new; £25, or best offer.—Grove, 224, Fore St., Upper Edmonton, London. [4968

1914 Triumph 3-speed and Sidecar, in perfect condition, with accessories; £44.—Chilton, High St., Watford. [X1574

1911 Triumph, 1914 S.A. 3-speed, Pilot jet, lamps, spares; £35, with sidecar £38.—174, Sussex Rd., Southport. [X1332

1914 4h.p. 3-speed F.E. T.T. Triumph and Carrol coachbuilt sidecar, all in splendid condition; £50.—Box L1,676, *The Motor Cycle* Offices, 20, Tudor St., E.C. [5081

That "Dread"

—that uneasy presentiment of coming "handle-bar dither" you often experience before commencing a journey over rough, uncertain roads—

YOU know it!—and the cause lies solely in your "semi-shock-absorbing" Forks.

Then hasten to expel that feeling for one of confidence in the security ensured by the Spring Fork which completely absorbs ALL Shocks—The

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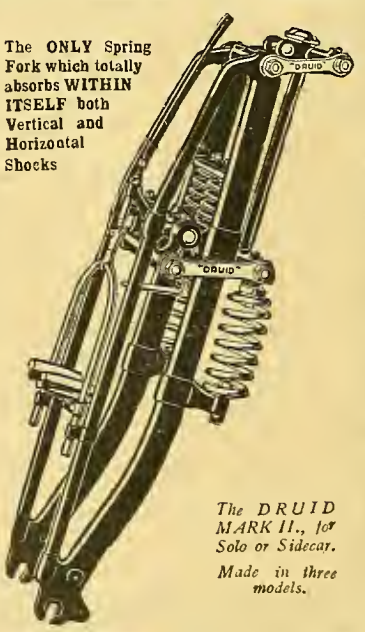

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Leopold Street, B'HAM.

MOTOR CYCLES FOR SALE.

Triumph.

1915 Triumph, 2-stroke, 2-speed, Lucas lamp, spare belt, tool kit, nearly new; £37.—Dalgety, Wayfilete, Eton. [475

1913 Triumph, 3½h.p., free engine, bought new 191. scarcely used, looks like new; £34.—Motor Mar Eastbourne. [479

1909 3½h.p. Triumph, exceptional condition, guaranteed perfect; seen Wauchope's.—76, Hermitage Manor Park. [X150

1912 Triumph, 2-speed, free engine, splendid condition, fast and powerful; 30 gns.—Chilton, Hig St., Watford. [X157

TRIUMPH, 1913, T.T., 3½h.p., 3-speed, and clut Lucas lamp and horn; £36.—79, Walworth Rd Hitchin, Herts. [58

1914 4h.p. Triumph, 2-speed, speedometer, Lu lamps, horn, etc., all complete; £45.—Mo Mart, Eastbourne. [47

4h.p. 3-speed 1914 Triumph, previously the propert of an engineer officer; £42/10.—Wauchope's, Shoe Lane, London. [X15

JUNIOR Triumph Motor Cycle, 1914½, 2 lamp horn, 2 tool bags; bargain, complete, £35.—Skinn Cobourg St., Plymouth. [X170

TRIUMPH, late 1914, clutch model, lamps, hr etc., in new condition; 39 gns.—A. Mardle, 1 Cowper St., Luton, Beds. [X14

TRIUMPH, 1910, free engine, tyres (Bates spec heavy), belt (Dunlop), carburetter, all new; £25. John, Cefnbrith, Tyrran, Llanelly. [X12

1914 4h.p. Triumph, 3-speed, nearly new Canoel sidecar, perfect condition; any trial; £55.—T Premier Motor Co., Aston Rd., Birmingham. [51

TRIUMPH, 4h.p., 1914, 3 speeds, in excellent con tion, complete with all accessories, with Glo sidecar; £53.—31, Dunvegan Gardens, Eltham. [478

1913 3½h.p. 3-speed Triumph, with Canoelet coac built sidecar; £50, cash or easy terms.—R. Jones (Garages), Ltd., Swansea, London, Cardiff. [073

LATE 1913 Triumph, clutch model, Millford ca S.C., not used since war, beautiful condition £37/10, bargain.—15, Warwick Court, Holborn. [49

TRIUMPH, 1913, 3½h.p., 3-speed, clutch, coac built sidecar, wind screen, lamps, horn, spar perfect condition; £42.—39, St. Peter's Sq., Hamm smith. [47

1914¾ Triumph, 3 speeds, and Mills-Fulford coac built sidecar, in extra good condition throughou a bargain to clear, £48.—Horswill, 103, Brook S Chester. [49

1914½ Triumph, 4h.p., 3-speed, and sidecar, £ worth of accessories and spares, enamel a plating excellent; £58, or nearest.—21, New Bond S Leicester. [X14

1912 3½h.p. Triumph, 2-speed shaft gear, re-enam elled, new tyres, perfect condition, powerful, liable, with sidecar; £35.—265, Stamford St., Ashto under-Lyne. [47

1914 Triumph, 4h.p., 3-speed, large tank and pulle semi T.T. bars, 5 gn. Cowey, all accessories, e cellent condition, very fast; £47.—Price, 24, Rutla Rd., Bedford. [X14

1910 Triumph, with 1914 4h.p. engine, M clutch, lamps, Jones speedometer, new tyre large new tank, Klaxon; £35.—Linington, 54, Commercial Rd., Portsmouth. [49

1913 3-speed Triumph, with brand new 17 gn. Glor sidecar, luggage rail, all accessories, perfec £50, cash or easy terms.—R. E. Jones (Garages), Ltd Swansea, London, Cardiff. [07

1912 T.T. Triumph, 3 speeds, clutch, handle startin engine just returned from works, very reliab machine, good order guaranteed; £35.—Box 9,492, *Motor Cycle* Offices, Coventry. [X14

1912 F.E. Triumph, excellent tyres, engine ov hauled, head lamp, rear lamp, horn, B170, Da lop belt, general condition excellent; £28.—Robinso Garage, Green St., Cambridge. [06

TRIUMPH, 1913, 3½h.p., clutch model, recently ov hauled, Philipson pulley, speedometer, lamps, p fect condition, with Canoelet sidecar; £45.—Chapma 262a, King St., Hammersmith, W. [X15

1914½ Triumph, 4h.p., 3-speed, clutch, B. and carburetter, complete with lamps, speedometer Canoelet sidecar, apron, spare belt, etc., in splend condition.—Jordan's Garage, Totnes. [X16

TRIUMPH, 1909, 3½h.p., excellent condition, ov hauled and re-enamelled, new Kempshall co bac usual accessories; £19, or highest offer; trial.—J. V. Turner, Allestree, Woodcote, Epsom. [49

TRIUMPH, 1912, 3½h.p., free engine, electric he and tail lamp, machine had very little use, appe ance and mechanical condition as new; £30.—The Pr mier Motor Co., Aston Rd., Birmingham. [51

TRIUMPH, 3½h.p., 1912¾, clutch, all accessori overhauled, perfect, red Canoelet sidecar, re-v nished; £36; will separate; any trial.—Hutchinso 79, First Av., Walthamstow, London. [X16

TRIUMPH, 1910, cylinder, piston, connecting r bushes, valves, tappets new this month, T.T. ha all accessories, tyres perfect; £30, or nearest.—Le Officers' Club, Penkridge Camp, Staffs. [X16

R.E.S

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SOUTH AFRICA.—Central News Agency, Ltd. PARIS.—Smith's English Library, 248, Rue Rivoli.

War Funds and Winter.

OF late quite a number of appeals have reached us from men at the Front to send out articles of one sort or another. The letters in question are from men actually using motor cycles, and, much as we should like to satisfy all the wishes expressed, yet we find it impossible. Some correspondents have suggested that we should organise a fund, and were we convinced that nothing was being done for their comfort we would not have hesitated long in doing so, but we know quite well that, apart from official consideration of winter requirements and the equipment to be provided, practically every large town is organising a fund for the benefit of its local representatives at the Front. For instance, Nottingham is endeavouring to raise £8,000, Coventry £5,000, whilst several daily papers already have large funds at their disposal. Extensions of the scheme would, we feel, only lead to overlapping and confusion, but the chief point which weighs with us is the fact that hundreds, nay thousands, of our readers are not serving in motor cycle sections at all, but are in the line, or in Army and Navy sections in which their motor cycle experience is of little or no advantage. All such would have to be left out of any scheme we might introduce, on account of the difficulty in tracing the motor cyclists, that is even supposing that a general desire to single out any class for special favour was prevalent. This is decidedly not the wish of the authorities, least of all the persons intended to be so favoured, who realise, as no one else can, the privations of the men in the trenches. Therefore we can only urge our readers at home to support their local funds to the best of their ability so that everyone shall benefit. As showing the difficulties with which any scheme of differentiation is beset, we may mention that a fortnight ago we published a request from a mechanic for a football for the use of himself and colleagues. A letter in the current issue takes exception to this appeal, on the ground that men earning six shillings per day are well able to buy little comforts and luxuries with spare cash. It is the men in the trenches earning a shilling or so a day, who, the writer argues quite reasonably, should receive any little attention which we are able to provide.

Desirability of Clutches in Lightweight Gears.

IT is to be hoped that the lightweight two-speed gear will, ere long, be fitted with a friction clutch as standard. Up to the present, the two-speed gear operated by the simple dog clutch has answered its purpose very well indeed, but as lightweights are being looked upon less and less in the light of "potterers'" mounts, but more as practical touring machines in fairly level country, the steps in the ratios provided are being increased. This means that a positive form of clutch is not a real success in the hands of a novice. The change from low to high gear when the ratios are approximately 10 and 5 to 1, means a certain snatch and jerk, which is not good for the engine, transmission, or tyres. This violent jerk can be entirely avoided and a comfortable change provided by the simple expedient of introducing a friction clutch which may be disengaged when it is desired to change gear up or down. The fact that the lightweight machine attracts in increasing numbers the absolute novice means that a foolproof machine is particularly desirable. We have personally witnessed novices climbing a hill on the low gear, and long before the requisite speed had been attained, engaging the high gear. This has resulted in snatching and knocking, which was very bad for the machine as a whole. Quick engagements of high or low gear at inopportune moments are inevitable in the life of a machine with a positive clutch, and the excessive strain can be entirely avoided by adopting a simple slipping medium such as is provided by the wonderfully efficient cork insert plate clutch.

An index to the advertisements in this issue will be found on the page facing the back cover.

A Business Sidecar.

A friend of mine has a Campion sidecar with Jardine gear in daily use for business purposes, and speaks very warmly of its merits. He makes the interesting suggestion that every sidecar should have a brake fitted with a pawl and ratchet holder, or other locking device, so that it can be safely left standing on a hill in its owner's absence. One day he was calling on a customer, and left his machine in the usual fashion, with a gear engaged, the clutch (as he thought) in, and the back wheel chocked against the kerb. As it happened, the compression was rather poor, the engine having done several thousand miles since its last tuning, and the clutch plates were barely touching, as the pedal was not fully engaged. When he came out he saw the machine rushing down hill with the engine firing. Since the clutch was not fully engaged, gravity had started the machine, which had run back on to the road, swung round under the pull of the sidecar, and then started its engine. He further told me of an odd experience in the way of misfires, a wet autumn leaf having blown on to one of his sparking plugs and shorted it, when he was doing thirty along the open road. He mocks at the luxurious hoods and screens so fashionable nowadays. In lieu of such fittings he carries an old umbrella, with the tip and handle of the stick sawn off, which his passenger uses to shield her head and body from rain.

The Control of Four-cylinders.

Mr. Robertson-Brown takes exception to my ideas on the subject of the control of four-cylinder machines. He says that a valve lifter is an unnecessary complication, in which I am inclined to agree with him. He emphasises what is obvious in remarking that it is a simple matter for a customer to adjust his throttle to shut off all gas from the engine, or to fit a handle-bar switch; indeed, he is ready to supply any Henderson so controlled to order. Where I differ from him is in respect of the desirability for car control for motor bicycles, subject to the substitution of a hand clutch control for the usual car clutch pedal. I like a throttle which just does *not* shut, and I regard a switch as a crude method of cutting out an engine temporarily. If there is no valve lifter, if the throttle does not shut, and if the switch is not used for temporary slows, surely a foot clutch is eminently desirable? A side lever clutch implies the removal of a hand from the steering bar every few yards in heavy traffic, and the alternative of a handle-bar clutch lever is bad, first because it is not yet standard, and few motor cyclists instinctively perform the requisite action in emergencies; secondly, because up to date it has not proved possible to design a handle-bar clutch control which does not require a lot of hauling out. In my opinion those firms who adopt the principle of car control for high-powered multi-speeded motor cycles should fit a foot clutch, and the Henderson clutch is such a beauty that it is well adapted to foot control.

A Second-rate Two-stroke.

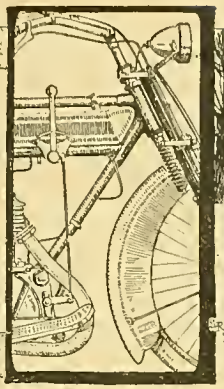
I have often asserted that two-stroke engines vary enormously in quality, and advised nibblers to insist on a trial before purchase; but a wee puffer that I struck to-day was the absolute limit. Not but what it climbed strongly enough, and started easily. But as compared with my well worn Levis of happy memory, and several other leading makes which I have owned or sampled, it was what the bookmakers would call a "stumer." It has defied all adjustments aimed at making it two-stroke down to ten or twelve miles an hour, and obstinately insists on four-stroking at every lesser speed. Its open release valve creates more noise than the exhaust, so that a hooter is quite unnecessary. The engine vibration at all speeds reminds me of the first 3½ h.p. I ever rode, which chanced to be a Minerva, clipped to the front down tube of a very whippy and lanky push-bicycle frame. Accelerative powers are conspicuous by their absence; the engine possesses two settled speeds, one for the level and the other for hills.

A Motor Cyclist in the Transition Stage.

A correspondent who has reached the phase when he seeks for more weather protection in daily winter work writes to ask my comparative opinion of the Carden monocar, the sporting Morgan, and the Baby Peugeot. Pity the poor journalist. It is pretty clear, surely, that here we have one of those common dilemmas soluble only by weighing personal fads against price considerations. The Cardan stands practically alone in its class, and its appeal depends partly on its very low price, and partly on those considerations which make some riders prefer four wheels to three, such as tyre accessibility. The Morgan supplies cosy accommodation for an extra passenger, has an unparalleled reputation in the cycle car world, and its single rear wheel need not imply side-slips even on the greasy setts of the northern cities under violent braking emergencies. The Baby Peugeot is a car, and enjoys all the advantages of the car; but, being a car in miniature, it must equally suffer from the disadvantages of a miniature car. If it is more comfortable and better protected than the cycle car proper, if its mechanism is concealed, instead of bristling into positions on to which rain and dust and mud may be flung, its small engine presupposes some warming up before full power is available on cold mornings, and the lack of reserve power suggests that the owner should be a clever tuner. The multiplicity of internal frictions imply that the simpler Cardan and Morgan can outpace it, especially uphill; and the squat wheelbase hints at a tendency to skid under really bad conditions, which must be countered by clever driving and sound tyre treads. Yet who would dare to say which is the best of the trio for an unknown enquirer's use? There are men who would love any one of the three, and refuse to be seen on the road with the others, so strong are individual preferences and antipathies.

Chain-cum-Belt Transmission on Big Twins.

By H. MORTIMER BATTEN.



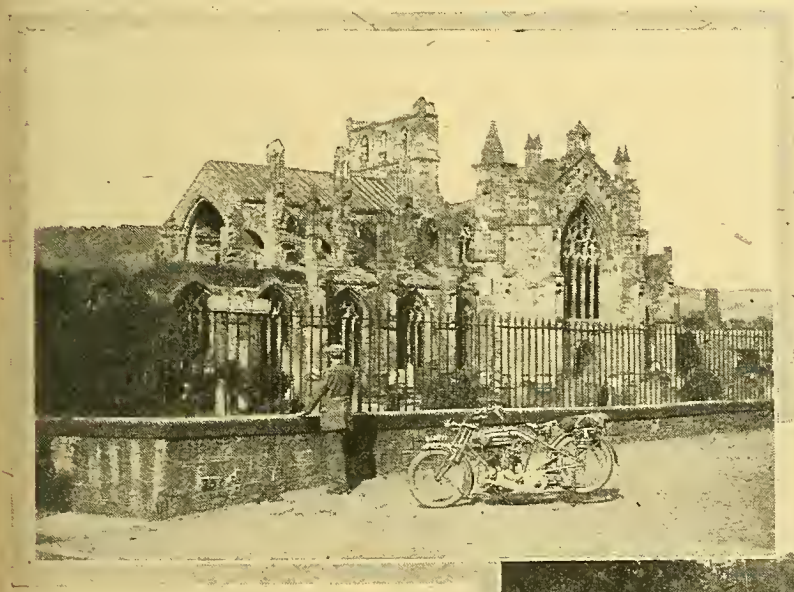
THOUGH the "all-chain" drive has gained general popularity for heavy sidecar machines, there is still a good deal to be said in favour of the properly designed chain-cum-belt system, and having had experience of the latter it is difficult to convince oneself that it is not better suited to the demands of a certain class of rider than the all-chain drive.

Carelessness on the part of the designer is very often the cause of failure in the case of the chain-cum-belt system. On two 1915 machines I have ridden with this system of transmission, I was horrified to find that one bottom corner of the rear wheel mudguard actually overhung the lower stretch of the belt, between the pulley and the rear wheel drum, with the result that the belt was subjected to a constant stream of drips from the guard when negotiating wet roads. This sort of thing is, of course, ridiculous, and is bound to result in belt slip after every shower.

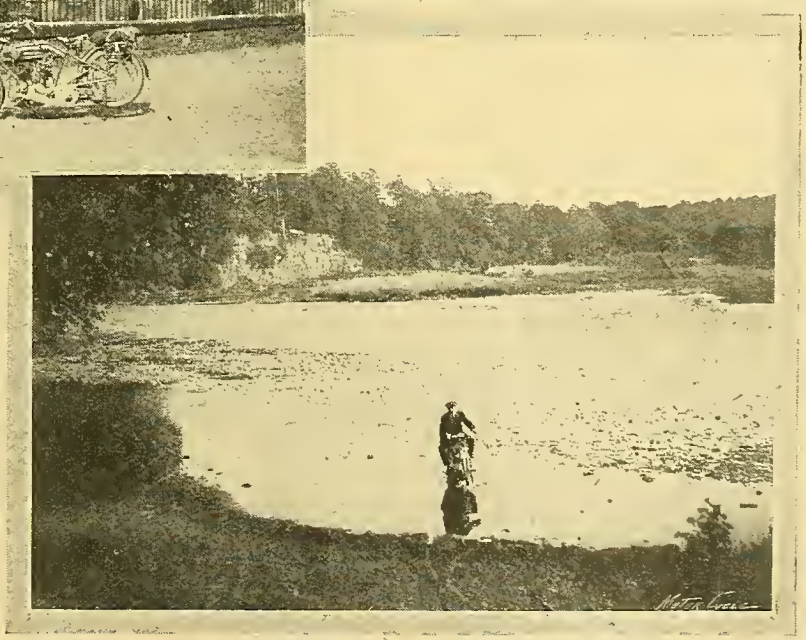
Again, why will manufacturers insist on making the pulley and belt drum so narrow that the belt rides on the extreme top of the grooves? Any oil that collects on the pulley, or any water splashed on to the drum, is thrown to the outer rim and is worked deep into the groove by the warmth and movement of the belt. A certain amount of oil, either from the chain or from the countershaft bearing, is bound to find its way on to the pulley rims sooner or later, but if the belt were riding deep down in the groove oil would be flung from the edge of the flanges without coming in contact with the belt at all.

Both pulley and belt drum, therefore, should be wide and deep enough to take a very much larger belt than practice demands, so that the belt used lies snugly below the rims of the driving members, more or less secure from oil and water that collects upon them.

Such small points are apt to make all the difference in the working of belt transmission, but since, with a little care on the part of the



Melrose Abbey, N.B. The motor cycle is a 5-7 h.p. chain and belt driven Abingdon King Dick.



Crossing the River Tweed by one of the many fords in the vicinity of Peebles.

Chain-cum-Belt Transmission on Big Twins.—

designer, such defects would not exist, they cannot justly be regarded as permanent drawbacks to this system of transmission. We have given the chain drive a degree of shelter and protection from the elements that the belt drive has never enjoyed, and though perhaps it would be difficult to arrange in the latter case, it is surprising that more effort has not been made to afford the belt at least sufficient shelter to render it reasonably secure from periodical drenchings of oil and water.

Taking it, then, that details of design are well thought out, and that the pulley is of sufficient diameter to assure immunity from belt slip and reasonable wear, what are the advantages and disadvantages of the geared down belt drive as opposed to all-chain drive for adaption to heavy machines?

Advantages of Chain-cum-belt Drive.

Dealing first with the advantages, to my mind there is no question that the chain-cum-belt is generally sweeter in transmission than the all-chain drive. Hitherto I have pinned a good deal of faith on the 3½ h.p. chain-driven single as an economical mount, but on my present 5-7 h.p. chain-cum-belt twin I am obtaining an infinitely greater mileage per rear cover than I have ever obtained with a 3½ h.p. chain drive. The difference amounts to something in the neighbourhood of 2,000 miles, the tyres used on both machines being identical, and the rubber bill in the case of the 3½ h.p. mount was not abnormal. This is an important point, for it augurs that not only the rear tyre, but the engine and gears are saved proportionally.

Another feature in favour of the belt drive is its cleanness and extreme simplicity. It is the simplest of matters to slip off the belt when adjustments of some kind are to be made, whereas my recollections of the corresponding task in the case of the enclosed chain drive are by no means fragrant. The slow speed belt is by far the simplest system of transmission we have, besides being the cleanest and the most easily adjusted; and these are points one might do well to ponder before condemning the belt drive as unsuitable for heavy twins. The minds of many of us are poisoned by recollections of the direct belt drive of a bygone age, but with the geared down variety we are up against an entirely different proposition.

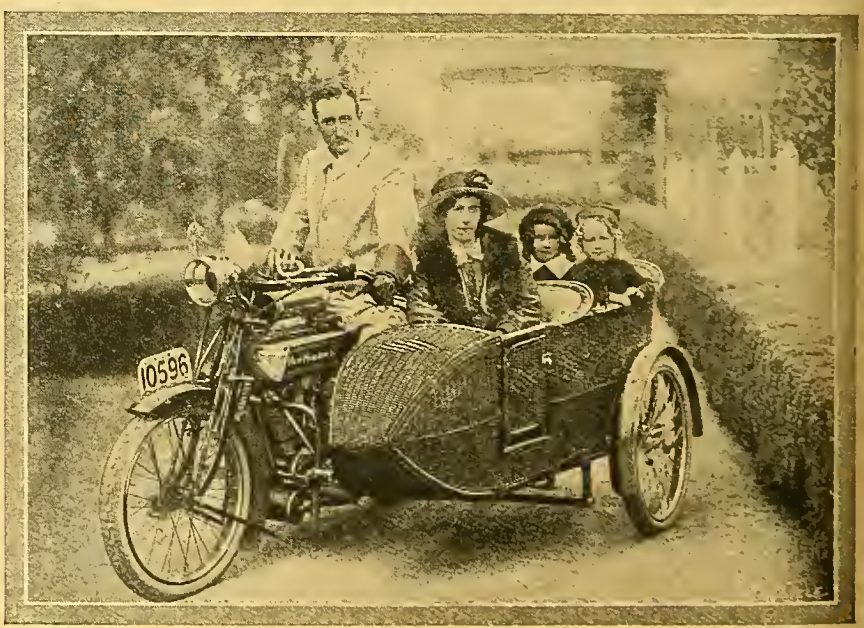
The softness of this form of transmission is, to my mind, its special feature, for however effective the shock absorbing device on the transmission of an all-chain twin, one does not obtain that silken torque peculiar to the belt drive. On my present mount it is possible to come almost to a standstill with the engine ticking over on top gear, yet the machine picks up instantly without a suggestion of snag or konk. I have yet to ride the chain-driven twin with which I would think of taking such liberties.

The wear on the belt is almost a negligible quantity, and certainly it is more than balanced by the reduced wear on the rear tyre. Judging from my own experience the chain-cum-belt drive is very considerably more economical than the all-chain drive, and for the average pleasure rider the system has many recommending features.

The Disabilities of Belts.

Coming now to the disadvantages of geared down belts for heavy twins, we have first and foremost the belt slip nuisance in wet weather or in crossing water-splashes. Many prominent advocates of the belt system have tried to convince me that the modern application of belt transmission has reduced the likelihood of slip so considerably that it need no longer influence one's judgment, but I still adhere to my own views with stolid British stupidity. I consider myself a rider of average intelligence, yet my humble opinion of belt drives is that they all slip, more or less, in wet weather. With a 5 h.p. engine thumping away and a heavy sidecar attached, more slip takes place even with the belt running dry than one realises, and if the belt accumulates oil or moisture the slip is apt to become a nuisance.

It is of no use pretending that the trouble does not exist, for it is the real defect of the system, and unless very elaborate guards are resorted to the rider who goes anywhere and in all weathers is sure to find it out for himself. On my present mount it has not yet stopped me or necessitated a wet and clammy adjustment at the roadside. I have always managed to get over the brow with the engine pulling steadily, but



A CHAIN-CUM-BELT DRIVEN FAMILY SIDECAR OUTFIT.

Mr. J. W. Stocks, Clerk to the Council of Young, New South Wales, who has been using a New Hudson "Big Six" sidecar during the last year. It is interesting to receive confirmation that the sidecar combination has become immensely popular in Australia, and Mr. Stocks speaks with enthusiasm of the enjoyment he has derived from his machine.

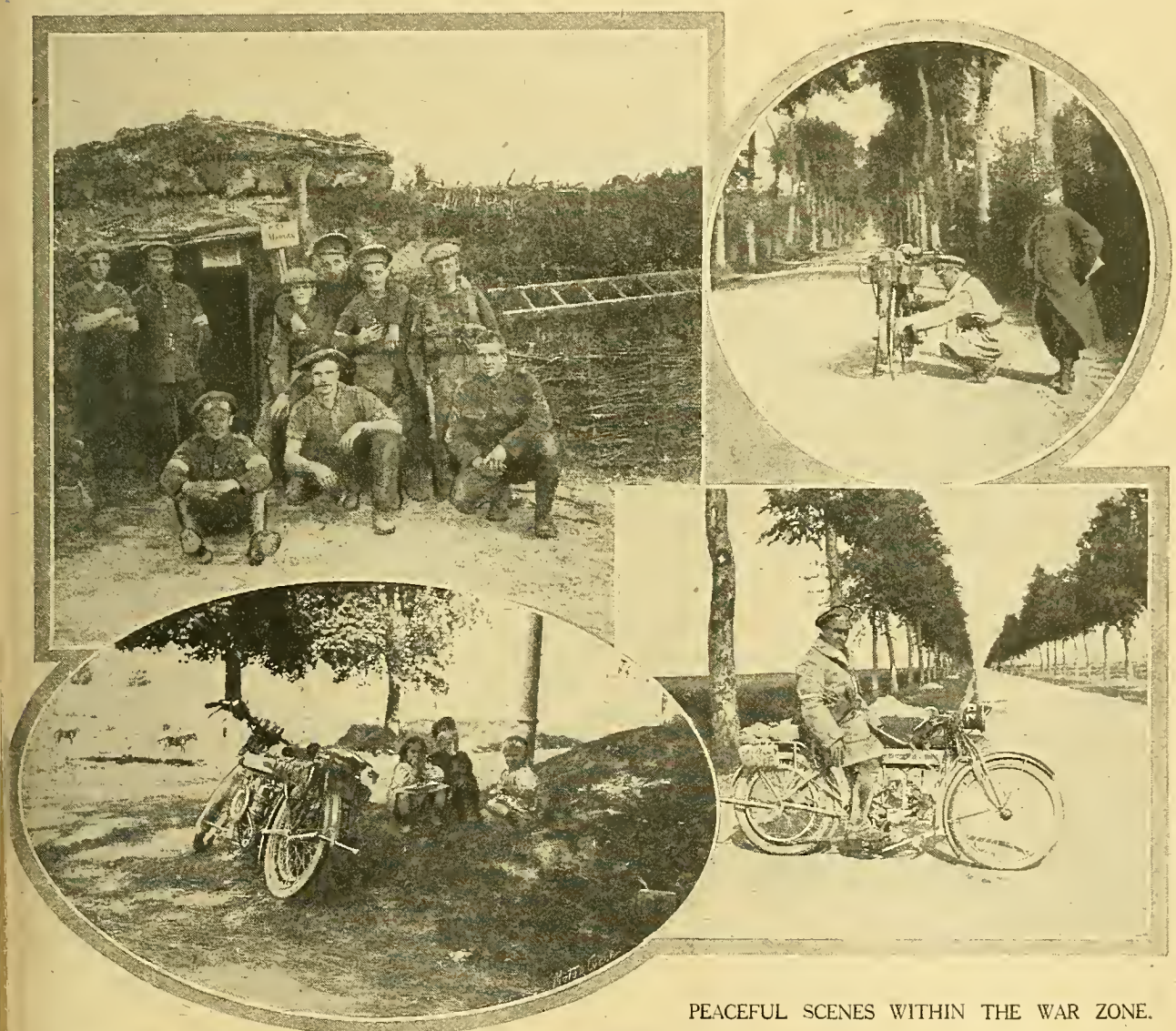
Chain-cum-Belt Transmission on Big Twins.— more than once I have found myself unable to thunder to the crest of the hill at full throttle owing to belt slip.

Even then I do not consider this defect outweighs the many advantages of the chain-cum-belt transmission for the modest tourist who does not desire to blind for hours on end through pelting rain with the sidecar piled up with luggage and the fair one. That he will have fewer rear tyre troubles than if the transmission were of the all-chain type, that he will find his machine easier and pleasanter to handle at low speeds, and probably that he will find it cheaper to run both as regards upkeep and depreciation, it is quite reasonable to expect, but in return he must be willing to keep the belt clean and at the right tension.

There is no reason to think, therefore, that the chain drive will finally supersede the geared-down belt for transmission of heavy machines, and certainly it is not probable that the belt system will ever attain the popularity of the all-chain. Still, it is unwise to be prejudiced; there is room and demand for both. For the powerful solo twin the chain-cum-belt system would probably be hard to beat, for in this case one would obtain its advantages without its disadvantages being so pronounced.

WHITEWASHED KERBS.

With regard to the whitewashing of kerbs, the A.A. has communicated with every municipal corporation in England, suggesting the adoption of this method of protecting road users at night. The response has been extremely satisfactory. One very interesting reply came from H.M. Office of Works to the effect that the kerbs at Menai Bridge, which is in total darkness, are to be whitened.



PEACEFUL SCENES WITHIN THE WAR ZONE.

(Top left) A well-appointed dug-out occupied by a British Signal Company.
(Top right) British despatch rider shortening the belt of his machine. A French soldier is an interested spectator.
(Bottom left) Three little Belgian refugees who have lost their parents.
(Bottom right) Despatch Rider F. Wolstenholme on his Douglas. There are apparently still some good roads in the French war zone.

The Four-cylinder Henderson on the Road.

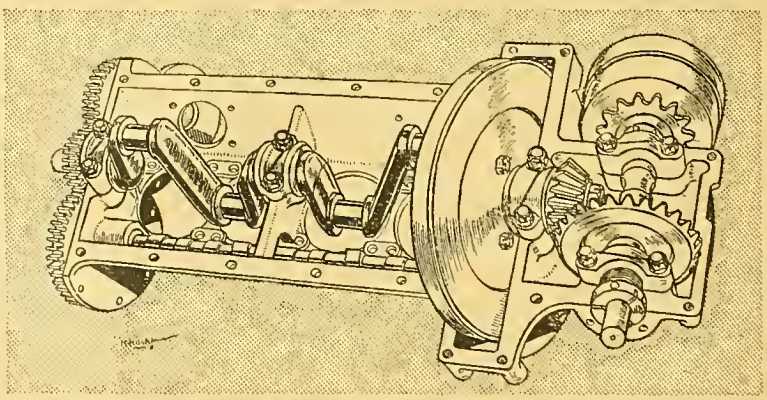
8 h.p. Engine, 67 × 76 mm. Bore and Stroke, 1,072 c.c.; Two-speed Hub.

YEARS ago in the dim and dark ages of motor cycle history, when change-speed gears were non-existent and 3½ h.p.'s were considered too powerful to be safe, the Editor of *The Autocar*, at an Auto Cycle Club (now the Auto Cycle Union) annual dinner, ventured to prophesy that the four-cylinder motor bicycle would have a great future. Now the four-cylinder motor bicycle has long been with us, and, though it has had some adherents, it has never had the popularity of the twin. It is not our intention to go into the whys and wherefores of this at the present moment, but it suffices to say that in the Henderson we have actually on the market a four-cylinder motor cycle which is one of the most perfect two-wheelers we have ever had the good fortune to drive. It has been dealt with on several occasions in these pages, and we have not hesitated to admire its original design, but until a certain week-end we had not had an opportunity of testing its running in the open country. On the occasion of the introduction of the new model E, that is to say, the new short (58in.) wheelbase type, we had a short run in the neighbourhood of Great Portland Street, which gave us a keen longing to try the machine in the open country.

A stop at an important road junction at Riverhead.

On a recent Saturday afternoon one of these new models was placed at our disposal by Messrs. Robertson's Motors, 157b, Great Portland Street, and a few more words concerning it, previous to describing its behaviour on the road, will doubtless be of interest. The chief departure from standard was the fitting of wide handle-bars provided with Pedley rubber grips, which, by the way, are most comfortable, while ordinary British Bowden handle-bar control was supplied to actuate the magneto advance and the Schebler carburetter. This to one who had never before driven the machine was a veritable godsend, although those who are accustomed to it prefer the American style twist handle control to any other, but experience is necessary before this method can really be appreciated.

The four-cylinder engine, air-cooled and with passages between the valve chambers and the cylinder to aid cooling, with its overhead valves, follows car practice pretty closely. Its design comprises commendable originality, and is yet totally devoid of freakishness. Lubrication is arranged on the gravity drip principle, which preserves a constant level in the base chamber, the general oiling being effected by the splash system, and the big ends scooping up oil from troughs. This arrangement is perfectly satisfactory in the hands of the intelligent user, but we suggest that the tap controlling the drip could be easily interconnected with the switch, so that the engine could not be stopped without the oil being turned off. As arranged at present, it is possible for a thoughtless driver to leave the oil on, and to find next morning the base chamber full up, resulting in waste, clouds of smoke, and perhaps ultimately a complete stoppage of the engine. As we mentioned before, the carburetter is the popular American Schebler, which gives perfect slow running, extremely rapid acceleration, economy, and plenty of power, while means are provided and full instructions are given for adjusting it to suit varying atmospheric conditions. It is adequately warmed by means of the exhaust, the main air intake passing right through the silencer expansion chamber.



Crank case, three-bearing crankshaft, flywheel and transmission gear of the Henderson.

As the crankshaft is set longitudinally, it is necessary to use a bevel drive to convey the power from the engine by chain to the rear wheel, which makes us wonder why the makers have not incorporated a simple dog clutch two-speed gear in the crank case unit instead of employing an epicyclic gear in the rear hub. Possibly, however, they have their reasons for not doing so. The excellent plate clutch is controlled by a long lever working in a quadrant on the near side of the tank, adjacent to the change speed lever. This arrangement has been greatly improved by Messrs. Robertsons, who provide a Bowden control for the clutch, which greatly simplifies its opera-

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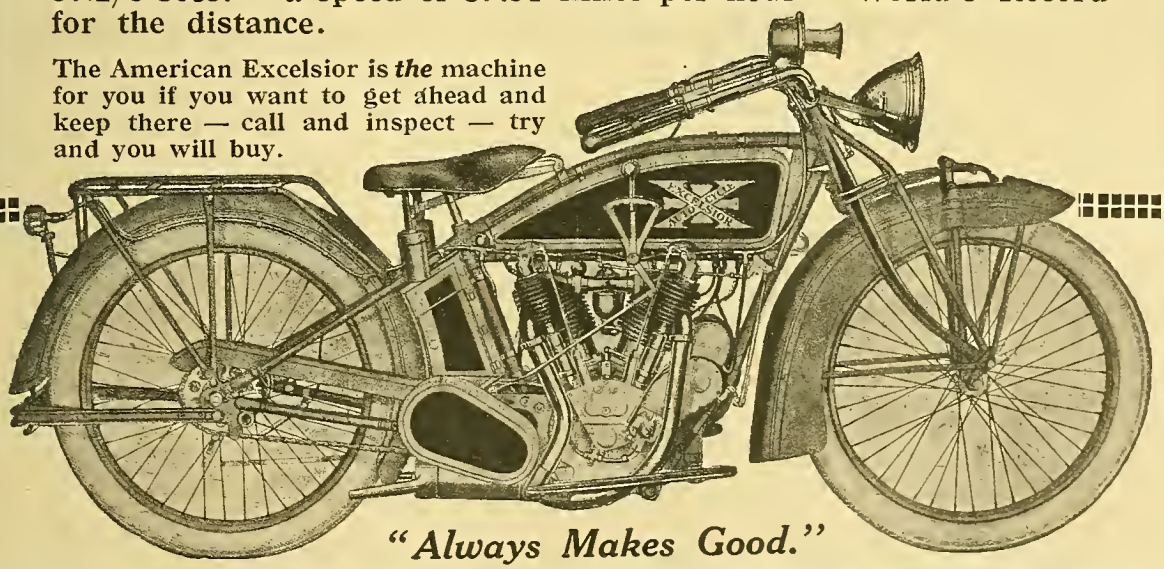

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Prices: STANDARD MODEL. 7 h.p., 3-speed countershaft gear, multiple disc clutch, chain drive, kick starter, mechanical lubrication **£80**

MODELE DE LUXE, as illustrated, complete with Dixie combination lighting and ignition, powerful head and tail lamps, electric horn, and speedometer **£90**

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For effectively controlling all movements from the handle-bar. Made in various strengths and finishes.

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BOWDEN TWO-SPEED GEAR.
A very simple countershaft gear with kick-starter. Can be fitted to a number of machines without any—to most with slight — alteration. Guaranteed for engines up to 6 h.p.

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Helps to grind a valve quickly and with absolute accuracy without dismantling the cylinder. Most efficient. Acts also as Valve Spring Lifter.

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3-ply
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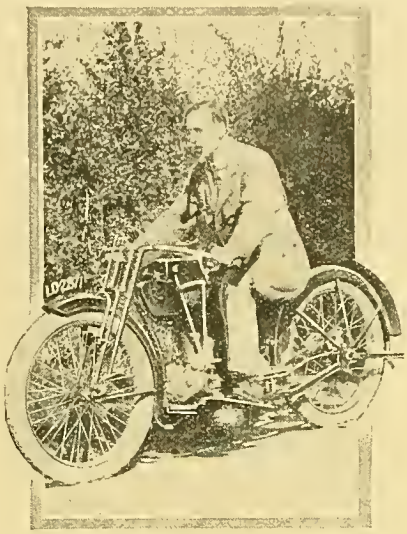
The Four-cylinder Henderson on the Road.—

tion in traffic, as it can then be withdrawn without removing the hands from the handle-bars. The particular machine we tried was quite new, and not even properly run in, and so the modernised clutch control was not in place. Consequently, we negotiated the traffic somewhat gingerly at first. We omitted to mention that the engine is set in motion by a handle, which is pulled up, and after starting, which is quite easily effected even from cold, folds neatly away. We rapidly, however, gained confidence and in a few yards we were revelling in the glorious smooth running, extreme controllability, and superb acceleration of the engine.



The four-cylinder Henderson on the road.

Our first ride was to a village some miles beyond St. Albans, which town we approached *via* Barnet, the road for some distance being nicely corrugated owing to the motor omnibus service running thereon. It is interesting to note that, within limits, the faster we travelled the greater was the comfort we experienced. This run gave few opportunities for speed, and as few for testing the hill-climbing power of the machine. Still, each side of Ridge Hill gave us some idea of what the Henderson could do in this respect. We were also able to note the smoothness of the engine, which possesses absolutely no objectionable period, whilst its response to the slightest opening of the throttle and its ability to run at slow speeds are simply marvellous.

The next day our drive was in the country south of London. Here we had plenty of hills to try, the first of which was the one which leads from the main Eastbourne road to Upper Warlingham. To say that the Henderson treated this as level ground appears to be but making use of a somewhat hackneyed expression, but its behaviour can be described in no other way. The hill, which is quite a good pull and will bring a good four-speed car down to second, was absolutely ignored. Titsey Hill, despite an obstruction on the steepest portion, was equally well climbed, while on Westerham, which we took in the evening, the machine was simply a revelation. The cross roads were taken with extreme caution, and then for the first time that day, after a good run in hilly Kent, the throttle was actually opened to its fullest extent, but hardly had this happened than it had to be closed again, for the first corner, and after this had been negotiated, the engine was picking up speed on the 1 in 8 gradient, as if the ground were flat. Such sensations of power cannot be enjoyed on any other vehicle than a powerful car, and yet the Henderson is as docile as a lamb in thick traffic or on greasy roads. It is heavy, it is true, but it is 25 lb. lighter than several American twins. It is also economical in petrol (70 to 80 m.p.g. we are assured). As no mileage recorder was fitted, we were unable to make an accurate test, but we can truthfully say that the consumption of spirit is small. Tariff or no tariff, the Henderson will sell among that section who like luxurious riding and ignore weight, as it is in its class quite without rival on the British market.

WITH THE M.M.G.S. IN FRANCE.

On the left two men are shown using a range finder. They are lying on the top of a trench dug in the farm-yard of their temporary headquarters.

The second illustration shows three motor cyclist scouts. They are, from left to right: W. P. Jamieson, J. J. Swann, and T. Saunders — all Douglas mounts.

NEW MODELS

· MANUFACTURERS' PROGRAMMES FOR 1916 ·

CAMPIONS IN 1916.

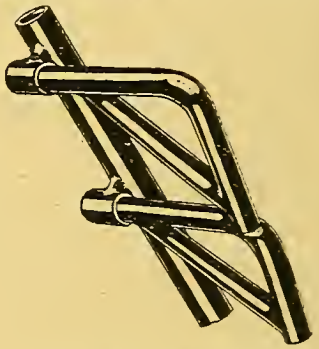
Two Heavyweights (including an 8 h.p. Four-speed Mount) and Two and Four-stroke Lightweights.

ONE of the sturdiest built high-powered machines which we have yet inspected is the new 1916 model 8 h.p. four-speed Campion-Jap. This mount is obviously intended as a go-anywhere passenger outfit, but, nevertheless, it is not an impossible solo mount, for we have ridden a machine of exactly similar type, but with combined belt and chain drive, as a solo mount, and its flexibility was remarkable. The mount illustrated is the latest production of the Campion Cycle Co.'s works; finished in khaki, it strikes the observer as a machine quite out of the ordinary run, but it embodies nothing experimental in its design, being just solid recognised practice throughout.

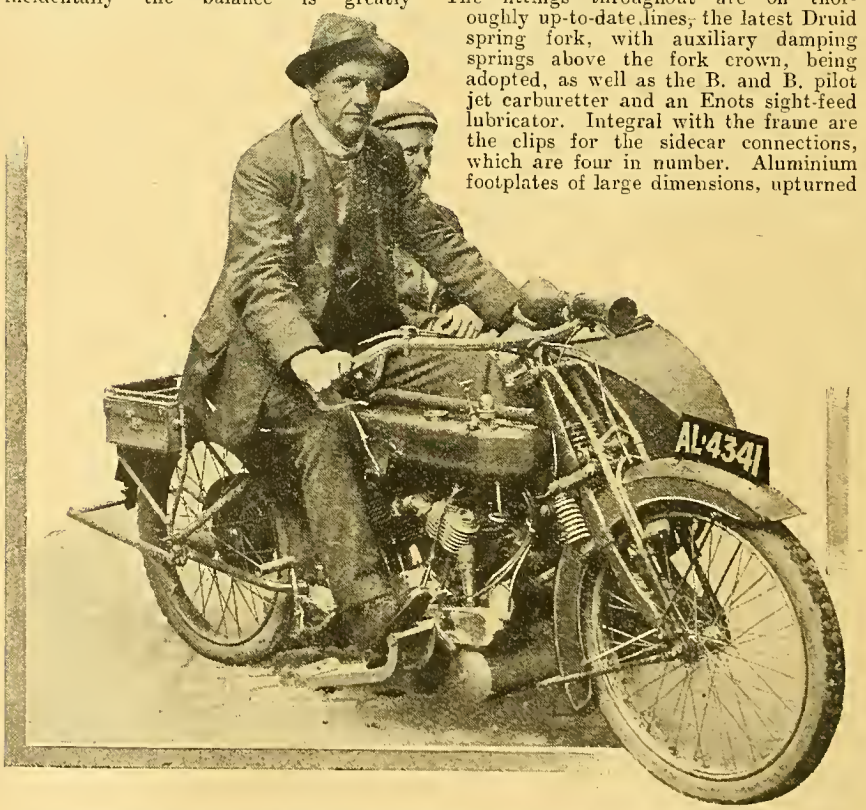
The engine is an 8 h.p. side-by-side valve J.A.P. of the new type, and incidentally the balance is greatly superior to earlier engines of this pattern. The front engine security plate performs a triple purpose. It forms a platform for the Splitdorf magneto, and neatly tucked under the platform is the circular expansion chamber of generous dimensions, a long exhaust pipe with saw-cuts conveys the gases to the rear.

Internal Expanding Brake.

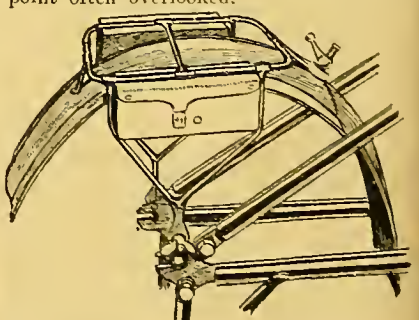
The gear box is of the new pattern Jardine four-speed type, giving one free-engine position only. Chain transmission is used throughout, and combined with the rear sprocket is a 7¼in. Ferodo lined brake of the internal expanding type, operated by the usual toggle lever movement. The second brake is the ordinary rim pattern operating on the front wheel. The transmission is entirely enclosed. The fittings throughout are on thoroughly up-to-date lines, the latest Druid spring fork, with auxiliary damping springs above the fork crown, being adopted, as well as the B. and B. pilot jet carburetter and an Enots sight-feed lubricator. Integral with the frame are the clips for the sidecar connections, which are four in number. Aluminium footplates of large dimensions, upturned in front and provided also with heel rests, have been adopted. Two pannier tool-bags, with metal protectors at the back and sides to retain their shape, are used, whilst to facilitate repairs to the rear tyre the carrier is secured on both sides by wing nuts, and the top portion of the mudguard by a hand nut. The removal of these three connections enables the whole rear portion to be removed in a very short space of time. The mudguarding is of modern design, the front guard having side extensions for its whole length, and the rear guard wings extending from the saddle springs to well below the transmission—a small but important point often overlooked.



Showing the stiffened supports at the front of the Campion sidecar attachment.



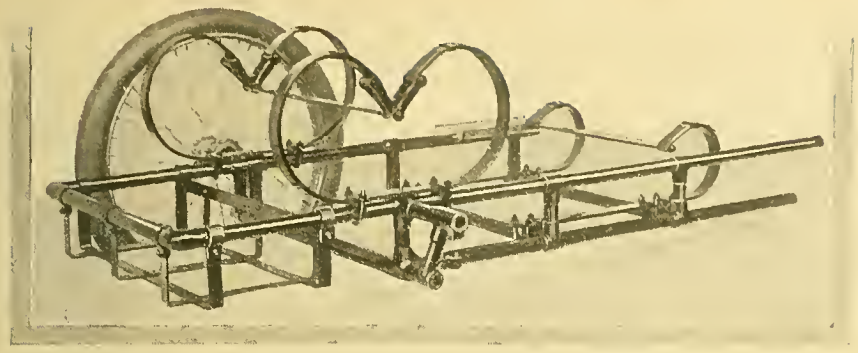
George Hunt on the new four-speed 8 h.p. Campion. Mr. Hunt, it may be mentioned, is the holder of the 24 hours cycle paced record, having covered over 400 miles in 24 hours.



Detachable guard and carrier on the Campion to facilitate tyre repairs.

The 8 h.p. Campion is obtainable not only as a solo mount, but complete with sidecar outfit, handsomely finished in khaki.

The sidecar is by no means to be passed over, for not only has it four-point



Showing the special springing and chassis design of the Campion sidecar. Note luggage grid.

attachment, which is now generally demanded by experienced riders, but the two bent tubes in front, which are necessarily used, are stiffened by two struts forming a triangle. Still the springing of the sidecar is the most attractive point of the Campion, for double "C" springs are used, together with long links, reminiscent of the springing of carriages in the early Victorian era, which give a movement and a degree of comfort comparable only to expensive cars. A luggage grid at the rear of the frame is a standard fitting on the Campion sidecar.

The Jardine gear being obtainable with a foot or hand-operated clutch at option, the Campion Company offer their customers a choice of these fittings.

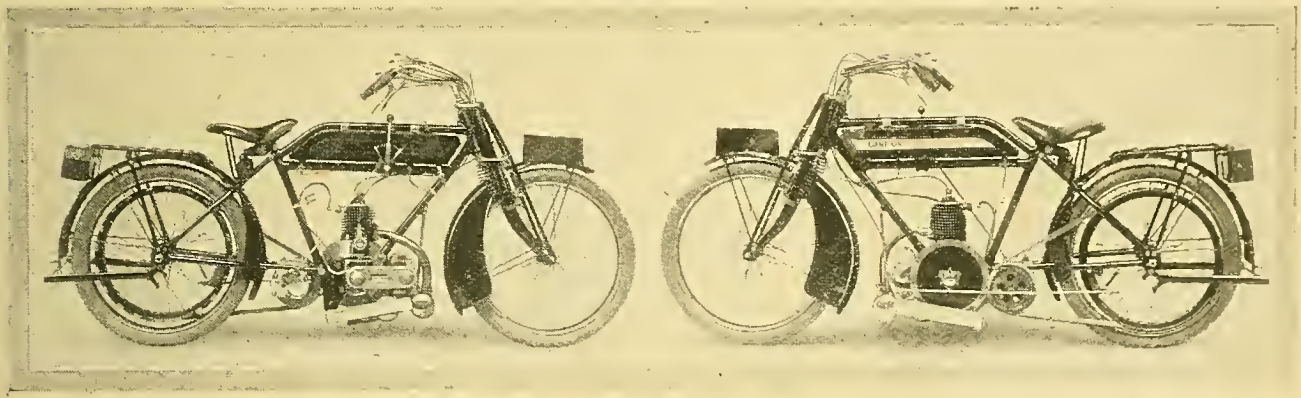
A 6 h.p. J.A.P. engine may be obtained in place of the 8 h.p. engine if desired.

Lightweight Campions.

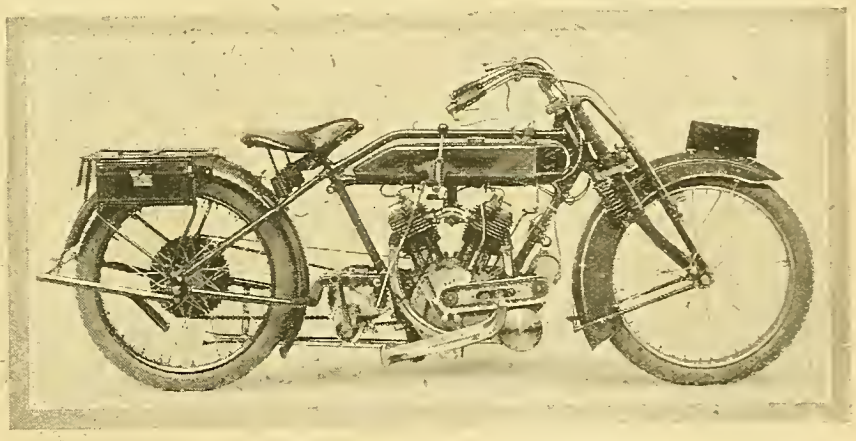
The Campion Company do not confine their attentions to any single model, but produce machines which appeal to all classes of riders. We are able to illustrate two further 1916 models of the Campion range, both of them lightweights, one fitted with a Villiers two-stroke engine of 70×70 mm., the other having a J.A.P. four-stroke engine of 2½ h.p. (70×76 mm.). These lightweights have black hubs, a black tank, and chain and belt transmission, the chain being enclosed. Footboards, too, are provided. In the case of the four-stroke, a Jardine two-speed countershaft gear is used, whereas the two-stroke model has an Albion gear, with the transmission arranged all on the left-hand side of the machine. The two models also differ in that a B. and B. pilot jet carburetter is fitted on the right-hand side of the four-stroke model, whereas the two-stroke is provided with an Amac carburetter. The toolbag is placed at the rear end of the carrier, and is protected by metal casings, access being obtained to the bag from one side. These two lightweights are handy little solo mounts, which are selling in large numbers.

A Trip on the Road.

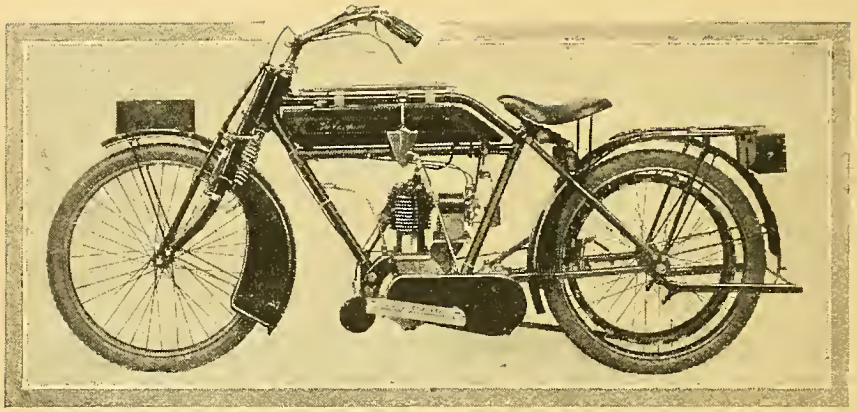
A road test of the new 8 h.p. Campion model was proffered by Mr. George Hunt (the sales representative of the firm), which we gladly accepted. The reserve power provided by such a big twin is most attractive. The slightest touch of the throttle lever and the machine bounds away like a thoroughbred, whilst as to hills one never notices them, as with the four gears, even with the high top ratio that is provided, one can toy with single figure gradients. The Coventry neighbourhood does not abound in steep hills, Stoneleigh being the only gradient of note in the district, so we wended our way thither, and, despite the fact that one cannot rush at this hill, owing to a right angle bend almost at the foot, it was possible to effect most of the climb on the top gear, whilst the engine roared away on the third ratio over the summit. Descending the hill, we tested the ease of changing when accelerating speed by starting from a standstill on the low gear, and changing gear by gear higher, and, as showing how beneficial intermediate gears are in acceleration and hill-climbing, it was possible to get the top into engagement just before the summit, and finish the climb with ease. A further test, which many will consider unfair, but which we were invited to make by Mr.



The two-stroke Campion which is fitted with a two-speed gear and chain-cum-belt drive. As will be gathered from this illustration alternative tank finishes are offered by the makers.



A high-powered sidecar mount—the new 8 h.p. twin-cylinder Campion—which has all chain drive and a Jardine four-speed gear. All chains have cases, but when photographed the latter were removed.



The four-stroke Campion lightweight. The engine is a 2½ h.p. J.A.P., and a two-speed countershaft gear in conjunction with chain-cum-belt drive is adopted

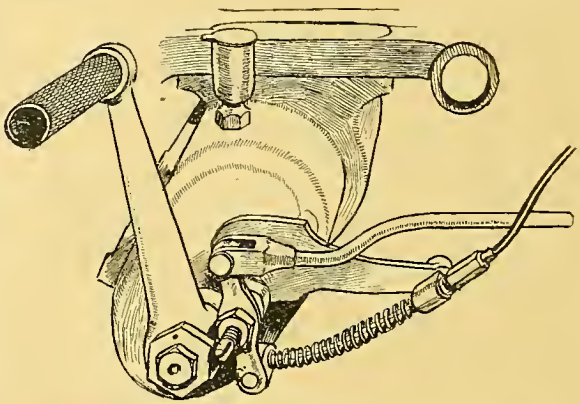
George Hunt, was to start away from rest on the steepest portion of the hill, first on the lowest gear, then on the second, and again on the third. Even this latter performance we carried out with comparative ease, the demonstration providing a most agreeable proof of the efficiency combined with ease of handling of the cork clutch. There was no snatch or jerk, and no tendency to seize; instead, it took up the load gently but surely, gradually increasing its speed.

We suggested to Mr. Hunt that recommending anyone to start on the third gear of a machine by the aid of the clutch was not good policy, in view of the strain it put upon the clutch; but we have his assurance that he regularly does so, and also habitually slips the clutch at corners, and has done so over a mileage of 35,000, and has never suffered from clutch trouble. His unbounded confidence in the efficiency of the clutch is remarkable. Certainly, we have never handled a clutch, whether on a car or a motor cycle, with which such liberties could be taken, and at the end of the trip the clutch took up the drive as sweetly as ever.

Dual Clutch Control.

An interesting fitment, which is new to the Campion, greatly simplified the handling of the machine, and that was an inter-connected pedal and hand lever for operating the clutch. The hand lever is on the left bar, and, consequently, when changing up or down, if the clutch is half eased by the right foot and the exhaust valve lifter touched, a ready and silent change can be effected. Having satisfied ourselves that no treatment, harsh or otherwise, of ours would affect its working in a brief mileage, we turned our particular attention to the balance and pulling of the 1916 model 8 h.p. J.A.P. engine, which, as already mentioned, is a great improvement on any engine of this make which we have tried. We found at speeds ranging from 20 to 40 m.p.h. there was an entire absence of tremor in the handle-bar grip, and there was no suggestion of one's feet dithering on the footplates—an experience not unknown to us.

This experience with the latest V type J.A.P. engine, particularly in the matter of the balancing of the engine, was certainly an eye-opener to us, and demonstrates the degree of comfort to which modern engines are being brought.



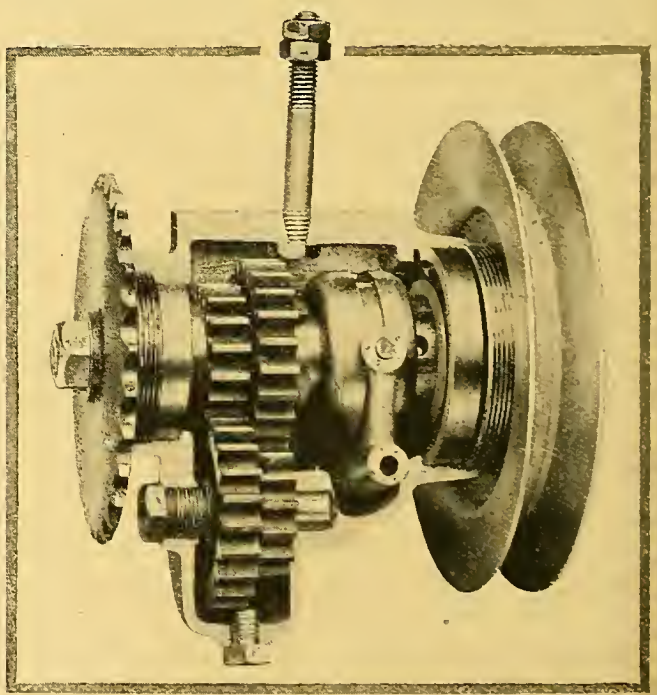
Interconnected hand and foot control for clutch on latest Jardine gear fitted to the new Campion.

JARDINE GEARS IN 1916.

THOUGH outwardly the Jardine four-speed gear remains unaltered for 1916, there are a number of improvements to be noticed from a more detailed inspection of its parts.

First and foremost, the shafts have been strengthened very considerably, and a deep spiral groove cut in the shafts to ensure adequate lubrication. Apart from the ball bearing main shafts, the bearing principle of the gear is now steel on steel, instead of steel on bronze, as formerly used. Each wheel is keyed in position with two keys, and is a ground fit, this change having greatly simplified the operation of assembling and dismantling the gear. Users of the Jardine four-speed gear will be aware of its wonderfully silent running, despite the fact that all wheels are in operation on the lowest speed. One of the secrets of this quiet running is the fact that there is very little difference in the speeds of the wheels, which arrangement also increases its efficiency. The fact that the four-speed Jardine is no more complicated than the three-speed gear, seeing that the two kick starter pinions are merely employed to give an extra low gear ratio, has led to the four-speed box practically superseding the three-speed type of gear. The adjustment provided in the operating gear has lately been simplified, which will overcome the only criticism we have heard of the Jardine four-speed gear. The cork clutch is retained, as it has been found extraordinarily efficient in use, and a 32 plate clutch as a slipping medium for the engine sprocket is now regularly supplied.

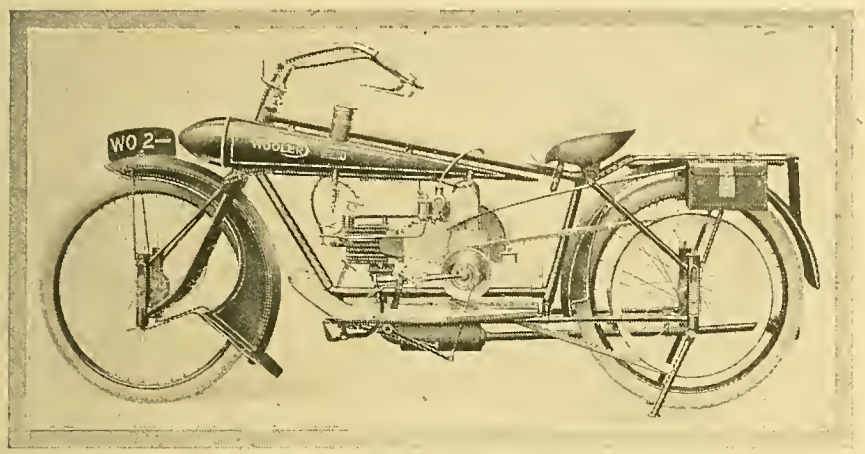
Improvements are noticeable, too, in the two-speed gear intended for lightweight motor cycles. This gear is of the simplest possible construction, and is beautifully made, the whole of the parts, with the exception of the fork (which is a drop forging), being produced in the works of John Jardine, including even the ball bearings on which the shafts run. In this two-speed gear the larger wheel is now screwed on to the smaller wheel, thus reversing the old order of things.



The latest Jardine two-speed gear for lightweight machines, showing its simple construction

The 1916 Wooler Two-stroke.

Some Detail Improvements to a Most Original Design.

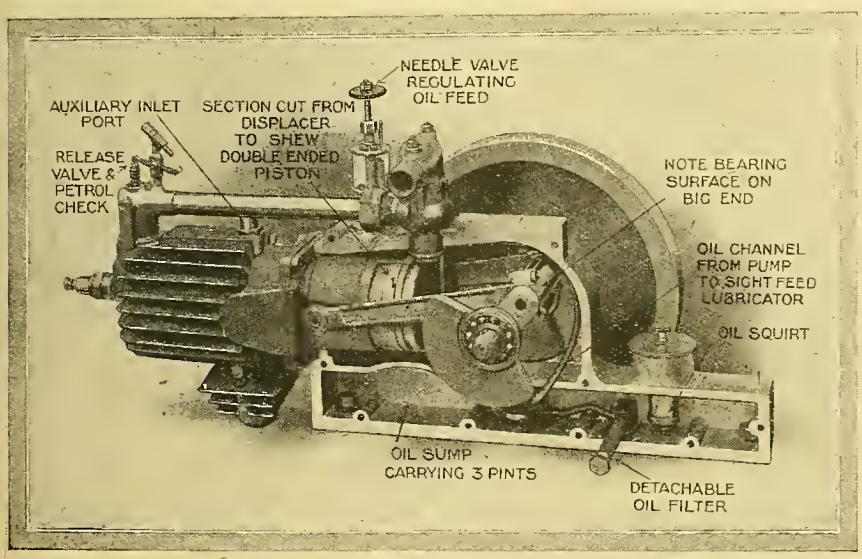


Belt side of the latest Wooler, the engine of which is a two-stroke placed horizontally.

ACCOMPANYING are sectional illustrations showing the latest improvements in the Wooler engine. In this interesting two-stroke, which has no crank case compression, there have been no very striking alterations for 1916. It may be remembered that the Wooler has a double-ended piston working in a double-ended cylinder, and the illustration shows how the gudgeon pin and forked connecting rods are designed to work though slots which are always covered by the piston, so that no compression can escape either from the cylinder or the displacer.

One of the improvements is to fit a new detachable oil filter, consisting of a tube of gauze, which prevents any foreign matter from being drawn up into the oil pipe. The pump delivers oil to the cylinder through a drip feed, which can be regulated, the excess being used to lubricate the big ends and main bearings of the engine.

The other improvement is the fitting of a chamber in the transfer pipe, which is shown in the accompanying sketch. This chamber in the transfer pipe is of assistance in the mixing of the charge, reduces the pressure behind the automatic inlet valve, and allows the valve to open slightly later, giving more time for the exhaust gases to escape and thus preventing the incoming mixture being fouled. We are informed that it renders the engine smoother in action, and prolongs the life of the inlet valve. It will be noticed that this chamber, which is fitted with a compression tap, is situated just over the auxiliary inlet port. It may be remembered that the object of the auxiliary inlet port is to enable the inlet pipe to be completely emptied of gas, and this is done as soon as the piston passes the port.

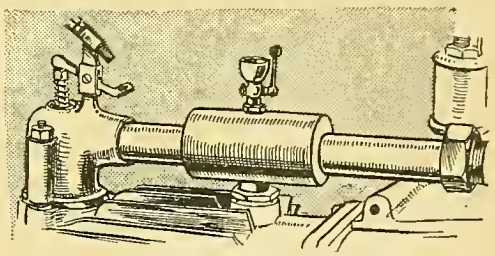

NEEDLE VALVE REGULATING OIL FEED
AUXILIARY INLET PORT
SECTION CUT FROM DISPLACER TO SHEW DOUBLE ENDED PISTON
RELEASE VALVE & PETROL CHECK
NOTE BEARING SURFACE ON BIG END
OIL CHANNEL FROM PUMP TO SIGHT FEED LUBRICATOR
OIL SQUIRT
OIL SUMP CARRYING 3 PINTS
DETACHABLE OIL FILTER

Sectional views of engine of the 1916 two-stroke Wooler—a most original design.

DUBLIN AND DISTRICT M.C.C. MEETING.

THE annual general meeting of the Dublin and District Motor Cycle Club was held on October 28th, at Jury's Hotel, College Green, Mr. G. A. M. Curtis presiding. Satisfactory reports were presented by the hon. secretary and hon. treasurer, the latter's showing an increased balance forward, despite the heavy expenses for prizes in the numerous competitions of the past season. The meeting heard an appeal from J. Dolman, against the decision of the committee in connection with the two days trial to Glengarriff and back, but the decision of the committee was confirmed. New officers for the year 1916 were elected as under: President, Mr. G. A. Curtis (re-elected); hon. sec., Mr. W. H. Freeman; assistant hon. sec., Mr. J. F. A. Day; hon. treasurer, Mr. W. J. Towell; captain, Mr. J. Browne.

The meeting considered the matter of next year's programme, and a resolution was passed recommending the committee to confine next year's events to four, viz., a reliability trial at Easter, the twenty-four hours trial, the two days trial and a meeting at Portmornock, with a possible winter trial on Boxing Day.



The new mixing chamber in the transfer pipe of the 1916 Wooler.

SPEED TRIALS IN SOUTH WALES.

THE Maesteg and District Motor Cycle Club on October 20th held a series of speed tests, the proceeds being devoted to the local Red Cross Funds. The results of the different classes were as follow:

CLASS 1. ANY POWER MACHINE.
1. W. Thomas (4 h.p. Douglas).

CLASS 2. MACHINES UP TO 3 H.P.
1. W. Thomas (2¾ h.p. Douglas).

CLASS 3. SINGLE-CYLINDER MACHINES UP TO 4½ H.P.
1. E. W. Jones (3½ h.p. Triumph).

CLASS 4. TWIN-CYLINDER MACHINES OF 3 H.P. TO 4½ H.P.
1. W. Thomas (4 h.p. Douglas).

CLASS 5. MACHINES EXCEEDING 4½ H.P.
1. W. Bowen (7-9 h.p. Indian).

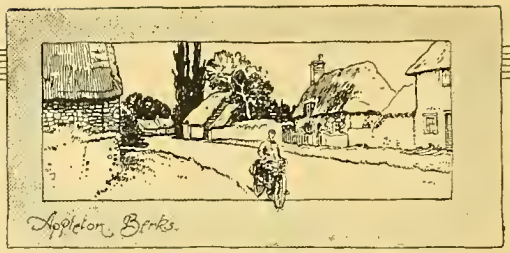
CLASS 6. SLOW RACE FOR TWIN-CYLINDER MACHINES.
1. T. Thomas (3 h.p. Enfield).

CLASS 7. SLOW RACE FOR SINGLE-CYLINDER MACHINES.
1. —. Lodwig (3½ h.p. New Hudson).

CLASS 8. POLO RACE FOR ANY POWER MACHINE.
1. W. Thomas (4 h.p. Douglas).

W. Thomas (Douglas) won the special prize for the most prizes won.

CURRENT CHAT



SPECIAL FEATURES

BELT-CUM CHAIN TRANSMISSION ON BIG TWINS.
A NOVEL THREE-WHEELER.
DURABILITY OF CLUTCHES WITH LIGHT-WEIGHT GEARS.

TIMES TO LIGHT LAMPS

Nov. 4th	... ...	5.28 p.m.
,, 6th	... ...	5.26 ,,
,, 8th	... ..	5.22 ,,
,, 10th	... ...	5.19 ,,

In London half an hour earlier.

Motor Cyclists in the Services.

"Owner enlisting" is a reason now frequently given for selling a second-hand machine.

Trend of Design.

There are two V type twin-cylinder two-stroke engines on test in the Midlands, but neither has yet passed the experimental stage, so each designer reports. Newcomers to the pastime do not appear to know that the Rex Co. six or seven years ago produced a V type twin two-stroke engine.

Moneylender and Motor Cycle Dealer.

A letter has been brought to our notice, the heading of which denotes that the writer not only sells motor cycles, but lends money with which to run them. Presumably the idea is to sell a motor cycle to a man, cause him to spend more money than he ought to, and consequently return with the object of borrowing more money with which to run it. The idea strikes us as being distinctly novel. *Caveat emptor!*

A Cumberland Road Warning.

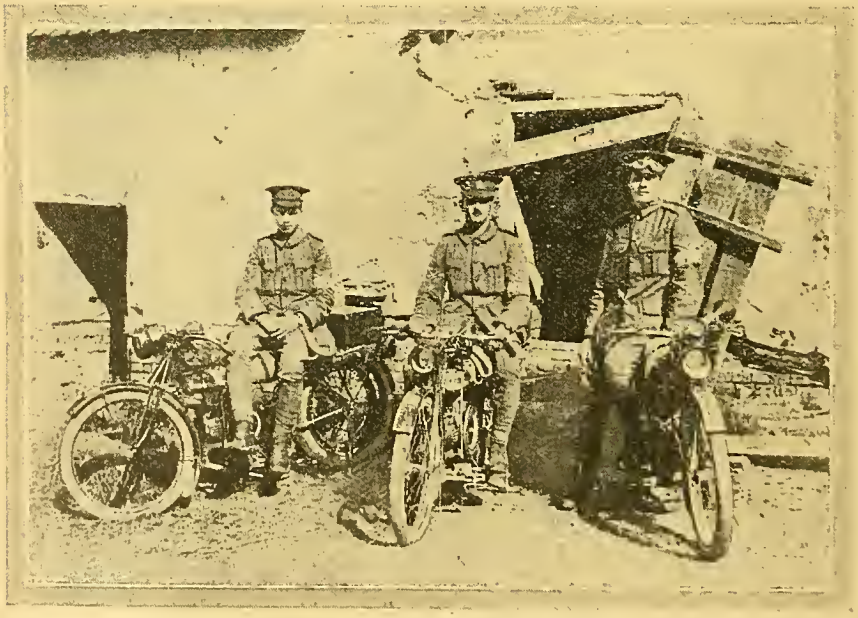
The Automobile Association has received serious complaints regarding the speed of motors through Longtown, Cumberland. At the present time all traffic going North through Carlisle has to pass through Longtown, owing to the closing of the usual road on which a bridge is being rebuilt, as notified some time ago in *The Motor Cycle*.

The Price of Petrol.

It has been said that the price of petrol is lower in England than in any other country except America, but a Dutch correspondent informs us that the prices which have existed there for the last two years, and are the same at the present time, are as follow: Antoline, 1s. 5d. per gallon; Sumatrine, 1s. 2½d. Both these spirits are used for motor cycles and cars, while Carburine, which is used for motor boats only, is 1s. 1½d. per gallon.

Moskovskoye Obschestvo Motoristoff.

The Moscow Motor Cyclists Club has lately been reformed and its sphere extended, and its title is now as above. The M.O.M. will be the recognised headquarters of the sport throughout Russia. It will organise competitions, trials, lectures, etc., and open repair shops and depots. Correspondence is invited from kindred associations in England.



STILL CHEERFUL AFTER FIFTEEN MONTHS' DESPATCH RIDING.

The three men shown have been through the whole campaign in France, being attached to a portion of the Indian Army. The man on the left (Lieut. Metcalf) has been granted a commission since the photograph was taken. All speak highly of their Douglas machines.

Road Repairs.

We have received a letter from the secretary of the Roads Improvement Association in which he points out that, in spite of the Government's action in curtailing the activities of the Road Board, there need be but little deterioration in the road surfaces if the local authorities will face the problem of judicious and skilful patching with proper material on the "stitch in time" principle.

Average Prices.

We give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model, the average for the past week is quoted. If there were not at least two advertisements then the last occasion on which they were quoted is given.

Make.	Year.	H.P.	Average for last week.	Latest weekly average obtainable.
A.J.S.	1914	6 3-sp. sidecar ..	£76	—
,, ...	1913	6 3-sp. sidecar ..	£57	—
,, ...	1915	6 3-sp. sidecar ..	£87	—
Allon	1915	2¾ 2-speed	—	£30
Ariel	1914	3½ 3-sp. sidecar ..	—	£53
,, ...	1913	3½ 3-sp. sidecar ..	—	£43
Bat	1914	6 3-sp. sidecar ..	£55	—
Bradbury ..	1913	4 3-sp. sidecar ..	—	£40
B.S.A.	1915	4½ 3-sp. sidecar ..	£73	—
,, ...	1914	4 3-sp. sidecar ..	—	£56
,, ...	1913	3½ 2-sp. sidecar ..	£42	—
Calthorpe ..	1914	2 2-speed	—	£19
Clyno	1913	6 3-sp. sidecar ..	—	£52
,, ...	1914	2½ 2-speed	—	£26
Douglas ...	1914	2¾ 2-sp. T.T.	£42	—
,, ...	1914	2¾ 2-sp. kick start	£43	—
Enfield	1914	6 2-sp. sidecar ..	£65	—
,, ...	1913	6 2-sp. sidecar ..	£50	—
,, ...	1915	3 2-speed	£46	—
,, ...	1914	3 2-speed	—	£47
Harley-Davidson	1915	7 3-sp. sidecar ..	—	£83
Humber ...	1913	3½ 3-sp. sidecar ..	—	£37
Indian	1914	7 2-sp. sidecar ..	£61	—
,, ...	1914	7 T.T., free eng.	£44	—
,, ...	1915	7 3-sp. sidecar ..	£68	—
Ixion	1914	2½ 2-speed	—	£25
James	1915	4½ 3-sp. sidecar ..	—	£61
Lea-Francis	1913	3½ 2-speed	—	£42
Matchless ..	1914	8 3-sp. sidecar ..	—	£75
,, ..	1913	8 2-sp. sidecar ..	—	£55
New Hudson	1914	6 3-sp. sidecar ..	£61	—
New Imperial	1914	2½ 2-speed	£27	—
,,	1915	2½ 2-speed	£20	—
O.K.	1915	2 2-sp.	£25	—
,, ...	1914	2 2-speed	—	£25
P. & M. ...	1913	3½ 2-sp. sidecar ..	£47	—
,, ...	1914	3½ 2-sp. sidecar ..	—	£59
Premier ...	1914	3½ 3-sp. sidecar ..	—	£40
,, ...	1913	3½ 3-sp. sidecar ..	—	£41
Rex	1914	6 3-sp. sidecar ..	—	£60
Rover	1914	3½ 3-sp. sidecar ..	—	£58
,, ...	1913	3½ 3-sp. sidecar ..	£42	—
Rudge	1914	5 Multi sidecar .	—	£48
,, ...	1913	3½ Multi sidecar .	—	£35
,, ...	1913	3½ Multi	—	£34
Singer	1913	4½ 2-sp. sidecar ..	—	£43
Scott	1914	3¾ 2-sp. sidecar ..	£53	—
,, ...	1914	3¾ 2-speed	—	£41
,, ...	1913	3¾ 2-sp. sidecar ..	£41	—
,, ...	1913	3¾ 2-speed	—	£38
Sunbeam ..	1914	6 3-sp. sidecar ..	£88	—
,, ..	1914	3½ 3-sp. sidecar ..	£61	—
,, ..	1914	3½ 3-speed	—	£59
,, ..	1915	3½ 3-speed	£66	—
Triumph ...	1914	4 3-sp. sidecar ..	£52	—
,, ...	1914	4 3-speed	£45	—
,, ...	1913	3½ 3-sp. sidecar ..	£46	—
Williamson	1914	8 2-sp. sidecar ..	£58	—
Zenith	1914	8 Gradua sidecar	£68	—
,, ...	1914	6 Gradua sidecar	—	£56

The "B.G." on November 25th.

It is ten years since "*The Motor Cycle* Buyers' Guide" was instituted. This year's Guide, in the absence of a show, is to be illustrated, and will form the feature of our issue of Thursday, November 25th.

Success of British Machines in Canada.

At two recent meetings of the Toronto Motor Cycle Club the Brough has distinguished itself. In a hill-climb on September 27th Broughs were first and second in two classes, *i.e.*, the 4 h.p. and 7 h.p. Again at speed tests on October 11th machines of this make secured three first prizes.

Comforts for the Men at the Front.

Among the many calls for comforts and games for men at the Front—a subject we deal with editorially this week—perhaps the most deserving, from the point of view of the readers of *The Motor Cycle*, is a request from the No. 5 Battery, Motor Machine Gun Section, now on active service. The men in this battery say that two or three Primus stoves, to heat Oxo, milk, etc., in the trenches on cold nights would be a godsend.

R.A.F. Brooklands Meeting.

We have received a letter from the hon. secretary of the Royal Aircraft Factory race meeting at Brooklands, in which he says that not a single protest has been sent in by any of the competitors, which is probably a record. No mention was made of prizes till the meeting was over, and then the committee, finding that they had a little cash in hand, decided to spend about £9 on this object, leaving about £3 or £4 to hand over to the War Distress Fund.

The National Relief Funds.

At the week-end the principal relief funds stood as follow:

	£	s.	d.
Belgian Relief Fund (exceeds)	1,045,000	0	0
Weekly Dispatch Tobacco Fund	87,604	0	0
The Times Fund for the Sick and Wounded ...	1,846,856	0	0
The Queen's Work for Women Fund	166,611	9	11
Daily Mirror Nurse Cavell Memorial Fund	3,500	0	0
Daily Chronicle Fund for Christmas Gifts for the Troops	5,156	0	0

"A Masterpiece of Mechanical Paradox."

We have received several criticisms of Mr. Worsdale's article. A selection of these will appear in our next issue.

A "Wavy" Road

Those Birmingham manufacturers who, following *The Motor Cycle* campaign in favour of spring frames, are studying the question, will find a most excellent stretch of road for testing purposes on the Coventry Road near Hay Mills.

When to Reduce Lights.

Is it not time some means of notice were provided on the outskirts of towns and cities showing the point at which lights must be reduced? Several motorists lately in different parts of the country have overstepped the mark in ignorance, which has later led to their appearance at the local police courts.

What Others Miss!

The Motor Cycle can truly claim to be the only paper covering every phase of the motor cycling movement. Not only are new models described and illustrated as they appear, but important trials all over the kingdom are reported by our correspondents. Readers of this journal have recently had accounts of a coast to coast despatch ride, Scotch petrol consumption trial, a Dutch pillion seat trial, a sidecar outing for wounded soldiers in Cape Town, and different Irish events, etc., etc., the majority of which have been dealt with exclusively in these pages. Four pages of last Thursday's issue were devoted to the R.A.F. munition workers' meeting at Brooklands, which attracted 265 entries.

Our campaign in favour of spring frames has produced such remarkable results that other journals who remained silent while *The Motor Cycle* performed the spade work are having to follow on.

More New Models in This Issue.

This week's issue again contains a number of exclusive features. Among the new models, following upon our description of the 6 h.p. twin Brough, the latest Auto-wheel, and the 6 h.p. twin Vindec, we describe and illustrate three new Campion designs for 1916, the latest horizontal Wooler, and an entirely new three-wheeler design by Mr. Alfred A. Scott. This novel two-seater, which is neither a sidecar nor a cycle car, has a twin-cylinder vertical two-stroke engine, shaft drive, and detachable disc wheels.

The Rain at the Week-end.

The projected Kentish hill-climbing tour for lightweight motor cycles at the week-end did not take place owing to the miserable weather conditions prevailing. Three munition workers braved the elements, two of them having worked all night at Woolwich Arsenal. There was a long wait at the meeting place for the conditions to improve, but as the rain still came down pitilessly the event was abandoned.

A Bogus Lieutenant.

John Arthur Cecil Scott, described as an engineer of Hampstead, had ridden his motor bicycle without lights along Rosslyn Hill after dark at a speed of twenty miles an hour, and a mounted constable had galloped after him for a distance of 600 yards before he overtook him. He gave his name as Lieut. Scott, of the Royal Navy, and refused to give further particulars, and then, lighting up, went off at a fast pace. The police at Hampstead said that Scott had no right to wear the Naval uniform, and had already been dealt with at Marylebone for this offence. On the present summons he was fined £5 or one month's imprisonment.

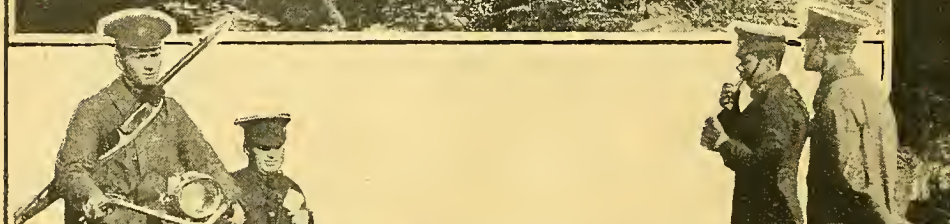
The R.A.C. Reduction of Subscriptions.

At an extraordinary general meeting of the members of the Royal Automobile Club, the Hon. Arthur L. Stanley, M.V.O., M.P., chairman of the Club and president of the Auto Cycle Union, mentioned in his introductory remarks that by retaining the old rates of subscription during the present crisis the Club would run the risk of losing just that class of member which could least easily be spared, and it was most desirable to retain the young, active, and enthusiastic motorist, who could in time to come be relied upon to foster the best interests of the automobile movement.

It was unanimously agreed that the subscription for town members be five guineas, and for country members three guineas. This should result in an influx of many thousands of motorists who had been debarred hitherto from the R.A.C., owing to the comparatively high entrance fee and subscription. It is interesting to note that the entrance fee has been abolished. We are sure that there are many well-to-do motor cyclists, the most enthusiastic of motorists, who will now seize the opportunity of joining the parent body of the A.C.U.

Part of a batch of prospective despatch riders passed by the Editor of *The Motor Cycle* on the 23rd ult. for the Royal Engineers Signal Service. They were tested on their own machines in the Coventry Barracks yard.

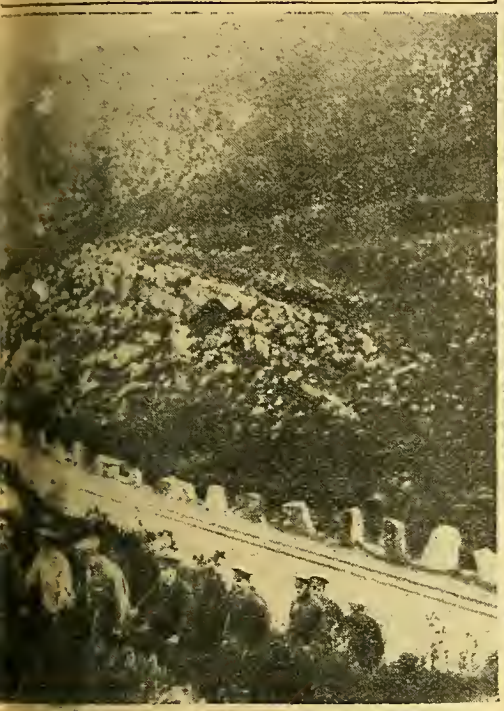
South Afric
Motor Cycle Volu

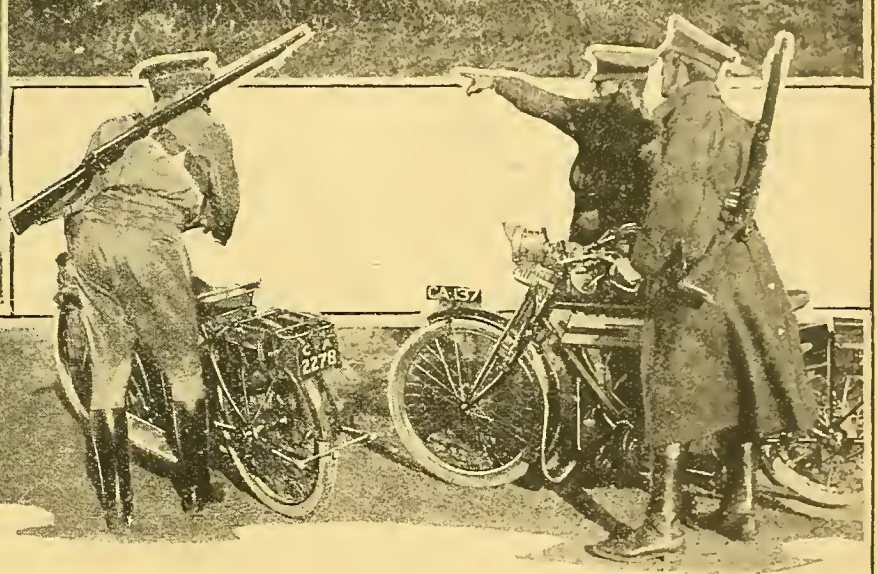


WHAT is more or less the South African equivalent of our motor cycle volunteer corps is the motor cycle troop attached to the Cape Province Training Association. These photographs were taken recently and show Cape Town motor cyclists, who are members of the troop, in training at a week-end camp about forty miles from Cape Town Motor Cycle Troop. The elevated plateau, about 800 feet above sea level, at Smitswinkel Bay. To reach this eminently suitable location a recently opened road has to be followed from Cape Town, and along this proceeds, on Saturday mornings, an advance guard of the Cape Town motor cycle troop. The main body of men follows in

...an ...nteers.

A WEEK-END CAMP OF THE CAPE TOWN TROOP.





the afternoon to find tents pitched and everything prepared by the advance guard.

The surrounding mountains offer opportunities of strenuous training, and, beside motor cycle scouting and other work intimately associated with the motor cycle, the men have rifle practice and infantry training. In this connection it may be mentioned that many of the men, formerly members of this troop, have come home to fight in Europe.

From the illustrations it will be gathered that sidecar machines appear to be as popular for this kind of work as solo machines; they are undoubtedly useful for carrying camp material, etc.

The men look fit and keen, and we wish the Cape Town Motor Cycle Troop every success.

MILITARY NOTES.

NEWS FROM THE FRONT.

WRITING from the Front, Lieutenant Cecil Burney, R.E., tells us that he is very glad to be back again. "The weather," he goes on to say, "is turning very bad now, and the roads are just right for D.R.'s. Bertram Fowke, who used to ride a Blackburne, is out here, but I have not seen him yet. I saw A. Q. Roberts the other day. There are several people out here I have met, or expect to meet shortly, including Rowlandson, Francis (of Lea and Francis), 'Bush' Newsome; in fact, it is quite like Coventry in some ways, with our huge M.T. repair shops here."

SPRING SEAT-PILLARS FOR W.O. MOTOR CYCLES.

IN view of *The Motor Cycle* spring frame campaign, it is worthy of mention that a number of Douglas War Office models on service in France and Flanders have lately been fitted with spring seat-pillars.

A USEFUL WAISTCOAT.

THE cold weather has set in properly in France and Flanders, and Lieut. Philip Grout, in the course of a letter received a few days ago, says he finds his T.T. waistcoat very acceptable. Grout is attached to headquarters with the chief engineer, and says that he is fit and cheerful. He has met S. Garrett, the Regal-Green rider, and now in the A.S.C.

"THE MOTOR CYCLE" 2½d.

THE illustration on this page of Despatch Riders Lander and Thacker was sent us by J. L. Browning, to whose Mechanical Transport column the two riders are attached. Browning says that practically every member of the M.T. units are only too willing to pay the 2½d. demanded by French newsagents for *The Motor Cycle*, which they obtain whilst passing through different towns in the execution of their duties.

SEASONED DESPATCH RIDERS

F. C. Lander (left) and H. L. Thacker, who have been over in France since the very beginning of the war. Both were well-known trade men before the war, Mr. Lander being connected with the British Deperdussin Monoplane Syndicate, and Mr. Thacker with Messrs. Cars and Motor Sundries, Ltd.

BRITISH MOTOR CYCLES FO FRANCE AND EGYPT.

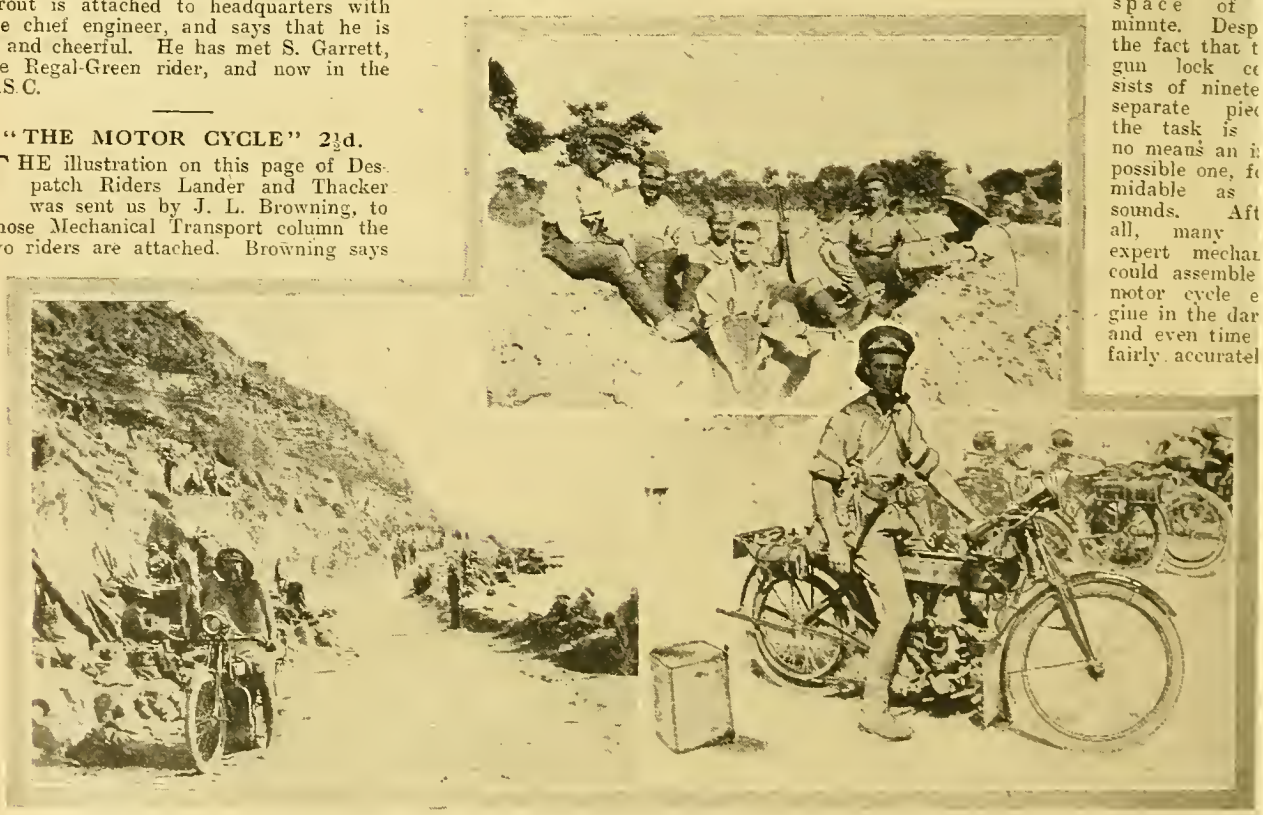
THE Wulfruna Engineering Co. info us that they have just received order for Wolf motor cycles fr the French Government for army use A.B.C. Road Motors have received order to supply motor bicycles to Egyptian Government.

No. 1 BATTERY M.M.G.S

LANCE-CORPL. A. B. WADE (former Zenith rider), who has b on active service for some time, now with the Motor Machine G Section. He tells us that the Sc machines with the No. 1 Battery, which he is attached, are standing bet than one could really hope for. W has met "Scott" Longfield, whom reports in good health, and both are lo ing for the good days and competitic to come.

ASSEMBLING MACHINES BLINDFOLDED.

MEN of the Motor Machine G Service have a very busy ti during training. One of the fi tests a soldier has to pass in the handli of a machine gun is, when blir folded, to build the gun lock in t space of minute. Desp the fact that t gun lock c sists of ninete separate pie the task is no means an i possible one, f midable as sounds. Aft all, many expert mecha could assemble motor cycle e gine in the dar and even time fairly accurate



DESPATCH RIDERS ON THE GALLIPOLI PENINSULA.

Although the use of motor cycles is at present limited on the Gallipoli Peninsula, there are some ready for eventualities. (Top) A group of despatch riders making a dug-out. (Left) A despatch rider coming back from a bathe uses his Douglas. (Right) Corporal Thomas, a Douglas-mounted despatch rider on the Gallipoli Peninsula.

"THE MOTOR CYCLE" RECRUITING SECTION.

Vacancies for Experienced Motor Cyclists in the M.M.G.S.

THE EVOLUTION OF A DESPATCH RIDER.

The upper photographs show prospective despatch riders being tested for mechanical knowledge and riding abilities before being accepted for the R.E. The lower left photograph was taken at a training centre; the back view of the D.R. shows part of his equipment, including the despatch case, while on the left is Sergt.-Major Finnimore, whom most D.R.'s know well. Below, the finished product—riders and their mounts with complete equipment, ready for service overseas.

R.E. DESPATCH RIDERS.

No doubt on account of the Recruiting canvass stirring up eligible men, the number of letters which have been received by the editor from prospective recruits has grown very considerably during the past fortnight. The majority of the applicants seek positions as despatch riders, but, as the South Midland Divisional Area list has swollen considerably during the last week or two, no further applications should be sent to the editor until another appeal is issued.

On Saturday last another examination took place in the Coventry Barracks Square of a score of motor cyclists who desired to enlist in the Royal Flying Corps and the Royal Engineers as despatch riders. Those accepted will be apprised in due course by the authorities.

MOTOR MACHINE GUN SERVICE.

As stated last week a limited number of experienced motor cyclists may now be accepted for the M.M.G.S. without any waiting. Any riders of good physique who have had at least a year's experience and who are desirous of enlisting in this section for the duration of the war should present themselves at the Coventry Recruiting Office on Tuesday afternoon next, the 9th inst., between 2.30 and 4 p.m. The editor of this journal (Mr. Geoffrey Smith), who is inspecting officer, will be in attendance to accept eligible recruits. The M.M.G.S. is the only branch of the Army desiring motor cyclists immediately.

In addition to the vacancies above mentioned, a few experienced car drivers and mechanics who have had experience in motor cycle workshops are wanted.

The undermentioned are among the latest recruits in the M.M.G.S.:

C. Hall.	H. Tillotson.
E. A. Hock.	A. L. Wrate.
J. Kemp.	

Motor cyclists in the Dartford (Kent) divisional area who desire to enlist as despatch riders should apply to the Rev. F. W. Hassard Short, Secretary Motor Cyclist Reserve Committee, 3, Watling Street, Dartford. There are a number of vacancies, and as ten despatch riders have to be furnished every month, it is unlikely that there will be so long a delay in being called up as in the past.

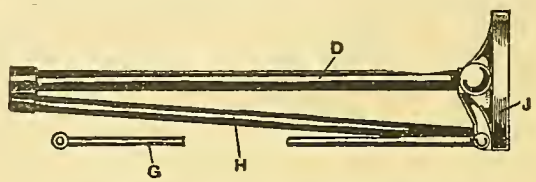
The total number of applications dealt with by the editor of *The Motor Cycle* from motor cyclist recruits totalled 5,064 on Saturday last.

A Scott Three-wheeler Design.

Sidecar or Cycle Car? Novelty Throughout in the True Sense of the Word.

THERE has just been published an interesting patent specification in the name of A. A. Scott, the designer of the well-known two stroke motor bicycle, which gives details of a new design of three-wheeled vehicle. This provides for the carrying of two occupants side by side in a comfortably low position, with considerable capacity for luggage, etc.

At first glance it resembles somewhat a sidecar outfit, but the high vertical frame of the motor bicycle has gone, and in its place is a low tubular structure of



Detail end view of axle showing stiffening strut H.

considerable strength. It will also be noticed that all the wheels are of the "overhung" type. That is to say, there are no forks as used on motor bicycles, the wheels being carried as on motor cars, so that each is easily detachable, and the same applies to its tyres. Another extremely important point is that all the tubular frame members are straight, and the machine is built up of a series of triangular structures of considerable strength. All the tubes are relieved from bending stresses, and are subject only to stresses of compression and tension, and the loads are all supported at the junction of the triangular structures.

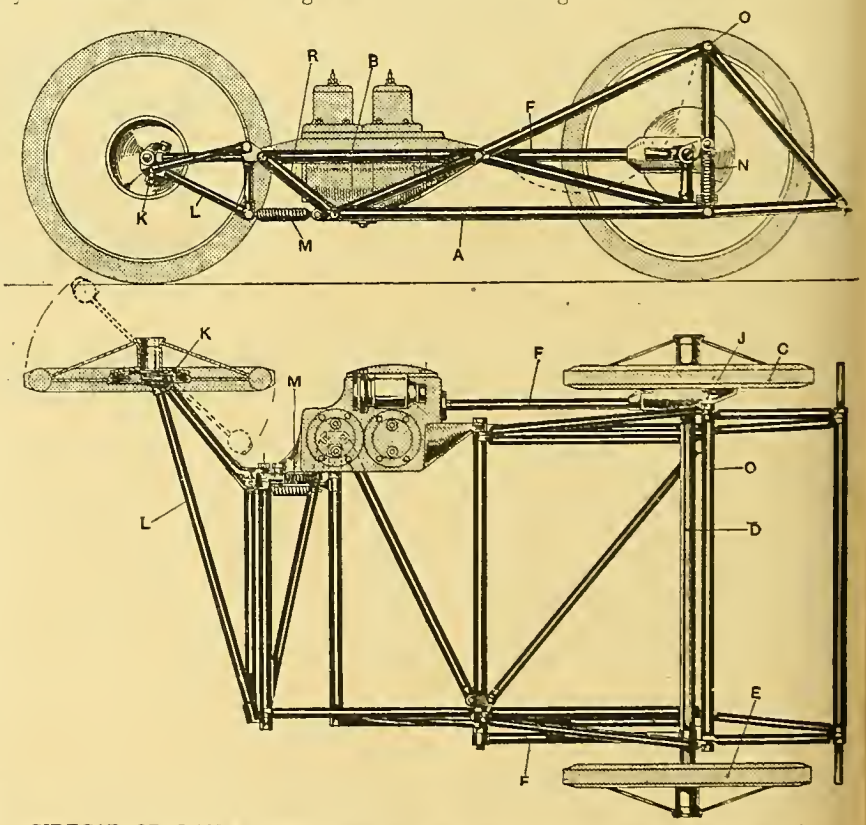
Interesting Frame Design.

In side elevation the frame is seen to comprise two parallel tubes, A and B in the reproduced specification, joined together by angular tubes, so that on the left-hand side two triangular structures are formed of which the members A and B form the bases. On the right-hand side of the frame the smaller triangle is constituted by the engine crank case casting; the two side frames are connected together by straight cross members, and also by diagonal tubes. It is claimed that the engine is prevented from setting up any oscillation on the frame by this method of attachment. The engine drives by a flexible propeller-shaft to the right-hand rear wheel C. This is mounted upon a fixed back axle D, as also is the left-hand wheel E. The axle is connected with the frame and engine by radius rods F, of which the right-hand one contains the propeller-shaft. The axle is also connected laterally with the frame by a transverse radius rod G. As will be seen from the detail end view, the back axle D is stiffened by a strut H, which is connected at one end with the axle and at the other end with the casing J which contains the bevel or other driving gear at the rear end of the propeller-shaft.

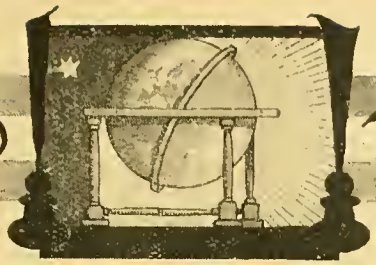
The front wheel swivels about a steering pivot K such as is used on motor cars, and this is supported by a structure L which is triangular both in plan and side elevation. This is pivoted to both sides of the front of the main frame, so that considerable support is afforded. The pivoted front structure L is connected with the main frame by springs M, and the back axle is coupled to the main frame by similar springs N. The main frame is therefore underslung at the back.

There is also a frame extension behind the axle which forms a luggage carrier, and there is a triangular structure supporting the cross member O, from which, as shown in dotted lines, a hammock type of seat can be slung. The footboard is arranged along the member R, so that it will be clear that both occupants are arranged very low down and side by side.

A machine on these lines, with Scott patent disc wheels, has already received exhaustive tests on the road, but until it has passed the experimental stage Mr. Alfred Scott is, perhaps, naturally averse to a full description of the machine appearing. As an attempt to produce a simple and light two-seater, this new design is bound to create great interest.



SIDECAR OR CYCLE CAR? Side and plan views of a new three-wheeler design by Mr. Alfred A. Scott. The engine is a twin-cylinder vertical two-stroke.



LETTERS TO THE EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address

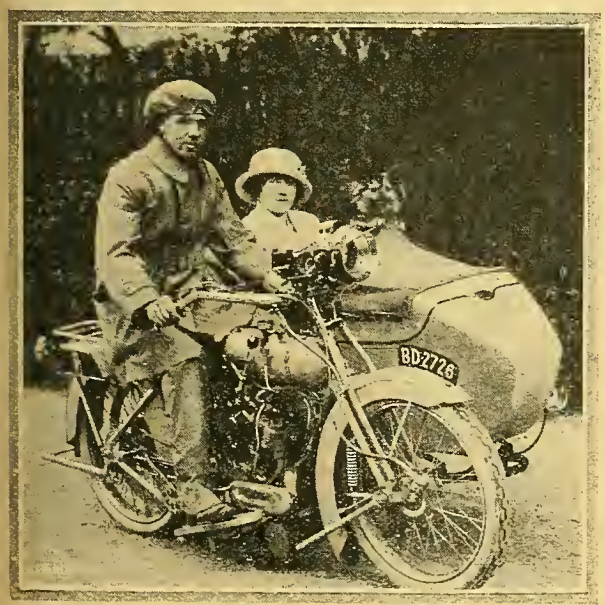
The Modern Sidecar Outfit Compared.

Sir,—I quite agree that there is no question of new engines being inferior to the models of a few years ago. All I suggest is that the new 3½ h.p. outfit, though admittedly more luxurious, is considerably slower than its forerunner of three years ago, both on the level and when climbing. It appears now to be designed for the middle-aged potterer possessed of a wife who insists on having an ostentatious sidecar, and the result is that those who still want speed must either cling to their old mount or run a big twin. The average modern 3½ h.p. combination is too heavy, too complicated, and too luxurious for speed. Till I can get a big twin, I shall stick to my old Bradbury and its shabby sidecar. As for Mr. Davies's B.S.A., it is as much as I can do to keep my three-year old under control when it spots the familiar green tank ahead. Mr. Davies would not have a chance. E. C. PALMER.

Sir,—Surely Mr. E. C. Palmer, in his letter in *The Motor Cycle* of the 14th inst., makes a rather big claim respecting the alleged superiority of his 1912 4 h.p. over the present 3½ and 4 h.p. I have no wish to belittle the performances of his machine, and I also am a believer in the old saw, "Old friends are truest," but I certainly must challenge the statements. I consider I am an average rider, and for the past seven months have driven a 1915 3½ h.p. Sunbeam single.

Now, I have successfully tackled most of the worst hills in Sussex, and with a sidecar and passengers ranging from ten to fourteen stone have never dropped lower than second, with the exception of, say, really bad corners or for some obstruction. All ordinary gradients have been mounted on top gear, and, in spite of that, the petrol consumption, tested carefully with an average 22 stone load, has been 82 m.p.g. The tyres are still in good order after over 6,000 miles, and the chains in perfect condition for the mileage.

I have no interest in the cycle mentioned, and write this only as a satisfied user. Anyway, a chat with "E.C.P." would be interesting, but as he has the pull over me of half a horse-power I had better not challenge him on a 1 in 5 with a head wind. A SUSSEX SUNBEAM.



Mr. and Mrs. Harry Green, of Rushden, Northants, and their 1915 6 h.p. Bat-Canoelet sidecar machine. The Pomeranian is a keen sidecarist—simply won't be left at home, and has already covered 2,500 miles.

Footballs for the Front.

Sir,—I notice an appeal for footballs in your issue of the 21st ult. Will you please allow me space to point out to those who are likely to respond that the boys in or near the firing line are those to whom footballs, etc., should be sent?

Red Cross and other mechanics are paid sufficient wages to provide them for themselves, and ought not to be encouraged to beg of the good-natured people at home.
M. J. HAWKINS.

Condition of Main Roads in Kent.

Sir,—With reference to your road reports of main roads in Kent in *The Motor Cycle* of October 7th, I feel that the paragraph regarding the main road from Gravesend to Chatham is rather misleading. I quite agree that the surface of this particular highway was very rough some weeks ago; but, in my opinion, it is now improved to a great extent, and, as I use this road every day, through all weathers, I can safely speak from experience. There are now only one or two very short patches which could be classed as faulty.
W. W. PINK.

Semi-T.T. Handle-bars.

Sir—It is with great pleasure that I always read your interesting journal, and especially "Ixion's" effort. In your issue of August 12th he writes a very caustic note on the subject of standard handle-bars, and here he has my fullest support. Often after a bad skid I vented my anger on the handle-bars by putting one foot against one and tugging at the other. Needless to say, I never budged them until I scrapped them in favour of a pair of semi-T.T. handles. Then only did I feel safe in mud and sand, which out here is often 6in. deep and extending for from 50 to 200 yards in patches. G.L.K.

Potchefstroom, Transvaal, S.A.

The Lady Motor Cyclist: A Protest.

Sir.—Considerable prominence has been given recently, in the motor cycle press, to the subject of motor cyclists of the fair sex, and the machines they ride.

It must be obvious from some of the photographs published, that there exists some difficulty in obtaining, or disinclination to use, machines which are especially constructed for ladies' use. Presuming this to be correct, I think all who have an interest in the sport and pastime must view this state of affairs with some alarm. I plead "not guilty" to being a prude, but do consider a woman loses her self-respect and the respect of all right-thinking people by some of the exhibitions which of recent years, and more especially recent months, have been thrust before the gaze of the public. I daresay no one, of the male sex, has taken more interest in motor cycling for ladies than I have, and some of my happiest hours, during many years' experience of the pastime, have been spent with clubs which encouraged lady riders who rode ladies' machines.
B.E.F. THE DREADNOUGHT.

Two Independent Brakes.

Sir,—A warning to Harley-Davidson riders. Whilst riding through Garstang on Sunday I was stopped by a policeman, and he enquired if I had two independent brakes. Not knowing the rules, and relying on the machine being complete, I pleaded ignorance, but was reported and fined 10s. I thought I would write you for the benefit of your readers.

A. V. GRIMSHAW.

[In connection with the above, it should be mentioned that the latest Harley-Davidson machines have two independent brakes.—ED.]

Clergymen and the Petrol Tax.

Sir,—I certainly agree with "Ixion" that there are many minor professional users of motor vehicles who are more entitled to consideration *re* rebate of petrol duty than the clerical profession; in fact, I think the latter could make out but a very poor case. These "minor professionals" are generally persons of no greater means, but compelled to a much greater extent to rely on motor propulsion for the rapid and economical performance of their business, and hence the petrol tax bears more hardly on them.

There is, however, very little likelihood of any extension of the rebate system: even the present rebates cause so much trouble and expense that any extension of the system would make any but a high rate tax unprofitable. Even under the present system claims are made on account of doctors' cars, hired-out motors, trade vans, threshing engines, chaff cutters, mangel-wurzel choppers, house lighting, and even travelling ice cream carts (a thermal contrast surely!)

Personally, I cannot see even why doctors should be entitled to rebate any more than the numerous body of "minor professionals" who are users (often compulsorily) of motor vehicles for business purposes. Doctors, as a rule, are certainly as well able to afford the tax as the latter class, and are equally interested in the proper upkeep of the roads. Being a Customs and Excise Officer, however, and having to pay the full tax on all petrol used (even that used in connection with the investigation of these very rebate claims), I am probably biassed on the subject.

CUSTEX.

Engine Rattle in Two-strokes.

Sir,—I have read with interest the article on "Engine Rattle in Two-strokes" by "Oile" in your issue of the 7th inst. I own a 2½ h.p. two-stroke Connaught, and have had the same experience as "Oile," with the exception that the rattle has not yet ceased, neither can I find out the cause. The rattle commenced about two months after I purchased the machine, which is now five months old. When I approach 25-28 m.p.h. the rattle commences, and when I throttle down gradually dies away until a high speed is again attained. I do not find it, however, when the machine is going up hill. I have tried cleaning out the cylinder, fitted new piston rings and plugs without benefit, and I should like to know if any other reader has had a similar experience; if so, whether a remedy has been found?

W.G.E.

Sir,—There is no doubt that the rattle complained of has a cause and also a remedy, but I do not consider it common to two-strokes. It points to faulty carburation or ignition, or both, and these can be got over. My machine is bad for four-stroking at slow speeds or starting, but runs well at anything over 10 m.p.h.

May I give my experience? I bought a 2½-3 h.p. 1914 two-stroke, petroil system, two months ago, and from its appearance it had done some mileage. I overhauled it, cleaned piston and cylinder, brought up the compression, and found all in excellent order. I covered some 350 to 400 miles on it, mainly by twenty-mile runs, but recently decided to go from London to Yorkshire—a day for each way. My outward run was covered at an average speed of 23 m.p.h.; the engine ran grandly, and only once did I have signs of overheating. I climbed all hills on top (5 to 1), although fitted with a three-speed gear. On the return journey I carefully checked the petrol in tank at start and finish, and found the consumption just 1¾ gallons of No. 2 for 220 miles; this is 125.7 miles per gallon—nothing much to complain of—and my average speed worked out at 24 m.p.h.. The engine ran splendidly, and again only had signs of overheating once (at Stamford), no rattle whatever, and between towns ran with wide open throttle.

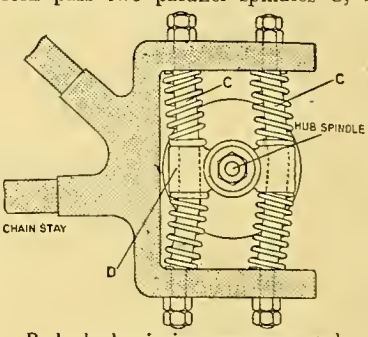
I have Amac, 24 jet, gauze on intake and between carburetter and cylinder, petrol $\frac{3}{16}$in. below jet. I paid attention to air slide to see it opened wide, re-timed magneto, and set it well in advance, but always retard when engine speed falls. The acceleration on opening throttle wide is splendid, without a trace of knock, but I usually open slowly. However, on this trip I took all hills slowly, say 20 m.p.h. to start, and eased up on down grades to give the engine a chance to cool, but drove hard on the level, doing one stretch of nine miles in 15½m. by stop-watch.

My experience thus shows that there are two-strokes which run well, and mine is far from new, though in good condition. The mileage I have covered is about 800, and not once has the engine knocked, and only three or four times has it overheated, and 300 to 400 yards at 12 to 15 m.p.h. have cured it.

WIMBLEDON.

Rear Springing.

Sir,—I enclose sketch of a suggested form of rear springing, or rather back wheel springing. At the rear end of the chain stay and diagonal stay is a large one-piece bracket in the form of a fork. Through the parallel arms of the fork pass two parallel spindles C, slightly curved to form an arc, and secured on the outside of the fork at both ends by lock nuts. Sliding on these spindles is a sleeve D, through the centre of which passes the hub spindle, the latter being of the "knock out" type in order to overcome any difficulties about back wheel removal. Above and below this sleeve, mounted on the spindles, are four stout coil springs.



Back wheel springing system suggested by Sec.-Lieut. W. Austin N. Smith.

It will be seen that the back wheel would have an upward or downward motion, governed by these coil springs, the same arrangement being, of course, on either side of the wheel; the necessary radial motion of the wheel is given by the fact that the spindles C are slightly curved. What seems to me to be a great advantage of this idea is that there would be an absolute minimum of unsprung weight. It should also be fairly rigid laterally, and the shorter and stouter the spindles are, the more this would be the case. It might be made a stiffer job by having the bracket in the form of a rectangle instead of a fork; however, this would hardly be necessary. It seems to me that something after this type might, at any rate, be applicable to light-weight machines, if not to those of the heavier type, and it should be fairly inexpensive to produce.

W. AUSTIN N. SMITH (SEC.-LIEUT.).

Paraffin Motor Cycle Lamps.

Sir,—Your correspondent, Mr. P. W. Johnson, asks about paraffin lamps. Let me strongly advise him, from personal experience, to give up the idea. I had two of the best lamps made a couple of years ago, and they blew out every few yards—literally. A large Holborn firm made a lamp at that time specially for sidecar use, but gave it up. It is not the jolting that causes the trouble so much as the excessive draught, and no arrangement of blocking holes that either the makers or I could try cured it.

EL 1969.

THE MOTOR CYCLE

BUYERS' GUIDE OF 1916 MODELS.

THURSDAY, NOVEMBER 25th!

This issue will be considerably enlarged and will contain an illustrated review of the various new pattern motor cycles.

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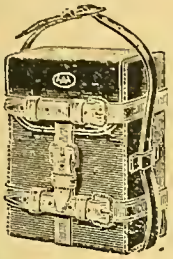

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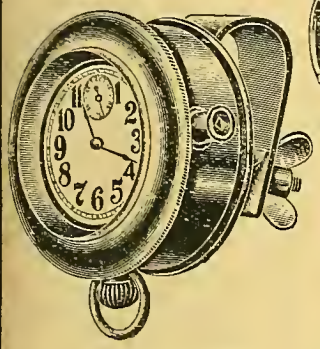

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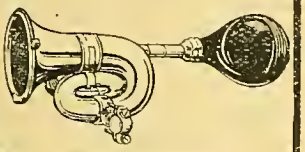

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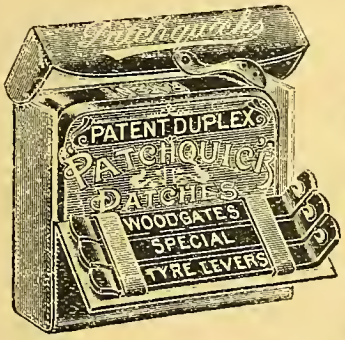

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15/- extra complete.
Can be put on in an hour

All my carburetters are quite automatic, but an extra air lever is fitted, by means of which extra air can be admitted any time or when running downhill with the throttle closed.

I AM ADVISING YOU

IF YOU WILL ACCEPT MY ADVICE YOU WILL

BEWARE OF IMITATORS.

As you will remember two of my competitors have in the past strongly advised that **pilot** jets were not necessary. Now they are fitting their latest productions with them, as they have at last recognised that they are really essential, but this is the important point for **you** to remember: they have copied obsolete designs of mine that I have **abandoned two years ago** in favour of something **much** better. The **BINKS Jet-Damping Carburetter** is patent, and **may not be copied**, and is the last word in carburetter construction. It makes your engine really flexible, and allows it to tick over like a clock when idle and won't race when the clutch is taken out, and on a 3½ Single you can do over **150 miles to the gallon** (see *The Motor Cycle*).

WHY NOT GREATLY IMPROVE YOUR MACHINE BY GETTING ONE TO-DAY?

I send them on a **week's approval**, and return your money, less examination fee, if you are not in every way highly satisfied. These carburetters have caused a **profound** impression, as they really do what no other carburetter can do by reason of their construction. The testimonials I have received are almost embarrassing, and I invite you to send for my testimonial book.

Mr. Robbins, using this carburetter, has won the much-coveted "Manufacturers' Trophy." What higher testimony can be suggested for touring value?

Mr. O'Donovan astonished the world by travelling at over 81 miles per hour on a 3½ Single Norton; no other carburetter would give an equal speed. No matter what make of machine you have, a BINKS will fit and improve it and give you just what you so desire.

ON THE SCOTT. Well, the improvement has to be seen to be believed. With a BINKS carburetter the Scott engine will tick over dead slow when in free and start with one kick.

PETROL

SUBSTITUTE

1/- PER GALLON.

ALL USERS OR PURCHASERS OF MY CARBURETTERS WILL BE ABLE TO BUY THIS WONDERFUL SPIRIT, WHICH IS INDISTINGUISHABLE FROM PETROL AT DOUBLE THE PRICE, ENABLING YOU TO RUN YOUR MACHINE AT HALF COST. WRITE FOR PARTICULARS.

C. BINKS Ltd., Phœnix Works. ECCLES, Manchester.

YOU get a full year's service from whatever date you join the AUTO CYCLE UNION.

JOIN NOW and secure Free Legal Advice, Touring Services, Special Insurance Benefits, Handbook, and many other advantages. **The A.C.U. Insurance Policy** (guaranteed by the Law Accident Insurance Society) provides that disputed claims shall be **settled by the A.C.U. Committee. Free Touring Membership without increase of Premium.**

ENQUIRY FORM. No.....	Make of Machine.	H.P.	Date of Manufacture.	Present Value.	Registered Number.

Please send full particulars to: NAME.....
ADDRESS.....

Address:
T. W. LOUGHBOROUGH, A.C.U., Pall Mall, S.W.

THE WORLD OVER

The British-built L.M.C. has demonstrated its road sovereignty—in reliability, in powerful action, in sureness under seemingly impossible conditions, and in regularity of running. There is not an instance where it has failed to realize the expectations of owners

6 h.p. TWIN, and 3½ and 4½ h.p. SINGLE-CYL. COUNTERSHAFT 3-SPEED GEAR MODELS.

Art List Gratis.

The Lloyd Motor Engineering Co., Ltd.
132, Monument Rd.,
Birmingham.

LMC

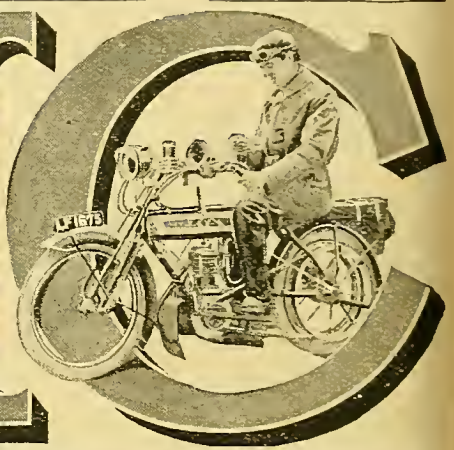
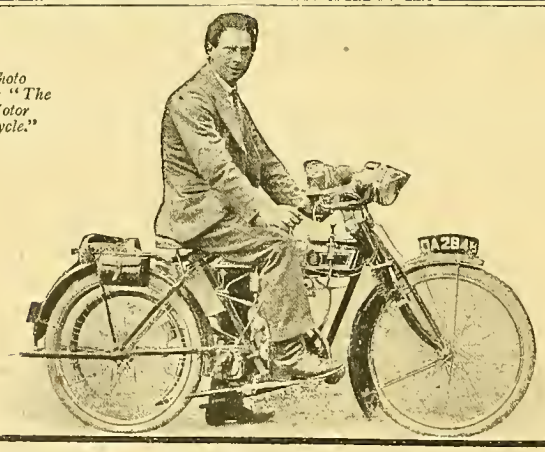


Photo by "The Motor Cycle."



When Nevil Hall on his Little O.K.—

the smallest machine in the trial—put up so remarkable a performance in the 1914 A.C.U. 6 days—

People wondered—marvelled—at its prowess!

They knew that practically half the competitors in that exceptionally arduous event retired—

Yet the O.K. scored a brilliant success

and, believe us, it is still capable of similar performances—above all capable of rendering you a service equally exceptional.

That's why you should ask us for earliest delivery dates of this "big-hearted little Britisher"—do so now.

HUMPHRIES & DAWES, LTD.,
Hall Green Works,
Birmingham.

Delivery to Order in Quantities as usual.

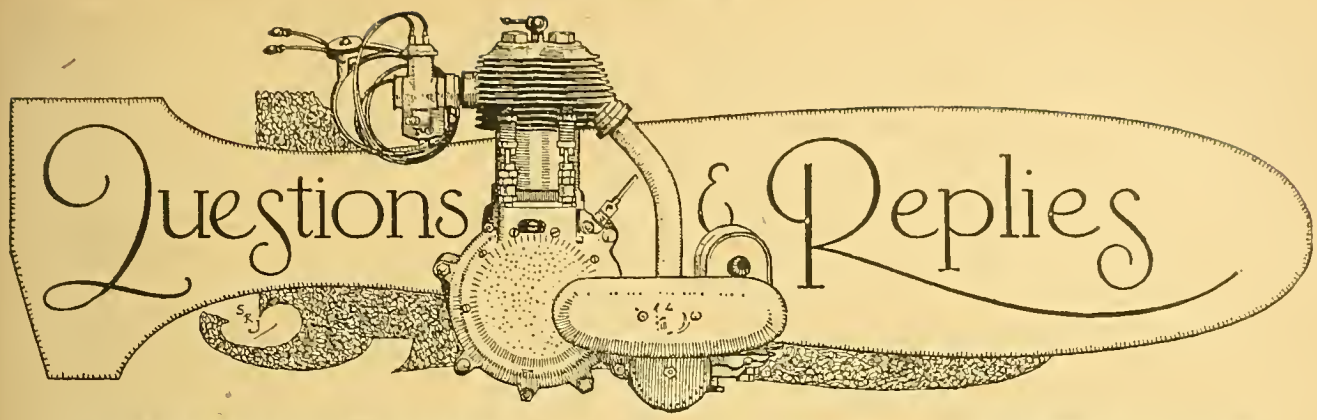
EVERLASTING
SILENT
MAG
ENGINES

500 c.c. 750 c.c. 1,000 c.c.

Spare Parts **ALWAYS** in Stock.

MAG ENGINE CO., LTD.,
Harrow Rd., Willesden Junction, N.W.

Telephone: 1092 Willesden.
Telegrams: "Synouymous (Keusal) London."



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Fitting a Magneto Switch.

I should be obliged if you would let me know if it is possible to fix a magneto cut-out switch to a two-stroke motor cycle, the magneto being a Dixie, and, if so, the best way to set about it.—H.L.G.

There is no difficulty whatever about fitting a magneto switch if you desire to do so. All you have to do is to connect a wire from the terminal on the magneto contact breaker to a switch on the handle-bars. If there is no terminal on the magneto you must write to the makers of the magneto for one.

Electric Lighting by Accumulator.

Do you consider that accumulators are satisfactory for lighting purposes on a motor cycle for head and tail lamp?—A.E.L.

A good accumulator is perfectly satisfactory—see *The Motor Cycle*, April 29th, page 412. The accumulator there referred to has had but one recharge in twelve months. We advise you to get one of 40 ampère hours and to use bulbs which do not require a large discharge, say, .75 ampère for head light and .25 ampère for tail lamp. These will give you ample light if your lamp is a good one and correctly focussed.

Lubrication.

I have a 2¼ h.p. two-stroke, and I wish to know if one may instead of keeping them separate, use petrol and oil combined. If so, what is the proportion of oil to petrol? Unfortunately, the makers do not send the machines out with a sight feed, and in cold weather it is somewhat difficult to know the amount of oil being supplied to the engine.—G.W.

We should recommend you to have a sight feed arranged, so that you can see how fast the oil is going through, in preference to mixing oil with the petrol, which, though satisfactory from the lubrication point of view, is exceedingly messy, as the mixture leaves traces of oil wherever it leaks. The correct proportion is half a pint of oil to a gallon of petrol.

Paraffin as a Fuel.

I have a 3½ h.p. Triumph, and, owing to petrol being so dear, I have been experimenting with best paraffin at 11d. per gallon, and find it works fairly well. Now some of my friends tell me that paraffin is injurious to the engine, etc. I shall be grateful if you will state if this fuel is at all detrimental, and if you would advise me to continue using it or not.—T.D.

Paraffin causes sooting in the engine, and also konking through pre-ignition, and, of course, the latter is always detrimental to the bearings. You will be quite safe in using three parts petrol and one paraffin, provided the engine does not knock.

Fitting a Larger Belt.

I am thinking of fitting a larger size belt on my machine; the present one is a ¾in., and it has bedded down to the bottom of the pulley after about 500 miles, so I thought of fitting a ⅞in. belt. Is there any disadvantage in doing this? The pulley is not worn, neither has any rubber peeled off the belt. The machine is a new one. I understand it will raise the gear a little, but my weight is not much—about nine stone—and I hardly ever use more than half throttle. Do you recommend this alteration of belt?—A.L.

If the belt is really a good fit on the pulley, and does not project too much above it, there is no reason why you should not use a larger belt; in fact, this would be a considerable improvement. It might raise the gear a little, but this would not matter.

Annual Buyers' Guide
OF
THE MOTOR CYCLE
An Invaluable Work of Reference.
This year's Guide will appear in our issue of THURSDAY, Nov. 25th, and illustrations of 1916 Models will form a feature.

Silencer Explosions.

(1.) My motor cycle is sometimes most difficult to start with the kick starter. After three or four kicks it misfires with a bad explosion. Does this harm the engine? (2.) I also want to know the best method of unscrewing a tight nut. The one in question is a small nut on the crank case which holds the bracket of the gear case.—G.H.

(1.) Probably the mixture is rather too weak. At starting the air should be closed and the carburetter flooded. If you use the kick starter several times and the engine does not fire, unexploded charges get into the silencer, so the next time the engine fires one of these is exploded, and this causes the loud noise. It does not do any harm to the engine, but it might possibly blow out the end of the silencer. You might try the effect of a slightly larger jet. (2.) Get a box spanner, or a spanner that exactly fits, which has a long handle to it, and tap it with a hammer. You will then have no difficulty in removing the nut. If you use force with a small bad-fitting spanner you will only burr the nut over.

Carburetter Adjustment.

(1.) Should I be able to run with the air fully open? At present after about seven miles with much air the engine begins to misfire; what causes this? I have an Amac carburetter, 26 jet. Should I try 24 jet? (2.) With Enfield gear 6 to 1, 13 to 1, can I raise the top gear to 4¾ to 1 without altering lower gear? Please explain the method, and would this give higher speed?—I.J.F.

(1.) The trouble is possibly due to a slight obstruction in the jet. Normally, if the carburetter is correctly adjusted, you should be able to run on full air. Of course, a change in temperature might also necessitate running on less air. We do not think a smaller jet would be an improvement. (2.) Yes, you can raise the top gear without altering the low by fitting a larger engine sprocket, as the two gears are separate, there being a separate chain for each. This might give greater speed, but you would not climb so well on top gear.

Changing Gear.

I own an 8 h.p. Williamson combination, fitted with two-speed and free engine, and also pedal-operated friction clutch. (1.) On ascending a steep hill with heavy load, to change down to low gear, what is the correct method—use the clutch or exhaust lifter? (2.) To change back to high gear—use the clutch or exhaust lifter? (3.) Is it advisable to use the clutch to free the engine in order either to stop the machine, not engine, or slow down, say, when meeting a flock of sheep or other obstruction; or is it only intended for starting purposes? (4.) Is the clutch intended to assist you in negotiating traffic by being slipped when you want to stop or slow up without stopping the engine? (5.) Should the neutral position of gears be used at all in driving, or is it only intended for starting purposes and wheeling the machine about?—G.E.H.

(1.) Use the clutch, or change without touching either lever. (2.) Here you may use either method. If you withdraw the clutch, close the throttle right down while the actual change is being effected, so as to take the load off the transmission. The use of the clutch for changing would probably give a quieter and sweeter change. (3.) The clutch could be used to stop the machine, provided you throttle down at the same time, or when you are negotiating traffic. (4.) Certainly the clutch is intended to help you to negotiate traffic, but it should not be slipped unduly, otherwise there may be trouble. (5.) The neutral position must not be used except for starting purposes or when pushing the machine about.

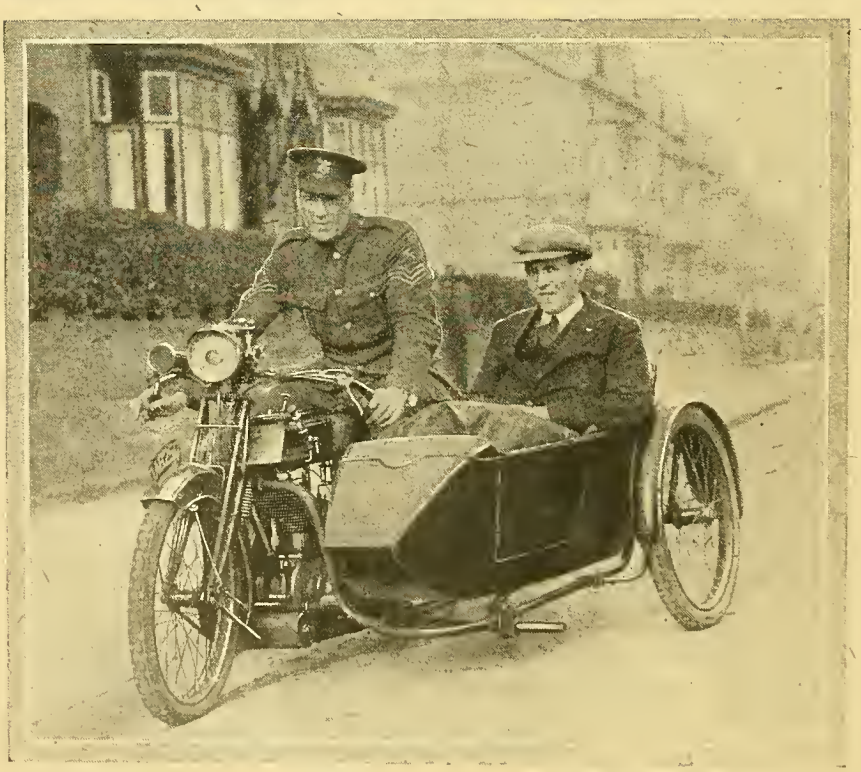
Automatic Inlet Valve Cotter Breaking.

I have a 1¾ h.p. Minerva, and have considerable trouble with the automatic inlet valve, which breaks the cotter-pin constantly in the hole, after travelling a distance of from fifteen to twenty miles. Can you kindly explain the reason for this, and give a remedy?—E.A.N.

You may cure the trouble by fitting a washer over the valve collar. This would have the effect of reducing the lift, consequently the valve will not have so much opportunity for chattering, and the risk of breakage would be minimised. The lift should be about 3/32nds of an inch. See article on "Valve Stresses," published on June 3rd.

READER'S REPLY.

With reference to a letter signed "W.McK." in *The Motor Cycle* of October 21st, I think his trouble of difficult starting and erratic running when cold may be due to the same trouble as I have just experienced on my 3½ h.p. twin with Amac carburetter. My symptoms were as follow: When starting from cold I flooded the carburetter till petrol overflowed, and the engine would then fire in both cylinders for about five revolutions, and then stop dead. I would then push off again, and the same thing would happen. This would go on for about eight starts, when finally the engine would keep running, but missing very badly and occasionally blowing back through the carburetter; after about half a minute of this, the firing would gradually become better, and finally become regular. In addition to this trouble, when on the road, without touching throttle, the engine would sometimes slightly accelerate, and then slow, then accelerate again, and so on. The variations were only slight, but perceptible. On taking down the carburetter I found that petrol overflowed from the jet steadily for no apparent cause, such as needle not seating properly. I then happened to notice that the cap which holds the flooder and spring just touched the top of the needle when the cap was screwed down tight on the top of the float chamber. Removing the cap caused the engine to run perfectly. Perhaps this may be the cause of "W.McK.'s" trouble, or, at any rate, it may be of use to other riders to know that this is a likely cause of irregular working.—D.L.E.



Sergt. (late Bombardier) Wells, heavyweight champion of England, off for a spin on a 1915 Sunbeam.

EXPERIENCES WANTED.

"F.W.W." (Mayo), "C.B." (Gosport), and "F.G.H." (Woolwich). — Douglas carburetter fitted with a Badcock by-pass. Ease of starting and even firing at slow speeds.

"N.C." (Runcorn).—3½ h.p. A.B.C. (touring model). Reliability, consumption, speed, and hill-climbing, solo and with sidecar.

"J.B.J." (Ayrsbire).—3½ h.p. A.B.C. (touring model) and 3½ h.p. Norton (all chain drive). Consumption, reliability, and all-round efficiency.

"R.H." (Andover).—2¾ h.p. two-speed Douglas with light sidecar. Hill-climbing, reliability, and consumption.

"J.B.I.M." (Newmarket). — 3½ h.p. A.B.C. Cost of upkeep, consumption, reliability, and suitability for use in the bush, West Africa.

RECOMMENDED ROUTES.

WALKEN (MANCHESTER) TO BISHOP AUCKLAND.—F.E.

Walken, Bury, Accrington, Burnley, Colne, Skipton, Harrogate, Ripley, Ripon, Leeming, Scotch Corner, Piercebridge, West Auckland, Bishop Auckland.

SOUTHAMPTON TO HOLYHEAD.—C.

Southampton, Winchester, Andover, Ludgershall, Marlborough, Swindon, Cricklade, Cirencester, Cheltenham, Tewkesbury, Worcester, Kidderminster, Bridgnorth, Much Wenlock, Shrewsbury, Chirk, Llangollen, Corwen, Cerrig-y-Drnidion, Bettws-y-Coed, Bangor, Holyhead.

PORTSMOUTH TO SHEERNESS.—W.J.H.

Portsmouth, Cosham, Havant, Emsworth, Chichester, Duncton, Petworth, Wisborough Green, Billingshurst, Five Oaks, Horsham, Crawley, Felbridge, Lingfield, Edenbridge, Sevenoaks, Ightham, Wrotham Heath, Maidstone, Detling, Key Street, Sheerness. Approximately 117 miles.

The Horizontal BROUGH In Toronto

PROVES ITS WONDERFUL EFFICIENCY BY BEATING ALL COMERS.

Toronto M.C.C.'s Hill Climb, September 27th, 1915.

4 H.P. CLASS	500 c.c. BROUGH.	FIRST and SECOND.
7 H.P. CLASS	500 c.c. BROUGH.	FIRST and SECOND.

And later at

Toronto M.C.C.'s Speed Trials on October 11th.

4 H.P. CLASS, 3 miles	500 c.c. BROUGH	FIRST.
4 H.P. CLASS (amateur), 3 miles ..	500 c.c. BROUGH	FIRST
4 H.P. CLASS, 5 miles	500 c.c. BROUGH	FIRST.

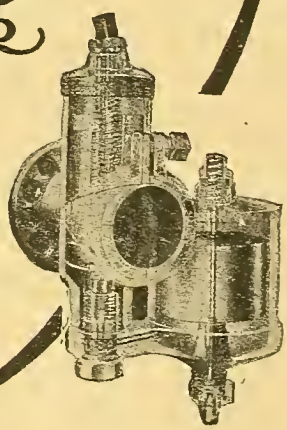
NOTE. The beautiful even pull of the BROUGH ENGINE *at all speeds* is as remarkable as its efficiency is unapproachable. "The Motor Cycle" says: "It runs in an effortless manner usually associated with High-class Cars."

Toronto Representative:
W. J. PORTER, Brunswick Avenue.

W. E. BROUGH & CO., Basford, NOTTINGHAM.

but — You can effect a remarkable Saving in Fuel by fitting

THE **Amac** CARBURETTER



Why not write for our Catalogue which fully describes the most certain method of economising petrol?

Write us to-day.

The ASTON MOTOR ACCESSORIES Co., Ltd.,
Aston Cross, BIRMINGHAM.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to ILIFFE & SONS Ltd., and crossed ——— & Co.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, 2d. will be charged for registration, and three stamped and addressed envelopes must be sent for forwarding replies. Only the number will appear in the advertisement. Replies should be addressed, "No. 000, c/o 'The Motor Cycle,' Coventry"; or if "London" is added to the address, then to the number given, c/o "The Motor Cycle," 20, Tudor Street, E.C.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

Abingdon.

ABINGDON, 1915, 6-7h.p., chain-cum-belt model, little used; £70.—Freeman, Brighton Rd., Redhill, Surrey. [5445

ABINGDON King Dick, 1914, 3½h.p., perfect condition, T.T. pattern, fast, very smart, all accessories; £33.—16, Camden Rd., Wanstead, N.E. [5427

A.J.S.

A.J.S., 4h.p. model, in stock for immediate delivery.—The Morris Garages, Oxford. [X2405

A.J.S., 6h.p., complete with sidecar, just delivered; £95.—Turpins, 22 and 29, Preston Rd., Brighton [0716

A.J.S., 1915, 2¾h.p., 3-speed, cost £66, as new; £50.—Young, 2 and 3, The Parade, High Rd., Kilburn. [5505

A.J.S., 2¾h.p., 3-speed, new August, 1915, little used; nearest offer £49.—Meredith, Tegfan, Dolgelly, Wales. [X2402

1915 2¾h.p. 3-speed A.J.S., Lucas lamp and horn, perfect; £45.—A. M. Siddons, Springfield House, Walsall. [X2185

2¾h.p. A.J.S., new June, 1915, done about 700 miles, lamp, horn, etc.; £48.—Hopkins, New St., Ledbury. [X2327

FOR PRICE AND PROMPTNESS

NONE CAN BEAT

WAUCHOPE'S

The House with Britain's largest stock, famed for quick sales and constant change of Bargains on offer almost daily. Lowest Prices for Cash. Easiest Easy Terms. Instant delivery. Values that satisfy the most exacting. Prices that suit every pocket.

HERE ARE SOME SAMPLE QUOTATIONS.

9938.	3½	h.p. 1915 3-speed **SUNBEAM** ..	£67	10
9944.	3½	h.p. 1909 **TRIUMPH**	£22	10
9946.	3½	h.p. 1912 2-speed **B.S.A.**	£35	10
9953.	2¾	h.p. 1915 2-sp. 2-str. **TYLER** ..	£27	10
9958.	6	h.p. 1909 2-speed **REX**	£28	10
9963.	8	h.p. 1913 **HUMBERETTE**	£67	10
9964.	2½	h.p. 1915 2-stroke **RUBY**	£20	0
9965.	6	h.p. 1914 3-sp. **BAT** and Sidecar	£50	0
9968.	6	h.p. 1914 3-sp. **A.J.S.** Comb'n	£85	0
9910.	4	h.p. 1914 3-sp. **TRIUMPH** & Sc.	£52	10
9928.	8	h.p. 1913 **HUMBERETTE**	£70	0
9925.	3½	h.p. 1913 3-sp. **ROVER** Comb'n.	£42	0
9926.	4¼	h.p. 1914 3-sp. **JAMES**	£45	0
9929.	2¾	h.p. 1915 3-sp. **DOUGLAS**	£50	0
9931.	6	h.p. 1914 3-sp. **A.J.S.** & Sidecar	£73	10
9880.	3½	h.p. 1913 3-sp. **ROVER**	£38	10
9894.	3½	h.p. 1911 **TRIUMPH**	£25	0
9895.	6	h.p. 1915 3-sp. **NEW HUDSON** and 2-seater Sidecar	£57	10
9896.	3	h.p. 1913 2-sp. **ENFIELD**	£35	0
9905.	4	h.p. 1914 3-sp. **TRIUMPH**	£42	10
9823.	2¾	h.p. 1912 2-sp. **ROYAL ENFIELD**	£27	10
9837.	4¼	h.p. 1913 3-sp. **JAMES** Comb...	£45	0
9839.	3½	h.p. 1907 2-sp. **TRIUMPH** & Sc.	£22	10
9840.	3½	h.p. 1911 F.E. **TRIUMPH**	£28	0
9844.	5-6	h.p. **N.S.U.**	£16	10
9847.	4½	h.p. 1915 3-sp. **QUADRANT** and Sidecar	£57	10
9853.	6	h.p. 1914 **ENFIELD** Combinat'n	£67	10
9867.	2¾	h.p. 2-sp. **ENFIELD**	£26	0
9869.	7	h.p. 1915 T.T. roadster **INDIAN**	£50	0
9772.	3½	h.p. 1914 3-speed Water-cooled **HUMBER**	£42	0
9778.	3½	h.p. 1914 3-sp. **NEW IMPERIAL** and Sidecar	£50	0
6421.	3½	h.p. 1908 **MINERVA**	£15	0
6842.	3½	h.p. 1912 F.E. **RUDGE**	£27	10
6863.	3½	h.p. 1910 **BAT**	£20	0
7521.	5-6	h.p. 1911 4-cyl. **F.N.** and Sidecar	£22	10
7708.	3½	h.p. 1908 **N.S.U.**	£15	0
7992.	3½	h.p. 2-sp. **FAFNIR** and coach-built Sidecar	£22	10
8165.	6	h.p. **BAT** and Sidecar	£22	10
8175.	6	h.p. 1913 2-sp. **N.S.U.**	£45	0
8320.	3½	h.p. 1911 **ARIEL**, variable gear.	£20	0
8529.	5-6	h.p. 4-cyl. **F.N.** and Sidecar ...	£45	0
8561.	3½	h.p. **VINDEC** and Sidecar	£17	10
8682.	6	h.p. 1913 2-sp. **V.S.-J.A.P.**	£37	10
8718.	3½	h.p. 2-sp. **FAFNIR** and Sidecar.	£22	10
8802.	7	h.p. 1914 **INDIAN**, with electric starter	£60	0
8832.	1¾	h.p. 1909 **MOTOSACOCHE**	£9	0
9076.	5	h.p. 1907 F.E. **ROC**	£20	0
9423	5-6	h.p. **AUTO-CARRIER**	£37	10
9429.	7	h.p. 1913 **PREMIER** and Sidecar	£57	10
9448.	2¾	h.p. **FAIRY**	£10	10
9449.	8	h.p. 1915 2-seater **SUPER** Car..	£57	10
9542.	2¾	h.p. 1915 2-sp. **SUN VITESSE**..	£33	10
9565.	6	h.p. 1912 **CLYNO** and Sidecar..	£37	10
9597.	6	h.p. **ZENITH** and Sidecar	£37	10
9633.	2¾	h.p. 1912 **PREMIER**, varia. gear	£18	10
9713.	6	h.p. **WALL** Tricar	£67	10
9732.	3½	h.p. 1913 2-sp. **P. & M.**	£45	0

WRITE FOR FULL LIST OF TO-DAY'S BARGAINS OF QUALITY.

NEWEST MODELS. BEST MAKES.

Wauchope's 9, Shoe Lane, Fleet St., London, E.C. 'Phone: 5777 Holborn. Wires: "Opificer, L'don."

LIBERAL EXCHANGE FULLEST GUARANTEE.

MOTOR CYCLES FOR SALE.

A.J.S.

1915 6h.p. A.J.S. Combination, in stock, spare wheel, etc., complete; full retail price.—Cross, Agent, Rotherham. [X2354

A.J.S., 1914, 5h.p., all accessories, speedometer, de luxe Swan sidecar; 70 gns.—Blake, 216, Westbourne Grove, W [5353

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1915 6h.p. A.J.S. Combination, absolutely in stock; this luxurious outfit complete only costs £97/6; exchanges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X1485

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A.J.S., 6h.p., 1913, and Gloria spring wheel sidecar, speedometer, and all accessories, very good order; £50.—Dr. Green, Crescent Road Military Hospital, Crumpsall, Manchester. [5258

1915 A.J.S., 4h.p., 3-speed, interchangeable wheels, sidecar, 3 lamps, horn, speedometer, chain parts, punch, 2 tyres, all spares, little used; cost £92, take £69, genuine bargain.—Thompson, Oakville Av., High Lane, Burslem. [X2332

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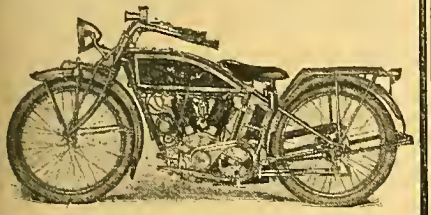

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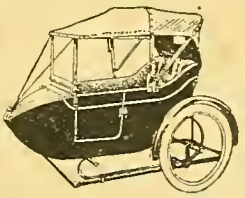

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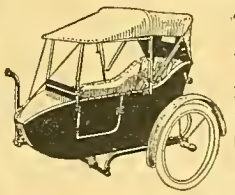

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N.S.U., 2-speed, F.E., twin, spring forks ... **£13 10**
REX, 5½ h.p., twin, magneto, tourist **£15 10**
REX, 3½ h.p., magneto, spring forks **£14 10**
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7 h.p. (American) 1915 **EXCELSIOR** de Luxe, dynamo lighting, electric horn, speedometer, nearly new, not done 200 miles. **£74 10s.** for quick sale. (New price **£90.**)

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MOTOR CYCLES FOR SALE.

Enfield.

3h.p. Enfield, June, 1915, as new, £45, or exchange Sunbeam, P. and M., A.B.C., or good chain driven 1914-15 3½-4h.p., cash adjustment.—Burns, Newbury. [X2227

ENFIELD, 1912½, 6h.p., and coachbuilt; best offer over £40, or exchange 1915 3h.p. Enfield; view appointment.—Burnup, 4, Cardigan Court, Richmond, S.W. [5180

ENFIELD Combination, this year's, special engine, Lucas accessories; would accept lightweight part payment.—C. Allerton, 758, Alum Rock Rd., Birmingham. [X2342

ENFIELD 1913½ 6h.p. 2-speed Combination, 2 lamps, speedometer, 2 spare tyres, tools, etc., splendid condition; £48; after 7 p.m.—47, Vicarage Rd., Camberwell. [5244

ROYAL Enfield, 1914¾, Bosch mag., 2¾h.p., 2-speed, kick start, free engine, chain drive, 2 lamps, horn, Dunlop tyres; 30 gns.—Osborne, 7, Harpur St., Bedford. (D) [X2414

ROYAL Enfields.—Immediate delivery all models at Alexander's, 115, Lothian Rd., Edinburgh. Also a few guaranteed bargains in 1914 and 1915 second-hand Enfields. [5150

ROYAL Enfield 6h.p. Combination, 1914, perfect condition, new covers to all wheels, horn, lamps, speedometer, pan seat, accessories; £65.—W.E.N., 407, Oxford St., London. [X2222

ENFIELD 6h.p. Combination, late 1914, done 3,800 miles, perfect condition, Lucas lamps and horn, speedometer, numerous spares; £65.—Priestley, 9, Gaythorn Rd., Bradford. [X2387

ENFIELD Combination, this year's, Lucas electric light set, speedometer, etc., hood and screen; cost £115, now £87/10, bargain.—Colmore Depot, 31, Colmore Row, Birmingham. [X2383

ENFIELD, 1915, 3h.p., 2-speed, T.T. bars, Dynamo supplying head and tail lights, bought new July, used 500 miles, absolutely as new, all accessories; £55.—Caird, Gables, Gorleston-on-Sea. [X2478

ENFIELD 1915 6h.p. Combination, coachbuilt sidecar, the finest combination made, new, but slightly shop-soiled; special price, £78/10.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [5227

1915 6h.p. Enfield, a lovely outfit, hood and screen fitted by makers, everything spotless, quite equal new; cost nearly £100; only done one real journey; £80; terms if required.—Buntiug, Harrow. [5283

ENFIELD 6h.p. Coachbuilt Combination, 1913, very little used, perfect condition, just overhauled, Lucas lamps, and horn, wind screen, spares; £58.—Holmes, Booteries, Clay Cross, Chesterfield. [X2397

ENFIELD 1913 6h.p. Combination, 2 lamps and generator, mirror, speedometer, watch, horn, spare tyre, tools, and sundry spares; a bargain, £48/10.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [5230

ENFIELD Combination, 1914, 6h.p., 2-speed, coach sidecar, splendid order, complete with accessories; £63, bargain; trial and full examination.—Elce and Co., 16, Bishopsgate Av., Camomile St., E.C. [0552

1914 Royal Enfield Combination, coachbuilt sidecar, 3 lamps, horn, speedometer, 2 new tyres and spare, numerous spares, very little used, new condition; £69.—Bennett, Brierfield, Liverpool Rd., Patricroft. [X2360

ROYAL Enfield Combination, £84; 3h.p. twin, 50 gns.; 2¾h.p. 2-stroke, 38 gns.; immediate delivery all models.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0571

6h.p. Royal Enfield Motor Bicycle and sidecar, 1914, 2-speed combination, property of an officer going to the Front, includes all accessories and speedometer; £67/10; opportunity.—Seen at Wauchope's, 9, Shoe Lane, London. [X2279

ENFIELDS, all models actually in stock.—6h.p. combinations, 3h.p. 2-speed twins, T.T. and touring models, also 2¾h.p. 2-speed 2-stroke.—P. J. Evans, 87-91, John Bright St., Birmingham, controlling district agent. [5398

ENFIELDS, Standard and De Luxe, £84 and £100; delivered now; also 1914 coach combination, speedometer, 65 gns.; special deferred payments if desired.—Lamb's, Enfield Specialists, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5215

1914 Enfield Combination, complete with lamps, horn, speedometer, mirror, watch, sidecar complete with hood and screen, machine in splendid condition; this belonged to an officer, and has not been used since the commencement of the war, except for 7 days; £65.—Julian, Broad St., Reading. 'Phone: 1024. [X2347

Excelsior.

3½h.p. Excelsior, a.i.v., with pulley, good condition; 30/-.—Barlow, Plumber, Mouton, Manchester. [X2409

AMERICAN Excelsior, 1914, 7-9h.p., 2 speeds, free engine, coachbuilt sidecar, all accessories; £50.—697a, Old Kent Rd., S.E. [5296

EXCELSIOR (American) 7-9h.p. 1915 Combination, in exceptional nice order; 50 gns.—Percy and Co., 337, Euston Rd., London. [5304

EXCELSIOR (American), 1915, 3-speed model; delivery from stock; £80; favourable exchange quotations.—Layton's Garage, Bicester, Oxon. [X2258

MOTOR CYCLES FOR SALE.

J.A.P.

J.A.P., 4h.p., 1914, Sturmey-Archer 3-speed, complete; £40; offers.—26, Highbridge St., Waltham Abbey. [5412

J.A.P., 1912, 3½h.p., special racing model, overhead valves, accessories, very fast, splendid hill-climber; £23.—Brynild, 81, Dartmouth Rd., Hendon, N.W. [5209

J.A.P., 5-6h.p., handle starter, F.E., Roc clutch, B. and B., Bosch, Druids, wicker sidecar, 2 new tyres, thoroughly overhauled; £20.—Reid, 41, Grove Vale, East Dulwich, S.E. [5175

Juno.

JUNO V.T.S., nearly new, 2½h.p., 2-stroke; £25.

JUNO-J.A.P., latest model, new, 6h.p., Sturmey-Archer countershaft gear; £78/5/6.

JUNO-VILLIERS, 2¼h.p., 2-stroke, second-hand; £22, or on gradual payments.—Seen at 248, Bishopsgate, London. [5500

Kerry.

1914 Kerry-Abingdon 6h.p. Twin, sidecar, lamps, horn, all perfect order; £55.—Norris, Preston Villas, Yeovil. [X2251

3½h.p. Kerry-Abingdon, Albion clutch, re-done up, splendid order; £20, or offer.—R. White, 16, Prospect Rd., Surbiton. 5188

KERRY 3h.p. Ellison, new, fitted B. and B.; exchange J.E.S. 1¾h.p., good order.—B. D. Micklethwaite, Cumberworth, near Huddersfield. [5527

Lagonda.

4h.p. Lagonda Sidecar Combination, 2-speed, a good, reliable outfit; £20.—Tennant Engineering Co., Pershore St., Birmingham. [X2300

Laurin-Klement.

1911 7h.p. Laurin-Klement, mag. ignition fast; £13.—53, Brownhill Rd., Catford. [5375

Lea-Francis.

1914 Lea-Francis, really excellent condition, property officer abroad; £46.—Box 9,537, *The Motor Cycle* Offices, Coventry. [X2252

LEA-FRANCIS, 1915, with sidecar, J.A.P. twin, 3½ h.p., Lucas lamps, horn, mirror, speedometer, only done 1,400 miles; cost over £84; owner active service; £65.—Perkins, Garage, Paignton, South Devon. [X2221

Levis.

LEVIS, No. 1 model, perfect, lamp, etc.; £26/15.—Sanders, Bridge St., Hitchin. [5481

SEMI-T.T. Baby Levis, new July; £25, including lamps, in good running order.—Hives, 13, George Rd., Guildford, Surrey. [5457

1915 Levis, single, grand condition, lamp, tools, Stewart speedometer, done 300 miles; £25.—Haynes, Honiton, Devon. [5318

LEVIS, 1914, 2½h.p., semi-T.T., horn, lamps, spare Hutchinson, tools; £21.—P.H., 120, St. Ann's Rd., Stamford Hill, London, N. [5292

1915 Levis, 2¼h.p., Popular model, absolutely in stock; £28/1; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6410

LEVIS, Levis'—Popular £28/1, and No. 1 model £36/17, in stock; cash or easy payments.—Alexander's, 115, Lothian Rd., Edinburgh. [5147

LEVIS, 1915¾, 2¾h.p., 2-speed, model de luxe, done 300, as new, all accessories; cost £53, first £38 secures.—A., 23, Market Place, Kingston. [5308

2¼h.p. 1914 Levis, tubes, tyres nearly new, lamps, speedometer, all accessories, beautiful machine; bargain of the week, £21.—69, Ridge St., Watford. [X2299

LEVIS 2-stroke Motor Cycles, latest 1915 models.—Sole London and district agents, Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent. [0711

LEVIS Popular, 1915, ridden approximately 500 miles, £26, bargain; also 1916 Populars and No. 1's; special deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5220

L.M.C.

L.M.C. Combination, new; £65/10.—Colmore Depot, 31, Colmore Row, Birmingham. [X2343

Martin.

MARTIN-J.A.P. Motor Cycles, new 1916 models, from stock. 2¾h.p., single gear, £32/10; ditto, fitted with 2-speed Enfield gear, £37/10.—Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., W.C. 'Phone: Regent 1432. [5200

Matchless.

1915 3½h.p. T.T. Matchless, special model; £54.—22, Gilmore Rd., Lewisham. [5379

1913 7h.p. Matchless, Canolet sidecar, all accessories; £55, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0721

4h.p. Matchless, 1912, P. and M. 2-speed, F.E., new Millford sidecar, lamp set, horn, good tyres; bargain, £26.—Smith, 762, Forest Rd., Walthamstow. [5249

MATCHLESS, 1911, 7h.p. twin, J.A.P. 2 speeds and F.E., Bosch, B. and B., coach sidecar, drip feed lamps, etc.; 35 gns.—101, Devons Rd., Bow, E. [5443

MATCHLESS Combination, 8h.p. J.A.P., 2 speeds, coachbuilt, splendid condition; £48.—Swayne's Garage, 530b, High Rd., Goodmayes. 'Phone: 763 Ilford. [X2415

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A.J.S. 4 h.p., twin, 3-speed.
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3½ h.p. twin, 3-speed, countershaft gear.
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2-stroke, 2¼ h.p., 2-speed.
2¾ h.p. J.A.P., 2-speed.
ENFIELD.
2-stroke, 2¼ h.p., 2-speed.
Model 140, 3 h.p., 2-speed.
6 h.p., coach-built combination.
6 h.p. Combination, with dynamo lighting.
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3½ h.p. twin, 3 speeds.
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4-5 h.p., clutch model, Gradua gear.

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SECOND-HAND MACHINES.

Completely Overhauled and Guaranteed Perfect.

DOUGLAS, 1913, 2¾ h.p., T.T., 2-speed.... £33
TRIUMPH Junior, 1915, 2¼ h.p., 2-stroke, 2-speed, head lamp, tail lamp, and horn £40
TRIUMPH, 1912, 3½ h.p., clutch model £33
TRIUMPH, 1913, 3½ h.p., clutch model £37
TRIUMPH, 1914, 3½ h.p., T.T. roadster, Cowey speedometer, Lucas head lamp, and horn £38
TRIUMPH, 1914, 4 h.p., 3-speed model, head lamp, horn, and back lamp £46
TRIUMPH, 1914, 4 h.p., 3-speed, lamps and horn, and MILLFORD CORVETTE SIDECAR £56
HUMBER, 1913, 3½ h.p, 3-speed, Lucas lamp set, Lucas horn, Cowey speedometer, back lamp, and MILLFORD CORVETTE SIDECAR £48
BRADBURY, 1912, 3½ h.p., 2-speed gear, head lamp, back lamp, horn, Cowey speedometer, and MONTGOMERY SPRING FRAME SIDECAR £32
RUDGE MULTI Combination, 1913, 3½ h.p., coach-built, fitted with hood and screen £48
A.J.S., 1912, 6 h.p., 2-speed countershaft gear, head lamp, horn, and rear lamp . £40
ROYAL ENFIELD Combination, 1914, 6 h.p., coach-built, head lamp, horn, speedometer, exhaust whistle, etc. £65
P. & M., 1914, 3½ h.p., 2-speed gear, Lucas head lamp, back lamp, and horn £46
AUTO-WHEEL, 1913, 1 h.p., nearly new . £9
A.C. SOCIABLE, 1913, 6 h.p., de Luxe model, hood, screen, side brakes, lamps, and horn £45

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MOTOR CYCLES FOR SALE.

Matchless.

MATCHLESS Combination, 1914, 6B. model, 7h.p. M.A.G. engine, Lucas lamps and horn, Jones speedometer, perfect condition; £68.—Wooding, Dover, Stafford. [X2315

MATCHLESS, 1914, T.T., 3½h.p. J.A.P., overhead valves, 3-speed, Binks 3-jet carburetter, U.H. mag., aluminium rims; £48.—Stewart, Gables, Gorleston-on-Sea. [X2477

MATCHLESS, 1912, 6h.p., excellent condition, 2-speed V.S. gear and clutch, just overhauled, lamps; £30.—Capt. Miles, R.M.L.I., H.M.S. Impregnable, Devonport. (D) [X1302

1913 Matchless, 8H, 2-speed, with Matchless sidecar, as new, not soiled, owner unable to use same owing to ill-health; offers wanted. — Millard's Motors, Guernsey. [4964

MATCHLESS 7-8h.p. Combination, 2-speed, chain, speedometer, F.R.S., Lucas lamps, screen, overalls, spares, excellent condition; £48. — Stevens, Addington, near Malling, Kent. [5321

MATCHLESS, late 1913, 6-8h.p. J.A.P., 6-speed Gradua gear, T.T. handle-bars, lamps, etc., unused since outbreak of war, splendid condition; £50.—Chandler, Abbotsfield, Kenilworth. [X1744

MATCHLESS-J.A.P. Combination, 3½h.p., free, 2 speeds, wicker sidecar, Watford speedometer, long horn, lamp set, tools, new John Bull and Skew tyres, generator, spares; £30.—Smith, 18, High St., Slough. [5408

MATCHLESS and cane sidecar, 1913-14, 8h.p., 2-speed, and F.E., semi T.T. handle-bars, kick starter, King of the Road lamp set, 2 electric lamps, speedometer, Lucas horn, spares, etc., recently overhauled; £50, or exchange lower combination.—23, Skinner St., Clerkenwell, E.C. [5401

Minerva.

5h.p. Twin Minerva Motor Cycle; £8/15.—66, Greyhound Lane, Streatham, S.W. [5289

Moto-Reve.

MOTO-REVE, 2½h.p., mag. (as new); lowest £9.—Collins, Ford St., Harlow. [X2163

MOTO-REVE Twin, 1912, 2¾h.p., must sell; £9/10; joining up.—Welch, 37, Edgware Rd., W. [5238

Motosacoche.

MOTOSACOCHE, 2½h.p., mag., Druids; £9.—Write for particulars, 25, Victoria Sq., Newcastle. [X2162

MOTOSACOCHE 3½h.p. Twin, 2-speed model, £60.—In stock at Alexander's, 115, Lothian Rd., Edinburgh. [5148

1912 2h.p. Motosacoche, Druid forks, mag., just overhauled, fine appearance, perfect, very nice machine; sacrifice £12, or near.—Alfred Proctor, Chepstow. [X2508

MOTOSACOCHE, 1914, 3½h.p. twin M.A.G. engine, De Lissa valves, 2 speeds, kick starter, just overhauled by makers; £35.—Trechman, 27, Langland Gardens, Hampstead. [5202

MOTOSACOCHE, 1913, 3½h.p. twin, Enfield gear, chain drive, lamp, horn, tools, etc., exceptional acceleration; owner at Front; sacrifice, £25, no offers.—Grove Garage, Eastbourne. [5178

MOTOSACOCHE, late 1913, 3½h.p. twin, M.A.G., 2-speed, free engine, new B. and B., variable, new Brooks, T.T. bars, perfect order; owner shortly proceeding on active service; £34, near offer.—Smith-Masters, 98, West St., Dunstable. [X2268

New Hudson.

1913½ New Hudson, 3 speeds, and sidecar, complete; £33, offers.—26, Highbridge St., Waltham Abbey. [5413

NEW Hudson, late 1913, 3-speed, perfect condition; a bargain.—Lea, 20, Fernhead Rd., Paddington. [6581

2¼h.p. New Hudson, 2-stroke, 2-speed model, in extra good condition and running order; price £32/10.—Wauchope's, 9, Shoe Lane, London. [X2284

NEW Hudson, 1913, 3 speeds, new tyres and belt, first-class running order, lamps, etc.; £27/10.—Robinson, Jack Lane Potteries, Hanslet. [X2184

1914 6h.p. New Hudson Combination, 3-speed, clutch, kick start, just overhauled; £60.—Box 9,550, *The Motor Cycle* Offices, Coventry. [X2502

1914 6h.p. New Hudson, perfect order, 3-speed, free engine, kick starter, all accessories; £48; owner in France.—Gay, Eastbrook End, Romford. [X2480

1912 New Hudson, 2¾h.p., 3-speed Armstrong and clutch, renewed February, P. and H. head light, rear light, horn, etc.; £25.—Mole, Dawley, Salop. [X2161

NEW Hudson, 2-stroke, from £36; all models from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0603

NEW Hudson, 3½h.p., 1912, 3 speeds, sidecar, lamps, speedometer, spares, just overhauled; £33.—Garty and Wade, Balham Hill, or Owner, 101, Narbonne Av., Clapham Common. [5337

4h.p. New Hudson and Mills-Fulford Coachbuilt Sidecar, 1913-1914, 3 speeds and clutch, excellent condition throughout; any trial; £40.—Ling, 35, Ditchling Rd., Brighton. [X1567

NEW Hudson, 1913, 3½h.p. J.A.P., 3-speed, clutch, Phœnix 1914 17 gn. sidecar, perfect condition, tools, lamps, new belt, 30/- electric horn; £40.—119, Tayhridge Rd., Clapham, S.W. [5444

MOTOR CYCLES FOR SALE.

New Hudson.

NEW Hudson, 3½h.p., countershaft 3-speed gear; £63; delivery from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0570

6h.p. New Hudson, 3-speed, and free engine model, fitted with a 2-seat coachbuilt Bowser sidecar, speedometer, lamp, Lucas rear light; the complete turnout, £57/10.—Wauchope's, 9, Shoe Lane, London. [X2285

NEW Hudson, 1913, 3½h.p., 3-speed, free engine, nice coachbuilt sidecar, heavy tyres, speedometer, 2 gas lamps; bargain, accept £29/10 cash; buying lightweight.—Clarke, Furnisher, 11, Earl St., Northampton. [X2525

NEW Hudson Big Six Combination, 1914 model, enamelled French grey, perfect condition; a bargain, through officer leaving for active service; can be seen in London.—Address, Mr. Baxter, 9, Eldon St. House, E.C. [X2153

NEW Hudson Models, A £29/10, O 2-speed £36, De Luxe £40, E semi racer £31, in stock; Big Six early November, £90/8; special deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5223

4h.p. New Hudson 1913½ Combination, 3-speed Armstrong, Millford Corvette, Cowey, lamp, horn, Ding-dong, back-rest, knee-grips, Terry links, decompressor, spare, cover, tube, valve, belt, new condition; £46; evenings.—48, Norfolk Rd., Seven Kings. [5339

NEW Hudson, 1912¾, 4h.p., Colonial model, grey, 1914 coachbuilt sidecar to match, disc wheel, 3-speed, clutch, speedometer, Miller's lamps, large horn, knee-grips, exhaust whistle, nearly new tyres, belt, spares; £39.—Kerry, Sylvan Av., Brooklands, Cheshire. [X2223

New Imperial.

NEW Imperial-Jap, 1915, 2 speeds, all accessories, used one month only; £29.—7, Surbiton Rd., Kingston. [5279

NEW Imperial, 1915, latest model, just received. 2½h.p., 2-speed; £36/15.—Layton's Garage, Bicester, Oxon. [X2265

4¼h.p. New Imperial-Precision Combination, 3-speed, spare cover, speedometer, lamp, horn; £45, offers.—C. Harrold, Castle Cary. [X2456

1914 New Imperial-Jap, 2½h.p., 2-speed, good condition, climb anything; £26.—Bellwood, 100, Falsgrave Rd., Scarborough. [X2331

NEW Imperial-Jap, 1915, single speed, perfect condition, all accessories; £23; seen after 6 p.m.—10, Kent Gardens, Ealing. [5317

NEW Imperial-Jap Light Tourists, both models in stock, with and without clutch and kick starter.—Crow Bros., 190, High St., Guildford. [4596

NEW Imperial-Jap's, 1915, new machines, for delivery from stock; 2-speed models £36/15.—Wauchope's, 9, Shoe Lane, Fleet St., London. [X2298

1915 2¾h.p. New Imperial J.A.P., 2-speed, actually in stock; price 35 gns.; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6408

NEW Imperials in Stock for immediate delivery, light tourist, kick-starter, and ladies models; prices from 35 gns.—P. J. Evans, Birmingham and district agent, 87-91, John Bright St. [5399

NEW Imperials.—The finest value in British motor cycles, with J.A.P. engines and countershaft gears, built on car lines; prices from 35 gns., and delivery from stock.—The Colmore Depot, 31, Renshaw St., Liverpool. [6419

1914 New Imperial-Jap, 2¾h.p., 1915 frame, 2-speed, Dunlop studded tyres as new, appearance and condition perfect, easy starter, good hill-climber, splendid machine; £27/10.—Fernside, Shepherd's Lane, Dartford. [X1737

1915 New Imperial-Jap, 2-speed, lamp, horn, etc., all in beautiful condition; owner going to Front, must sell at once; machine cost £40, and is honestly worth £35, great bargain, 27 gns.—Owner, c/o Julian, Broad St., Reading. 'Phone: 1024. [0736

3½h.p. 1915 New Imperial-Jap, 3-speed countershaft, clutch, kick start, Dunlop heavy tyres, T.T. bars, complete with Millers lamp, rear lamp, horn, and speedometer, only 3 months old, mileage 1,800; £55; exchange entertained.—Ideal Cycle Co., Thundersley, Essex. [5341

New Ryder.

NEW RYDER-J.A.P., 2¾h.p., latest 1915 model, brand new, countershaft 2-speed, Amac carburetter, Dixie mag., Avon tyres, Empire de Luxe saddle; list price £36/15, first reasonable offer accepted.—Bryon, 4, Park Terrace, Southend-on-Sea. [5407

Norton.

1914 3½h.p. 3-speed Norton, excellent condition; £48.—Parker and Son, St. Ives, Hunts. [5472

1915 Norton, 3½h.p., T.T., Philipson pulley, absolutely in stock; £54; exchanges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X1486

NORTON 3½h.p., semi T.T., new Sturmey-Archer hub and clutch, very fast; £32/10, no offers.—To be seen, Alperton Garage, Church Rd., Hanwell. [5405

NORTON, the Big Four, 3-speed countershaft gear, chain drive, £68/15/6; in stock for immediate delivery.—Alexander's, 115, Lothian Rd., Edinburgh. [5149

LAMB'S

NEW MACHINES ACTUALLY IN STOCK.

JAMES, 1916, 4½ h.p., combination	£78 13
B.S.A., 1916, model K, belt-cum-chain, 3 speed	62 0
ENFIELD, 1915, combination	84 0
Also electric model	100 0
INDIAN, model C, sidecar to suit, 14 and 22 gns.	78 0
NEW-HUDSON, model C, 2-stroke, 2-speed, lightweight	38 0
Model A	29 10
Model E	31 0
HARLEY-DAVIDSON, model F	78 5
Model J, electrically equipped	88 13
All pre-Budget models now sold,	
SUN de Luxe, 2½ h.p.	29 8
CALTHORPE, 2-speed, 2-stroke	31 7
2-str., single sp.	£27 14 8
Jap 2-speed	£38 15
Single speed	20 15
ALLDAY'S ALLON, 2-sp., 2-stroke	38 17
Single sp., 2-str.	31 10
IMPERIAL-JAP, 2-speed, if with variable magneto, 2s/- extra	35 gns.
CONNAUGHT, 2-stroke, standard models, 2¾ h.p., semi T.T. bars	£35 3
WOLF, 2¾ h.p., 2-stroke	25 8
LEVIS, No. 1's	35 17
Populars	28 1
ARIEL, 5-6 h.p., combination	90 18
HUMPHRIES & DAWES, O.K. mark 4 junior	31 gns.
NEW-HUDSON de Luxe, 2-speed	£40 0

SECOND-HAND OUTFITS FOR SALE.

HARLEY-DAVIDSON, 11J, elec. equipped, 7-9 h.p., Bramble sidecar, nearly new	£85 0
ARIEL, 3½ h.p., 1913, 3-speed, Swan sidecar, very good order	38 10
TRIUMPH, 1913-4, clutch model, fine condition	37 10
BAT-JAP, 1913, 8 h.p., 2-speed, coach combination	50 0
F.N., 1914, 7 h.p., 2-seater sidecar, speedometer, ridden only 1500 miles, D.A. lighting set	75 0
TRIUMPH 1911, fixed gear model	23 10
INDIAN, 1914, clutch model, T.T. bars, Lucas horn, large Miller lamp set	50 gns.
CLYNO, 1914 3-speed combination, 2-seater, sidecar accessories, ridden week ends only	£69 10
SUNBEAM, 1915, 8¾ h.p., 3-sp. combination, electric and Stewart horn, genuine Sunbeam sidecar	75 0
ENFIELD, 1914, 6 h.p., with Cowey speedometer	65 gns.
TRIUMPH, 1914, 3-sp., all accessories, fine condition	£45 0
WOLF-JAP, ridden only 700 miles	22 gns.
LEVIS, Popular 1915, ridden approx. 700 miles	£24 10
CONNAUGHT, 1915, 2-seater, ridden approx. 400 miles	30 gns.
CHATER LEA, 1912, Jap, 6 h.p., 2-speed, Premier coach sidecar, all red finish	40 gns.
CHATER LEA car, 8 h.p., 3-speed, water-cooled, hood, screen	90 gns.

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MOTOR CYCLES FOR SALE.

Norton.

NORTON, 1912, 3½h.p., horn, lamp, speedometer, all tools, tyres new, belt good, perfect running order; £25, or near offer.—Plough Garage, Clapham, S.W. [5459

3½h.p. 3-speed 1914 (delivered 1915) Norton, with superior 16 gn. coachbuilt sidecar, in new condition, run 1,200 miles; lowest £55.—Seen at Sanders, Bridge St., Hitchin. [5479

1915 Norton Big Four, Sturmey-Archer 3-speed countershaft, chain and belt, absolutely in stock; £64/10, plus 5%; exchanges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X1487

N.S.U.

N.S.U., 3h.p., Bosch, good order; £8; trial here.—21, Tindal St., Chelmsford. [5263

N.S.U., 3½h.p., spring forks, adjustable pulley, perfect order; £12.—A.W., Hillview, Hartford. [X2178

N.S.U. 2h.p. Lightweight, done only 500 miles; cost £35, accept £19.—21, Tindal St., Chelmsford. [5275

1914 N.S.U., 4h.p. twin, C.B. combination, run 1,000, perfect; £35; part exchange lightweight.—4, Stag Lane, Edgware, N. [5247

N.S.U., 1910, 3h.p., 2-speed, spring forks, mag. ignition, good running order; £15.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0481

N.S.U., mag., 2¾h.p., good tyres, tubes, and belt, first-class order, do 40 m.p.h.; trial given; must sell; £17, or near offer, first cheque.—Barnes, 5, Gordon Rd., Lea Rd., Waltham Cross, Herts. [5197

N.S.U., 6-8h.p. twin, 2-speed gear, large coachbuilt sidecar, car size tyres, full equipment, an exceptional outfit, in new condition; £45.—Tuke and Bell, Ltd., Motor Department, Carlton Engineering Works, High Rd., Tottenham, N. [4140

N.U.T.

1914 8h.p. N.U.T. 3-speed Combination; £62.—53, Brownhill Rd., Catford. [5371

O.K.

1915 O.K. Junior, 2-speed, done 500 miles only, complete; £27.—Cross, Jeweller, Rotherham. [X2353

O.K. Junior, 2-speed, Mark III; £33/1/6.—In stock at Alexander's, 115, Lothian Rd., Edinburgh. [5157

O.K., 2h.p., 2-speed, 1915, Druid forks and mudguards, capital condition; £22.—Millard's Motors, Guernsey. [4962

O.K. Junior, 1915, in splendid condition, very little used; 23 gns., great bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X2346

O.K. Junior, 1914, 2h.p., 2 speeds, lightweight, new double girder, Druid forks, new belt; £23.—Lambert, 6, Hawthorn View, Chapel Allerton, Leeds. [X2394

Omega.

OMEGA, 2¾h.p., single gear, good; £20, no offer.—21, Tindal St., Chelmsford. [5271

OMEGA, 3h.p., 1915, 2-stroke, 2 speeds, lamps, speedometer, etc., as new; £30.—3, Carson Rd., W. Dulwich. [5335

OMEGA, 3h.p., 2-stroke, 2-speed, all accessories, cost £40, September, perfect condition; sacrifice, £25.—Elliott, 19, Shakespeare Rd., Hanwell. 'Phone: Paddington 4193. [5309

P. and M.

P. and M. Combination, numerous accessories; 39 gns., immediately. — Hill View, Augusta Place, Leamington Spa. [X2400

P. and M., 1914¾, coachbuilt sidecar, screen, hood, excellent condition; £53/10.—Capt. Jones, Sonth Staffords, Lichfield Barracks. [5367

P. and M., kick-start, spare wheel, forks, gear, chains, etc., 2-note horn, Lucas set, 2 badges; £31.—Box 9,538, *The Motor Cycle* Offices, Coventry. [X2399

P. and M., 1913, 2-speed, kick starter, Millford coachbuilt sidecar, 3 lamps, tyres as new, splendid condition; £46.—Stopher, Jewry St., Winchester. [5435

1912 P. and M., 3½h.p., 2-speed, kick starter, sidecar, 3 almost new best Avon tyres, acetylene lamps; £35.—Vallings, 5, Ethelbert Rd., Bromley, Kent. [X2357

P. and M., 1914, and coachbuilt sidecar, in splendid condition, complete with Lucas lamps, horn, Cowey speedometer, and £5 insurance policy; £48/10, no offers.—The Walsall Garage, Walsall. [X2426

£18.—3½h.p. P. and M., best machine made, 1910, 2 speeds and free, renovated by makers, all accessories, and quite ready for service; Montgomery sidecar to fit, £3 extra.—Arthur Stanbury, Liverpool. [X2380

Peugeot.

6h.p. Peugeot and Mills-Fulford sidecar; bargain, £23.—Rev. Bell, Hillside Rd., Colwyn Bay. [X2336

PEUGEOT, 3½h.p., free engine, good condition; £30.—Write, Box 9,544, *The Motor Cycle* Offices, Coventry. [X2330

PEUGEOT and Sidecar, 3½h.p., 1912, N.S.U. speed gear; £32; good condition.—Clowes, 27, Church Rd., Willesden. [X2317

PEUGEOT, 7-9h.p., wicker sidecar, N.S.U. 2-speed, Bosch, Druids; £25.—Seen at Mid-Surrey Motor Garage, Addlestone. [5298

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A New Series of Cycle Cars.

THE sidecar, the most maligned type of motor vehicle on the road, and generally judged to be the most unmechanical in point of view of design, has, if anything, "made good" quicker than any other type of vehicle produced in the motoring era. Introduced as a lightweight in the same manner as practically every other type of motor vehicle, it has gradually grown in power and luxuriousness, and by reason of added weight has been strengthened, so that it is now as reliable a piece of mechanism as it is possible to imagine.

And so, having proved its worth, both in the hands of the pleasure user and the trade, and last, but not least, in the requirements of the Army, designers have latterly turned their attention to modifications of the sidecar outfit, such as the fitting of a two-seated body, so that both driver and passenger shall be protected from the elements. As a matter of fact, the sidecar is so cheap to buy, so economical to run, and so absolutely reliable, as well as being fast, not only on the level, but uphill, that its numbers would have been trebled had it not possessed that inherent weakness of an exposed position for the driver. Hitherto the double-seated sidecars, which have merely dispensed with the driver's saddle, have not attracted the public in large numbers; but, nevertheless, the demand for something of the kind has been abundantly evident for years past, and particularly since untested cycle cars were hastily rushed on to the market in their experimental state and were heralded by false prophets as the last word in two-seaters—not, however, in *The Motor Cycle*. Left to mature with reasonable encouragement, the cycle car might have been a success to-day. Instead, it was accorded a degree of prominence wholly undeserved—and entirely failed to come up to expectations.

Last week we illustrated and described the latest production of a designer whose name is a household word in motor cycle circles, and in this design, whilst the general outlines of the sidecar have been retained, the diamond frame of the bicycle has been discarded. Instead, the vehicle has been built as a permanent three-wheeler. This is as it should be. If the heavy coach-built sidecar outfit has come to stay—and there is no doubt on that score—then makeshift methods of attachment are not sufficient.

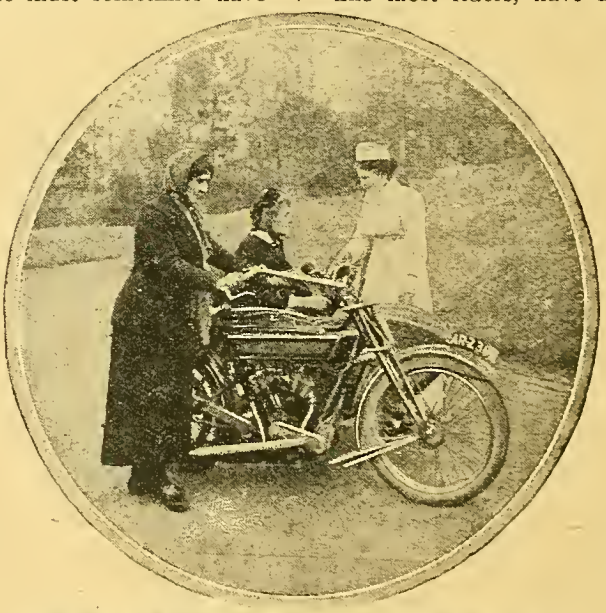
We are glad that one engineer, at any rate, convinced of the success of the sidecar as a type, has set about designing a vehicle on similar lines, which is intended to be a permanent two-seater instead of a vehicle in two separate sections, so to speak. In this manner it has been found possible to improve upon many features which have been open to criticism in the past. A weatherproof shaft drive, for instance, has been incorporated, and it is possible to co-ordinate the frame design, by which we mean that, no matter how strong the bicycle or the sidecar frame of an ordinary type of machine may be as separate units, the idea of their attachment is not sound. Again, the wheels not being carried in fork ends are readily detachable and interchangeable. One excellent feature of the sidecar type of three-wheeler is its wonderful mobility and the great ease with which it may be turned in either direction in the space of a narrow road. It is thus possible to dispense with the complication of a reverse gear, and so simplify driving from the novice's point of view. It was only the old pattern light sidecars with a narrow track which gave trouble on this score.

We hail with considerable satisfaction the arrival of this very original design—the commencement of a new series of cycle cars—as there is no doubt that sidecar makers have got into a groove, yet the call for a weatherproof two-seater has been and is insistent, and the possibilities of such an outfit as a result of the failure of the belt driven four-wheeled cycle car are doubled.

An Index to the advertisements in this issue will be found on the page facing the back cover.

THE DEVELOPMENT OF THE MOTOR CYCLIST. A SIDECAR SCREEN.

IT is most interesting to watch the development of the motor cycling habit in the beginner. The way in which the sport captures the enthusiasms of everyone who tries a venture is surprising to those people who have yet to try their hand on the driving and management of a motor cycle of their own. Passing my window several times each week, probably on her way to town, is a rider who has recently acquired a new lady's Douglas. Some three years ago this same rider piloted an old tricar, with no passenger, up and down the same highway. Her experiences with this machine of uncertain date must sometimes have been the reverse of pleasant. How often had I seen her pedalling vigorously to assist an engine which spluttered and misfired as it faced the rising road. One day, however, the old tricar was "no more," and the rider was astride a small-powered solo machine, about a 2 h.p., that the Singer Co. placed upon the market some four or five years ago. This, doubtless, was a great improvement, but now, in turn, this has been discarded for the new Douglas. This rider's experiences would make interesting reading. I imagine few wayside repairs can be unfamiliar to her, but the joy of a well-designed new mount must be intensified by the memories of the vicissitudes met by venturing abroad on an ancient crock.



Nurses at hospitals throughout the country are having a most strenuous time, and a run in a good sidecar outfit is greatly appreciated as a temporary relief from work that is always trying.

A Fellow-feeling.

I can speak, perhaps, feelingly on this score. Well I remember my own first mount, an old open-framed Phœnix-Minerva, for which I—like many another novice—paid a great deal more than its value. Fitted with accumulator and coil and other devices now obsolete, it generally carried me beyond the ken of motor repair shops and then refused to budge. How many times during my first summer's riding did I leave the refractory object in the care of a friendly cottager and trudge home! No sooner did I master one of its failings than another cropped up. It is many years since a discerning poet said, "There are tears in the affairs of this life." Maybe he was the owner of some contrivance whereby he was carried a distance from his "ain fireside" and then "let down."

My Ideal Machine.

I always, when meeting a lady motor cyclist, and I meet many in these days, look closely to gather the make of machine that has captured her fancy. I, like most riders, have my pet ideas of what I consider would constitute an ideal mount. I am looking for a two-stroke for pottering which embodies my choicest features. An engine of about 2½ h.p. with gear box and well-designed open frame, built particularly low, a clutch of the hand-controlled type, and some form of starting arrangement, for, in spite of the two-stroke ease of starting, it is an additional advantage to be able to start up the engine without pushing when required. The lady's Clyno is nearest these ideals, but whilst the military are absorbing all the output and energies of the motor cycle manufacturer, we cannot expect our whims to be considered. When peace is again restored our needs will doubtless receive attention, and we shall participate in the results achieved by experiments in the springing for frames. Occasionally comfort is sacrificed for smartness. I wonder if other lady riders will agree with me *re* aluminium footboards; whilst they please the eye, the feet are apt to slip about them and are unable to get a grip. To my mind, wood covered with rubber or cork-lino is preferable. It prevents the jar to the legs and is generally more comfortable.

A Sidecar Windscreen.

I have had made to my own design a windscreen, the illustrations of which might be useful as a guide

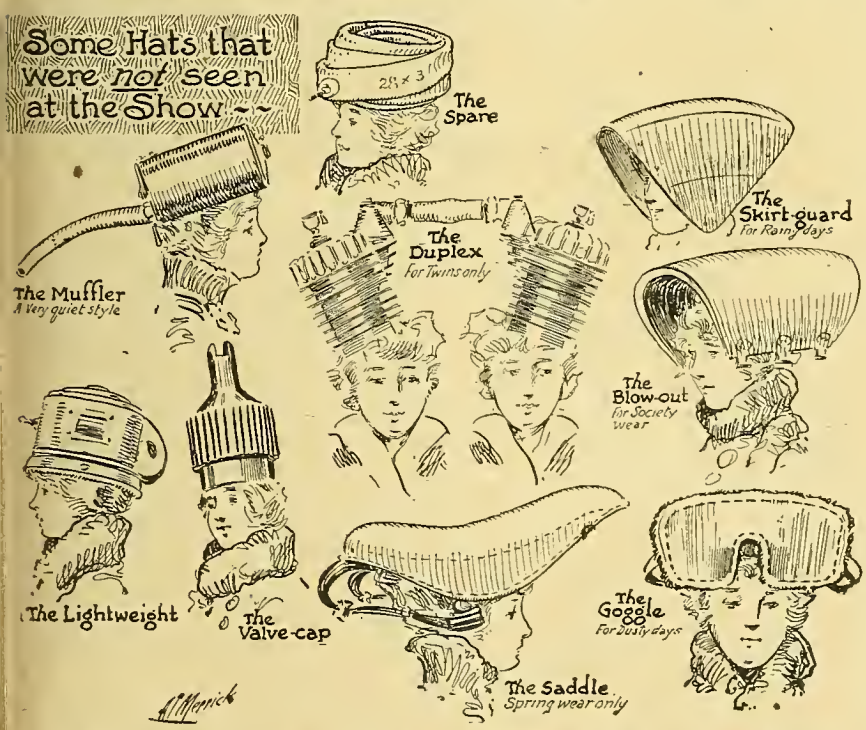
New sidecar screen described by our lady contributor. It is adjustable, and the object aimed at is to get the screen as near the passenger as possible.

to anyone who is thinking of fitting a shield for the passenger. The usual small screen I found to be ineffective, as with an open sidecar the screen is too far from the passenger to be of much benefit; and the door does not allow the screen to be placed nearer. In the one I had made the hinged woodwork allows the whole fitment to be put out of the way—the distance determined by a check strap when getting in or out, and it provides a good cover for the knees of the passenger and diverts the rain spots. By following the photographs a mechanic can make and fix this screen in a few hours.

MAY WALKER.

LADIES IN A TRIAL FOR AUTO-WHEELS IN HOLLAND.

HOLLAND is certainly not getting behind as far as motoring is concerned, and lately has been to the fore with some very novel forms of competitions. Not only have the Dutch held a trial for pillion seats, but they recently organised a trial for Auto-wheels, in which quite a number of lady riders took part. The little machines were represented in several different forms, though most were attached in the usual way. In two cases the attachment was carried rigidly fixed to the chain stays of the cycle and driving direct to the rear wheel. Another was built into the cycle in place of the back wheel, as was illustrated in a recent issue. Several machines were even fitted with light spring forks. These machines must be very popular in Holland if it is possible to obtain a sufficient number of enthusiastic riders to warrant the holding of a special competition.



A set of clever and amusing sketches that appeared in the New York Show number of our contemporary, "Motor Cycle Illustrated."

The increase in the number of lady riders is really remarkable. The majority ride modern lightweights, and it must not be forgotten that the perfection of this type of mount with its clutch and change-speed gear has had a lot to do with the popularising of motor cycling among ladies. At the same time, there are signs of the medium and high-powered sidecar outfit increasing in favour, it being not at all uncommon to meet machines of this type driven by a lady with another in the sidecar.

We should like to take this opportunity of warning lady novices of the advisability of examining the tyres of their mounts with the approach of winter weather. To avoid skidding it is necessary that the studs or corrugations on the back tyre should be in good condition; if worn smooth, or if a plain cover is fitted, a change should be made by the fitting of a good non-skid.

Occasional Comments

"By Ixion"

A Pair of Douglases.

The bulk of my 1915 riding has been done on a pair of Douglas machines, this being the first year in which my 2¾ h.p. has been flanked by its bigger sister. I can hardly praise the big 'un more than by saying I don't know which of the two I like best. I generally found that the 4 h.p. got the verdict for long cross-country work; its weight imbued it with extraordinary steadiness over bad roads, and its extra pace always found a weak spot in such a confirmed sinner as myself. The little 'un found itself under orders whenever there were many stoppages ahead, because it could be propped against a kerb and paddled off when I wanted it again. Neither machine has caused a single road stoppage, even the tyres earning me a pair of white gloves. I hear next year's 4 h.p. is even better than the 1915 edition, and only hope that delivery will be easier to obtain.

The High-efficiency Single.

I do not know that I drew any contrast between the 8 h.p. solo mount and the 3½ h.p. T.T. in my recent article, but a correspondent writes to urge the claims of the high-efficiency or T.T. single-cylinder as a long distance speed merchant's mount. Well, let us essay a comparison. The twin is, perhaps, 10 m.p.h. faster on the road when all out; but, as it can seldom be fully opened out, this does not matter, except in so far as the extra speed is usable on hills. I know that the racing singles often approach or equal the racing 1,000 c.c. twins in the unlimited classes at a hill-climb, but I shrewdly suspect that the surface and corners generally set a limit to the speed of both. At any rate, my own big twins invariably accelerate uphill better than the T.T. single, and touch a higher speed in short bursts on main road hills. Then the twin is heavier, and more expensive to run, which is certainly not in its favour; nor is it so cheap to buy. On the other hand, it will stand a higher gear than the single, and this is a great point, for however pleasant "revs" may be when one is tuning for a brief sprint event, the subdued hum of an 8 h.p. on a gear of 3 to 1 is much less obtrusive company on a 200 mile jaunt. On the next point I must gang warily, for, to speak the truth, I haven't been running a high efficiency 500 c.c. single of late, and singles may have made progress. But on previous occasions, when my pet mount for the year has taken the shape of a T.T. single, I generally found that the m.p.h. above fifty were rather elusive gentry. They were on the spot when it was new, and gradually vanished; a little tuning, and they would return. But in my road work, and especially in hill work, I was often asking the engine to give of its very best; and when the best wasn't forthcoming, I missed it, and was correspondingly irritated. Now the big 8 h.p. is normally run far below its maximum efficiency, and therefore keeps its tune better. Moreover, it usually has a fairish reserve of power up its sleeve, and even when it is considerably under par, it can still do all one is likely to ask of it on the open road. *Ergo*, it does not often inspire the petulant reflection, "The old 'bus is running rotten to-day!"—a sensation not unfamiliar to most owners of sporting singles. Finally, the tuning up and overhaul of the big twin is a much more formidable job than that of the single. No! I had not visualised the comparison which my correspondent suggests; but when I tackle it, I think the big twin just gets my personal verdict.

Side-by-side v. Overhead Valves.

The same writer is on more open ground, methinks, when he challenges my printed preference for the overhead valve. I have not had a season on the 79 × 100 mm. Brooklands Norton, which is the text round which his discourses are written, though oddly enough, I met a man who was a raving maniac about that very machine on the day when this letter reached me. It so happens that all my best twins and singles have had either overhead inlets, or two overhead valves; and as the last really hot side-by-side T.T. machine I owned dates back a year or two, I was probably a little hasty. Track statistics certainly indicate that the side-by-side valves hold their share of the records. Still, I won't plead guilty. Theory and racing car practice are all in favour of the overhead valve. Motor cycle designers have never had a really free hand. In the motor car world racing and touring practice are sharply divorced, and nobody expects a Sunbeam or Peugeot Grand Prix racing engine to be ostensibly a partial copy of the standard pattern. But, for some curious reason, there would be a horrible outcry in our correspondence columns if the Triumph Co. (Mr. Schulte will pardon my using his firm as an illustration) should win a T.T. with an overhead valved engine, and then stage side-by-sides at the next Olympia. So I am not sure my thoughtless impressions were not justified. When I have had the opportunity to test the two designs in the same year, the overhead pattern has impressed me as showing the more ginger. It may be true to-day that you can buy a side-by-side, *e.g.*, a Norton, which is quite as lively as any o.h.v. on the market; but it hardly follows that if Mr. Norton thought well to build an o.h.v. for track and T.T. work, it would not give his side-by-side several seconds in a mile. I suppose the fact is that the average motor cycle business is hardly big enough to justify the creation of a special racing department; racing is just one of the odd jobs which is squeezed in between other things, according as the buying public happen to be interested in speed events, or the firm wants a leg-up in the advertising department. Whereas, in the car world, racing is scientifically organised by the crack firms at any rate, and time, men, and money permit a racing programme to be pursued "regardless," in the motor cycle world the ordinary staff take the ordinary engine, and adapt it as well as circumstances permit.

THE TREND OF ITALIAN DESIGN.

An Interesting Italian Machine Reminiscent of Several British Makes.

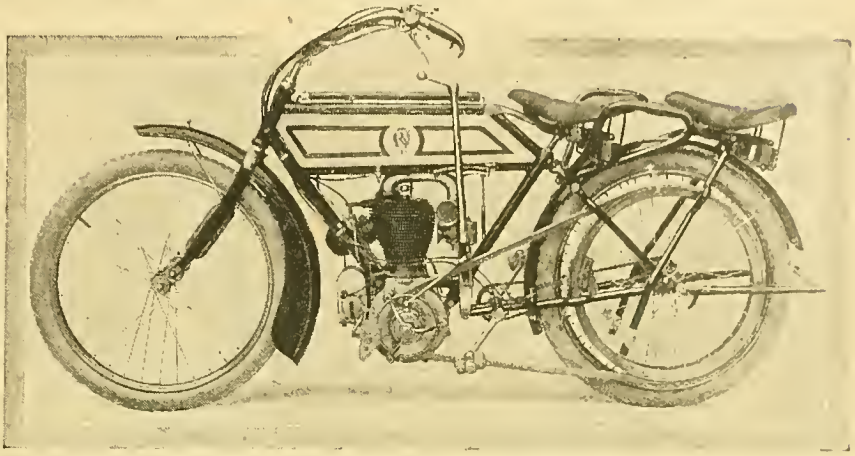
WE have on more than one occasion commented favourably on the clean lines and attractive appearance of the motor cycles lately produced in Italy, and noted a growing resemblance to British motor cycle design. The Borgo machine, which we illustrate herewith, is no exception to the general tendency referred to; it is taking in design and of sound construction.

The engine, which strongly resembles the Rudge, has a bore and stroke of 85 × 88 mm. (499 c.c.), the popular British size; the inlet valve is overhead, and, of course, mechanically operated; the Bosch magneto is carried in front on a platform cast with the crank case, is handle-bar controlled, and provided with a cut-out.

Reference to the illustration of the single-seated model will show that the timing gear and magneto transmission are contained beneath a single cover—a very commendable practice—but the cover itself strikes us as being rather ornate, for though the coat-of-arms looks well when clean, it will, in use, collect much dirt, which will be difficult to remove. The outside of a crank case should be smooth and free from crevices. The carburetter—a special two-lever type—is constructed in the Borgo factory. The silencer, it will be noticed, is unusual in appearance, and although it will probably prove very effective from the point of view of absence of back pressure, it is unlikely that its silence would satisfy the authorities in this country unless it were furnished with a pipe to the rear. Both oil and petrol pipes are provided with rubber insertions. So much for the power unit.

The Variable Gear.

Turning now to other details, we come to what is perhaps the most novel point of the whole machine, viz., the variable gear. This consists of an expanding pulley such as is fitted to several British machines, and a method of maintaining correct belt tension by moving the rear wheel in the manner of the Zenith. However, in this case, not the rear wheel only, but the whole of the rear part of the frame moves backwards and forwards. This rear portion is pivoted below the saddle, and the front ends of the chain stays are carried by the extremities of a long lever, which extends upwards on the left side of the tank and has its fulcrum on the engine bracket. When this lever is pushed forward it forces the wheel backwards and tightens the belt, at the same time opening the pulley. The pulley can be further controlled by rotating the lever; thus, a free engine and clutch can be brought into use at the requirements of the rider. The pedalling gear (used for starting purposes only) is mounted upon the chain stays, and so the tension of the chain is unaffected by any movement of the wheel; the chain is, however, provided with a jockey pulley on its under side. The arrangement of the movable part of the frame and the distribution of weight is such that the weight of the rider tends to maintain the belt tension.

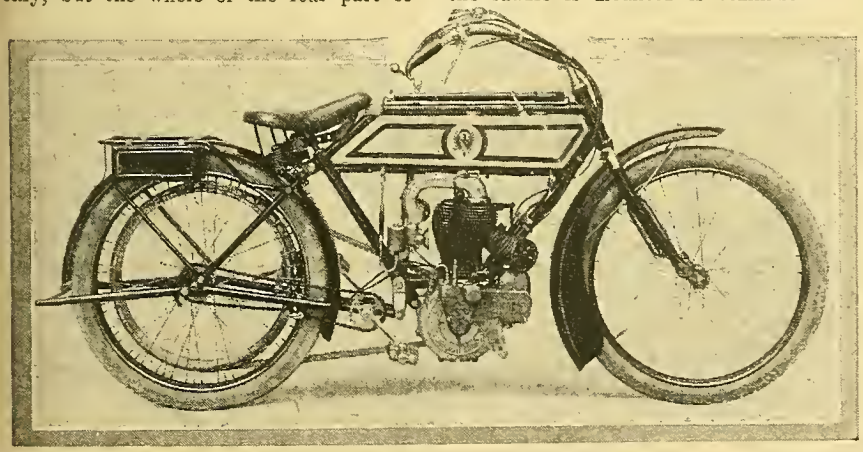


The tandem-seated Borgo, a new Italian production. A variable pulley gear in conjunction with an extensible rear frame is adopted.

Tandem Seats.

The cantilever arrangement upon which the saddle is mounted is reminiscent of another British machine, viz., the Rex. In one of the illustrations a second seat, together with hand grips and footrests, is shown mounted in the rear. This method of carrying a passenger is very popular in Italy, being much cheaper than a sidecar and more comfortable than the padded pillion-seat. The handle-bars are adjustable, on the lines of the A.B.C. or Indian, but the spring forks are essentially Italian. Two brakes are applied to the belt rim—one on either side of the V—and both are operated from the handle-bars by means of Bowden cables. The stand is of the spring-up variety, but differs from those to which we are accustomed in this country. When a carrier is fitted, neatly constructed metal-cased tool boxes are supplied. The tyres are heavy Dunlops, 26in. × 2⅜in.

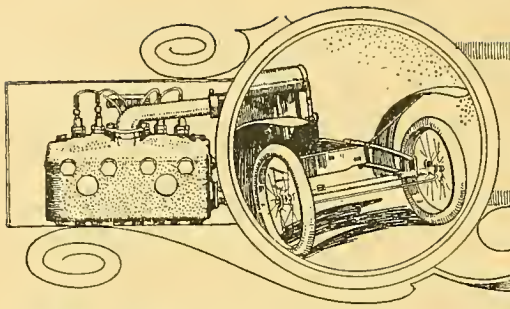
We understand that the Borgo (but with a single gear) is being supplied in large quantities to the Italian Government. The Italian manufacturers are making but few changes for 1916, as the more important houses are fully occupied with Government work, while business in general is more or less at a standstill. Messrs. Bianchi, whose motor cycle we illustrated and described some time ago, are adopting belts instead of chain drive, for the sake, we presume, of economy and simplicity.



The single-cylinder Borgo, showing the extended ribbed exhaust port which takes the place of the silencer. The engine dimensions are 85 mm. × 88 mm. = 499 c.c.

CAUSE AND EFFECT OF A BREAKAGE.

A LIEUTENANT-COMMANDER in the Navy recently broke a timing wheel of his twin-cylinder sidecar outfit owing to the fact that he accidentally left the throttle open when declutching on a hill. He has applied to the makers for a spare, and was astounded to hear that it is quite impossible for them to supply another. The machine was bought second-hand, and this point should be a warning to readers to take care when selecting a second-hand outfit that it is not of obsolete design, or, at any rate, that spares are available.



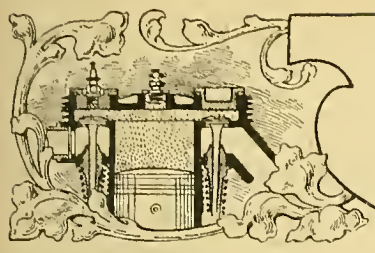
The Future of the Cycle Car.

By ROAD RIDER.

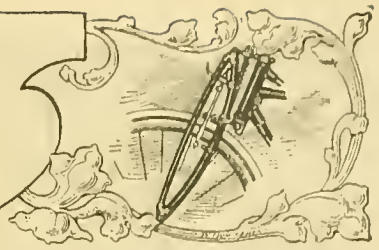
MY colleague "Ixion" published a paragraph on p. 389 of our issue for October 21st last, entitled "The Grease is Coming," in which he stated his conviction that there is a great and permanent demand for light four-wheelers on motor cycle lines, which the trade would do well to study. Some people consider the cycle car to be as dead as the dodo, but my own belief is that it is no more extinct than the lightweight bicycle was extinct when half a dozen premature attempts to foist 80 lb. machines of little roadworthiness merely led to fresh booms in heavier and more expensive patterns. The demand for a light, efficient, comfortable, and economical four-wheeled two-seater must in the nature of things persist until the mechanical and commercial problems which surround it are solved. The fact that the latest attempt to foster such vehicles has produced something entirely different, to wit, the £120 sidecar outfit de luxe and the £200 12 cwt. light car, does not prove that the demand is non-existent, or that it cannot be fulfilled. It only shows that the trade is not yet able to solve the problems. The reality of the demand is proved by the huge sales of the Morgan runabout and the high-powered sidecar, not to mention the big output of the more costly G.W.K. light car, and the fairly numerous sales of such four-wheeled motor cycles as the G.N., Carden, etc., etc. Sooner or later the trade will return to the cycle car problem like a giant refreshed with wine; one of its returns—perhaps the next return—will not be as premature as former essays; and then the cycle car boom will come. It might have been with us already if half the energy devoted to developing the ancient single-geared motor bicycle with basket chair attachment had been concentrated on light four-wheelers, not too ambitious in design. The usual history of developments in the motor cycling industry is that the trade and the public agree in recognising an empty niche. The trade is making some other type of vehicle, which it can sell; and it shrinks from entering a breach which it may fail to fill. Small firms rush in, and do good pioneer work, without achieving full success. They sell a few dozen machines, perhaps even a hundred or two. Some journal or other exaggerates the merit of the new patterns. The public is misled into forming a false estimate, and pays for its blunder. The premature boom peters out, and there is a lull. Finally, some genius produces a machine which succeeds. The trade jumps off the fence, and the big firms seize the idea, and improve on it. Presently, a new type which is roadworthy is successfully launched. This final stage of the cycle car movement is possibly nearer materialisation than the public thinks.

There are two factors in the present situation which contain hints of big events. One is the evident determination of the American factories to supply us with practical four-wheelers at £100 or so. Every sidecar maker knows that if the Americans succeed, the sidecar de luxe will be killed, for good and all. The American factories are probably inferior to our own in engineering skill and honesty; they are less clever, and they have often shown a lamentable willingness to "boost" inferior stuff; but they may easily point the way towards the solution of the engineering problems, and their commercial honesty is improving under stress of competition. In the other and more acute aspect of this particular problem they display positive genius; nobody can equal them in scientific economy of production. They certainly threaten alike our sidecar and light car industries. I regard it as certain that within a very few years they will be offering us cheap four-wheeled two-seaters good enough to challenge the sales of the big sidecar outfit and the £200 light car.

On the other hand, the number of British factories and engineers more or less connected with aviation work has increased by leaps and bounds during the war; and this work bristles with suggestions of potential value for the future cycle car. For an example, a not uncommon type of aeroplane chassis is built of spruce; its main frame members may not exceed 5in. × 2½in., hollowed out on each side, and drilled for lightness, stiffened with wire stays and strainers attached to the spruce beams by sheet iron clips. Such a chassis resists all the strains of gravity in banking or volplaning or looping the loop; it remains true under wind resistances equal to speeds of 100 m.p.h. or more; and it bears engines up to at least 100 h.p. When the industry settles down again, many of these suggestive facts will permeate the designers of road motors. The transit from such chassis to something on the lines of a modernised Orient buckboard is neither long nor difficult. Such detail inventions as the Harcourt radiator assist the elimination of water-cooling. Light and cheap three-speed gear boxes have now been perfected for motor bicycle work, and with slight modifications would suit the next batch of cycle cars, whilst the tendency to organise factories specialising in components produced by the thousand all helps. The belt drive is gaining a new lease of life, as adapted to run over big pulleys in the secondary half of the transmission. A cycle car far surpassing all previous essays is already practicable: and the situation changes with incredible rapidity. If only one leading firm, possessing clever engineers, sufficient capital, and a position of authority, should elect to jettison the make-shift sidecar de luxe when peace returns, and concentrate its attention on the £100 four-wheeled, two-seated cycle car, the industry may easily be revolutionised.



"THE MODERN MOTOR CYCLE ENGINE."



"UBIQUE'S" CRITICISM OF MR. WORSDALE'S ARTICLE. (Issue October 28th).

IN his article headed "A Masterpiece of Mechanical Paradox," Mr. Worsdale touches with no light finger several very sore spots in motor cycle design and construction.

No one with any pretence to mechanical knowledge can condone the criminal lack of bearing surface either in the top or bottom end of the connecting rod nor "the ingenious application" of the flywheels to prevent oil reaching the big end bearing.

On the subjects of solid crankshaft, outside flywheels, and mechanical lubrication, the editor has allowed me to air my views on previous occasions, so that I will not enlarge on these points now, except to agree cordially with the writer.

So far, then, my humble opinion is in agreement with Mr. Worsdale, but, though his destructive criticism as such is excellent, he does not help us much with regard to the future.

Pistons and Cylinders.

Piston design on motor cycles is usually bad, but what material are we to use in place of cast iron? In the course of twelve years' work on internal combustion engines for land, sea, and air, I have seen many substitutes tried, but in nearly every case the designer has come back to some form of cast iron as the most suitable for all-round purposes. Steel pistons are satisfactory where large clearances are permissible or when distorted pistons can be easily replaced, such as is the case in racing practice. The built-up steel piston is perhaps the most satisfactory form, though under continuous hard work it not infrequently disintegrates at an awkward moment. Perhaps aluminium pistons were the type Mr. Worsdale had in mind. A considerable amount of experimenting is going on in this direction at the present time, especially in America, but let us not forget that this is no new idea and that one of the best known British automobile firms has had pistons of this type under observation for years, yet has not adopted them on the latest models.

Much the same argument applies in the case of cylinders. Steel cylinders, though excellent in tension, are limited in design to commercial machining possibilities. Cast iron, it is true, is vile in tension, but a cast iron cylinder need not be held down from the base. As I write I have before me a ten year old amateur-built motor cycle engine, having a cast iron cylinder held down from the head. The cylinder walls are only 2½ mm. thick, and yet the engine runs well and pulls good power per capacity and does not burst cylinders. I may add that this engine has a one-piece crankshaft, large bearing surfaces, and a symmetrical outside flywheel.

Valves and Tappets.

Overhead valves are obviously the most correct, but, though the ideal inlet and exhaust valves should differ both in size and shape, commerce once again steps in, and it will be found that the *pros* and *cons* of each type about cancel out. Internal cams are more or less obsolete, as the chief exponents of this type discarded it for 1915. Offset tappets are an abomination, and adjustable tappets are usually much too heavy. Mr. Worsdale admits that he is a keen rider, and, in consequence, his machine should prove a most interesting one, for I cannot believe that one so keenly alive to the faults of existing types would leave these faults unimproved.

In conclusion, may I hope that now Mr. Worsdale has pointed out the many weaknesses of the motor cycle engine, he will prove himself a public benefactor by giving us the benefit of his experiences both in general design and alternative materials.

THE LIMITATIONS OF A MOTOR CYCLE DESIGNER. By A. C. Wickman.

PRACTICE and theory do not always agree. An engineer has well been described as being a person who can do for one shilling what any fool can do for two. It is unfortunately very often that the ideal (in theory) clashes with practical considerations, such as machining and cost. As these two are dependent on one another, and as the price of a machine cannot successfully be raised above a standard set by other firms, it is necessary to modify the ideal theoretical design so as to conform with these practical factors. There are two ways of producing a new design.

(1.) By trial, *i.e.*, eliminating designs which are found to be defective.

(2.) By theory, *i.e.*, strictly applying the principles of mechanics.

The second, in many cases, becomes too complex to handle. The first takes time, is wasteful, and therefore expensive. Here, as in many other cases, we have to be content with a compromise. The production will, therefore, have to be by means of theory coupled with practice. Take the case of the H-sectioned connecting rod. Now on a strength for weight consideration the tubular one is considerably preferable; that is, if we could make the connecting rod complete with no joins. This is an impossibility; the two chief ways of manufacturing them being to press them out in halves complete with gudgeon and

SIDECAR MACHINES FOR DESPATCH WORK.

A French despatch rider, attached to the headquarters staff of the 138th Brigade, who uses a Triumph sidecar outfit. When the picture was taken, three weeks ago, the machine had seen nearly twelve months hard and daily service.

main bush holders, and to weld them down the centre, or to keep the tube weldless and to weld the bush-holders.

Quantitative commercial welding is rather an uncertain thing. When one, or even a few pieces, are done by a firm specialising in this sort of work, the results are very satisfactory, but when you have got to turn them out in thousands it is quite a different matter. They cannot each be tested, except by the eye of an expert. A sample one may be taken from a batch and tested to destruction, but this gives no promise that the others are similar (a thing which is rare even when welded by the same man). The cost is high and quantity does not materially decrease the welding charges. The H-section rod, however, lends itself easily to quick and cheap production, and can be forged complete with upper half of a split brass bearing if wanted.

The Strength of Aluminium Alloy.

As regards the piston. Here undoubtedly there is vast room for research. Shall I send cold shivers down the back of your contributor when I say that an aluminium alloy seems to give the best results?

Mr. Worsdale refers to aluminium as having a consistency resembling hard cheese. That may have been so many years ago, but improvements have been made. The Alloys Research Committee in their report of 1912 obtained an alloy consisting of approximately 25% zinc, 3% copper, and 72% aluminium, the sand castings of which, after annealing for one hour at 400° C., gave a yield point of 15.3 tons and an ultimate stress of 17.23 tons per square inch. I think that your contributor will agree that it is some cheese!

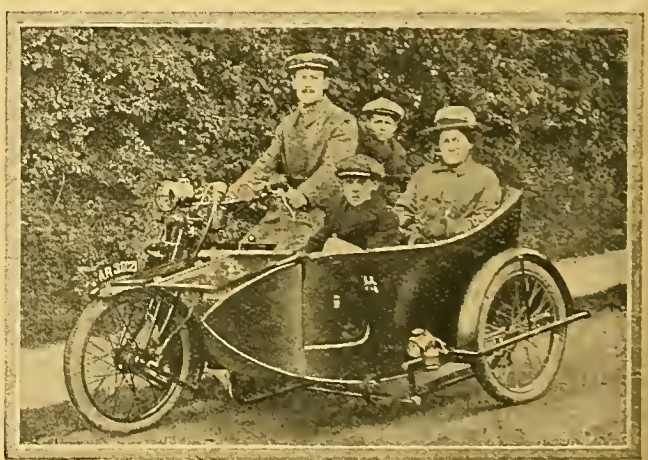
Let us consider the case. From a mechanical standpoint the material should be tough and have a high elastic limit. This the alloy has to a marked degree. From an efficiency basis the material must be light and of high conductivity.

It is a well known fact that in order to obtain a good m.e.p. at high speeds, high compression should be used. This latter, however, is very limited owing to pre-ignition. If, however, we use a piston with a high conductivity, we could get rid of more heat, and therefore increase our compression ratio, thus obtaining a higher m.e.p. for that particular critical speed. The power curve will not loop over so quickly, and we shall have a more efficient machine. Of course, the coefficient of expansion is large, and care has to be taken to provide the necessary clearance; but this has been successfully done, and though a slight slap may be heard when starting from cold, twenty or thirty revolutions are all that are required to make them run as silently as any others. Also from a machining point of view it is an ideal metal. However, great care is required in the temperature regulation when annealing, as if too cold it gets hard, and if too hot it powders.

Mr. Worsdale also says that cylinder studs work loose, timing case stud holes strip their threads, and ball races in gear boxes have to be held by bronze rings. As regards the first, do not blame the material; alter the design. The studs can easily have enlarged ends through which the case bolts can pass (as in the Douglas). A little experimenting in threads and stud sizes will, I feel sure, cure the second. The third is nothing but condemnation of really good practice.

The outer race should be a sliding fit in its housing, and if the bearing gets gritty it may occasionally turn. Aluminium as used for gear boxes is not good as a bearing material; no one wants it to be. (Mr. Worsdale seems to think that an aluminium box has not enough mechanical strength to hold together without a skeleton frame.) By pressing in a bronze ring as a housing we have an ideal bearing. Perhaps your contributor does not realise that aluminium is daily coming into greater use. An entire car engine has been constructed of it in America, the valve seats, guides, cylinder liner, and other friction parts being of steel or cast iron as the case may be. An aluminium cylinder with deep taper fins would give ideal cooling.

Lightness, moreover, is a super-consideration amongst the public, as it means more speed, less upkeep, and less wear and tear for the same power.



A NEAT FAMILY SIDECAR OUTFIT

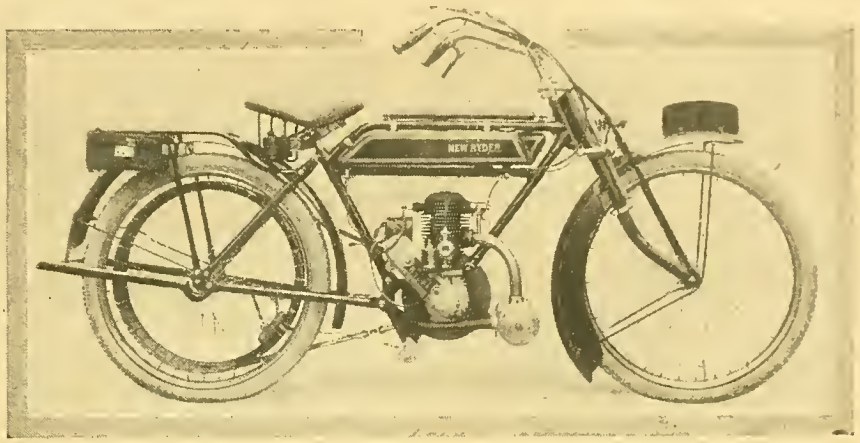
The owner is Mr. T. Suffling, of Hitchin, and the machine is a 6 h.p. 1915 model A.J.S. with a Bowser two-seated sidecar. Mr. Suffling is very pleased with the complete outfit, and he tells us he gets sixty miles per gallon with a full load.

NEW MODELS

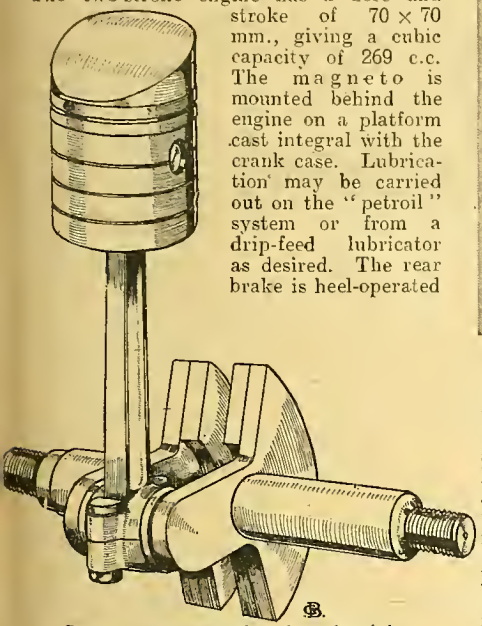
· MANUFACTURERS' PROGRAMMES FOR 1916 ·

THE TWO-STROKE NEW RYDER.

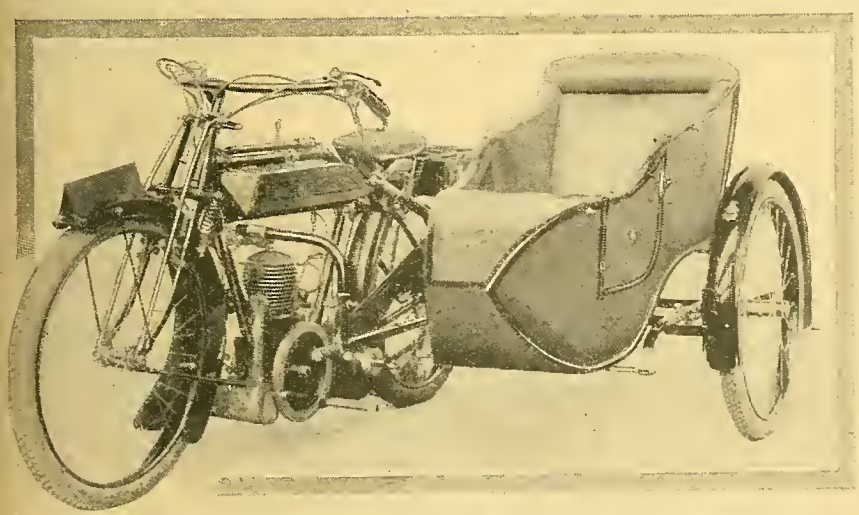
IN our issue for October 21st we briefly described New Ryder models for 1916. We are now able to furnish a further description of these machines. The two-stroke engine has a bore and stroke of 70 × 70 mm., giving a cubic capacity of 269 c.c. The magneto is mounted behind the engine on a platform cast integral with the crank case. Lubrication may be carried out on the "petroil" system or from a drip-feed lubricator as desired. The rear brake is heel-operated from the left footrest, and the front is the ordinary Bowden rim brake operated from the handle-bar. The frame has a dropped top tube which affords a low riding position, and Saxon spring forks are fitted. The release valve is enclosed, and has a connection to the exhaust pipe, and the silencer, which is large and most efficient, is furnished with extension pipes at each end. New Ryder machines are supplied either with a single gear, as illustrated, or two-speed countershaft. Referring to the sketch of the internal parts of the engine, it will be seen that grooves are provided in the piston to assist lubrication. The finish is in black enamel, the tank being black with a broad gold line round the edges. A desirable feature of these machines is the freedom from vibration which is experienced when on the road, denoting careful attention to engine balance.



1916 pattern two-stroke New Ryder, the improvements to which are referred to on this page.



Piston, connecting rod, and cranks of the two-stroke New Ryder.



A lightweight passenger outfit—the 1916 model 2¾ h.p. Excelsior sidecar machine. The engine is a two-stroke, and chain drive throughout, in conjunction with a two-speed countershaft gear, is employed

NO ALTERATIONS TO A.J.S. IN 1916.

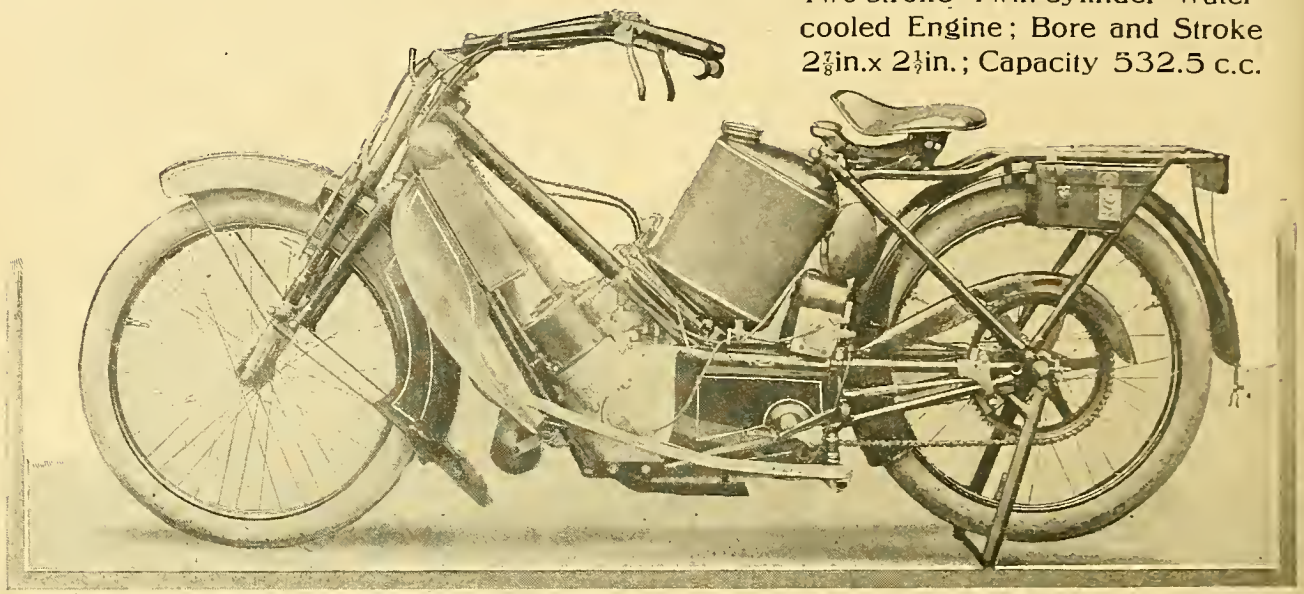
WE learn from Messrs. A. J. Stevens and Co., Ltd., that A.J.S. machines in 1916 will be exactly as produced during the present year. The entire absence of change is not only due to the fact that a large section of the works is busily employed on munitions of war (including parts for Clyno machine gun sidecars), but also to the fact that A.J.S. machines have proved so entirely satisfactory that little or no change is called for. The most popular of the series during the present year has proved to be the 6 h.p. twin-cylinder three-speed mount, which, with its detachable and interchangeable wheels, is, and will remain, a sidecar mount *par excellence*.

The 4 h.p. model with a sloping top tube has been a mount much sought after in 1915, but there have been difficulties connected with this model as regards delivery.

It may not be generally known that three Princes of the Royal Danish household are enthusiastic users of the 6 h.p. combination.

Scotts for Next Year Practically Unaltered.

Two-stroke Twin-cylinder Water-cooled Engine; Bore and Stroke 2⅞in.x 2½in.; Capacity 532.5 c.c.



NO alterations worthy of special note are taking place in the construction of the Scott motor cycle for 1916. A fifth point of connection has been added to the sidecar couplings, this consisting of a light steel rod passing between the front end portion of the sidecar chassis to the steering head, a hole being drilled through the leg shield for its admission. While this extra connection adds little to the work of attaching and detaching the sidecar, it very much improves the steering of the outfit when a heavy load is carried.

A Dixie magneto is to be fitted as standard for 1916, and a B. and B. or Binks carburetter to order.

Running briefly over the mechanical points of this machine, the engine is provided with roller bearings throughout. All parts are in constant thrust. Lubrication is mechanically operated by the engine and automatic in action. An adjustable sight feed is provided.

The gear is foot-controlled and simple in construction. Two chains drive from the engine to the countershaft, and the countershaft sprockets are mounted on expanding ring clutches. These sprockets, being of different sizes, represent the high gear and the low gear respectively. The drive to the rear wheel is by a Hans Renold heavy ½in. pitch chain.

Artistic and efficient leg shields, set on either side of the radiator, protect the rider's feet and legs from cold and mud. These shields, also the footboards, are instantly detachable, and the boards are sprung at both ends.

The spring forks provide for vertical movement only. All working parts are enclosed, and specially strengthened for sidecar use.

An open frame, providing very low centre of gravity, is a special feature of the Scott machine, this being immensely strong, and designed throughout to meet the strains of high speed and hard usage.

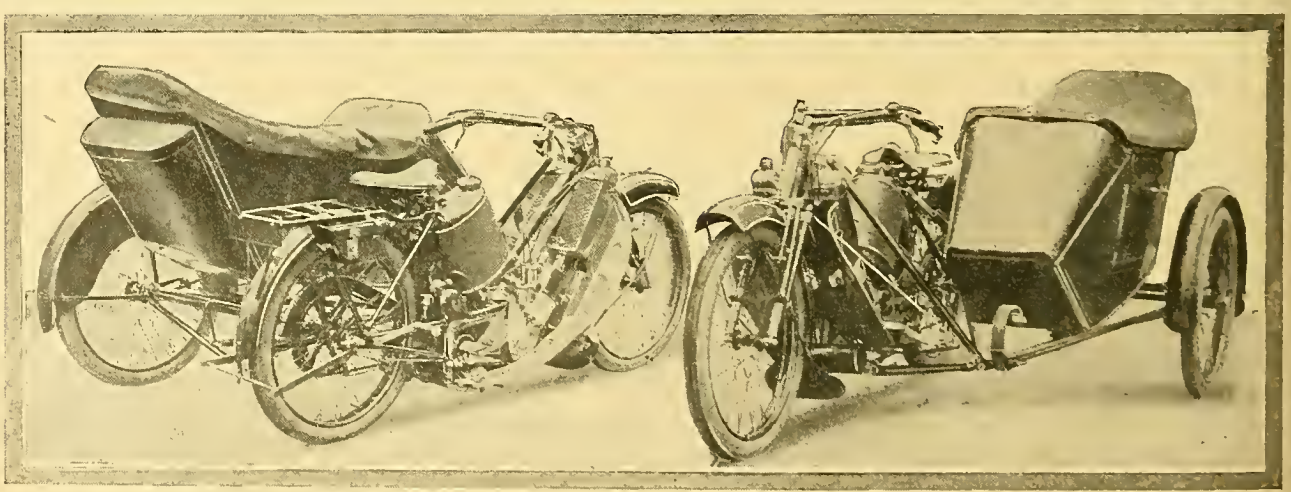
The kick starter is situated well back, being almost on a level with the rear wheel.

The Scott engine is capable of enormously high speed, and owing to its low centre of gravity the machine holds the road remarkably well.

The Scott Sidecar.

The Scott sidecar is of very rigid construction, and the body is excellently sprung. All straight tubes are used. The springing is instantly adjustable to suit the passenger's weight, and ample provision is made in the way of space for carrying spares, etc.

The sidecar body is finished purple with thin white relief lines to match the tank.



The 1916 pattern Scott passenger outfit. The right-hand view shows the additional sidecar connection, which consists of a light steel rod from the forward end of the sidecar chassis to the steering head—a lesson from sidecar machine gun experience.

It is worth while to wait when you know it is waiting for a good thing.

Will you wait while we fill the urgent needs of the Country—while we help, as far as it is in our power, the men bearing the heat of the fray ?

To every patriotic Britisher the Country's needs come first. The destiny of Empire is in the balance. Will you surrender your personal requirements in this hour of stress, while we throw our immense manufacturing resources into the scales, and wait for the day of peace which every moment draws nearer ?

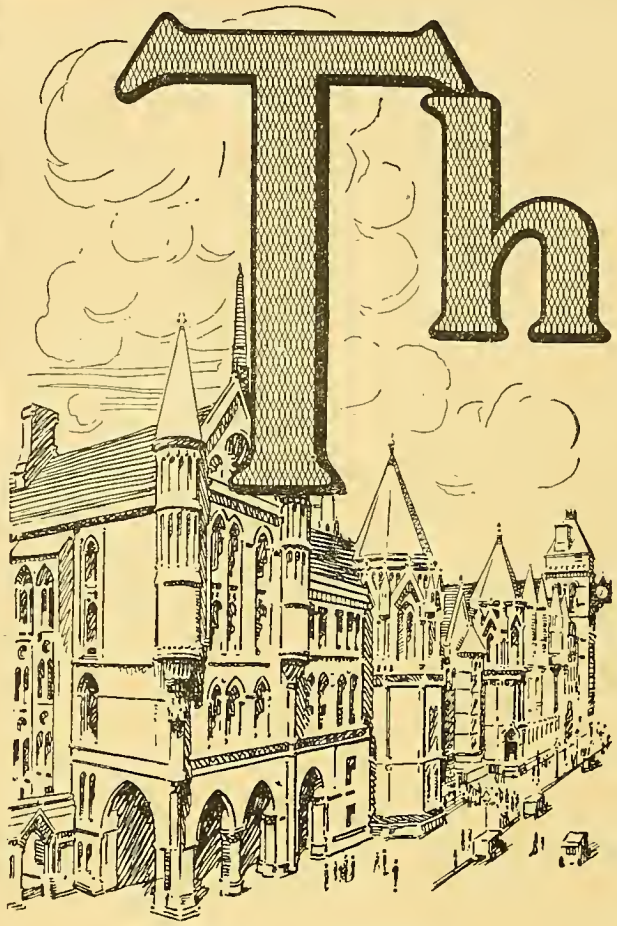
The Triumph Motor is doing a great work in helping our brave men, but the call is constant and insistent for more—a striking tribute to their marvellous efficiency.

Will you help us and wait ? Peace day will again see us at your service.

Triumph Cycle Co., Ltd., Coventry.

TRIUMPH

Thrift



THE LAW COURTS

JUSTICE

invariably ensures that all transactions between buyer and seller shall be reasonably equitable, and if at any time the buyer receives less of value than is his by right, justice may be obtained by legal methods, but few will agree that there is anything of thrift behind any transaction having such a sequel.

The B.S.A. Trade Mark is the reliable guide to motor cycle value. The B.S.A. Company places everything—reputation, goodwill, business advancement, and success, upon the quality of the article to which is attached the B.S.A. Trade Mark. In the case of the B.S.A. Motor Bicycle, the whole energy, facilities and organization of a vast concern is centred upon one ideal, that of giving to the public such goods and service as will ensure complete satisfaction for the purchaser, and at the same time enhance the reputation of B.S.A. manufactures.

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MOTOR BICYCLE

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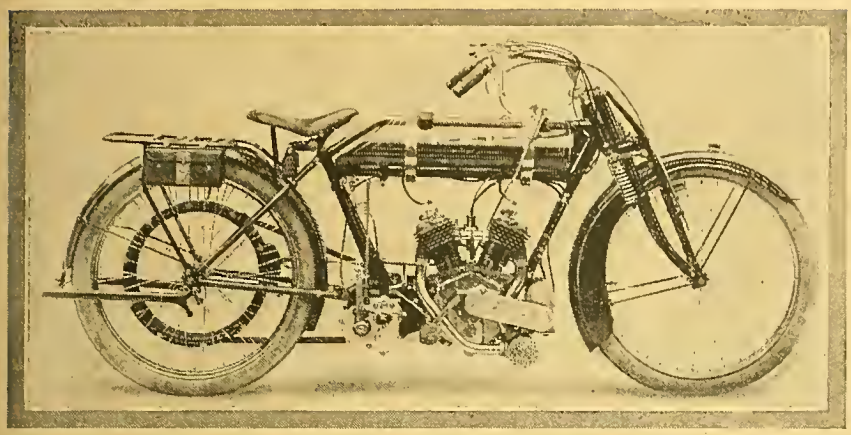
B.S.A. Motor Bicycle List Free.

THE BIRMINGHAM SMALL ARMS CO. LTD.
13, SMALL HEATH, BIRMINGHAM.

"On War Service"—a book full of interest to motor cyclists—sent free on receipt of 1d. stamp for postage.

1916 Model N.U.T.'s.

Countershaft Three-speed Gear and Twin J.A.P. Engine.



The latest 3½ h.p. twin-cylinder countershaft-geared N.U.T.

ALTHOUGH there has been no T.T. race in the Isle of Man this year, the name of Hugh Mason and the famous N.U.T. machines are always associated with speed and reliability.

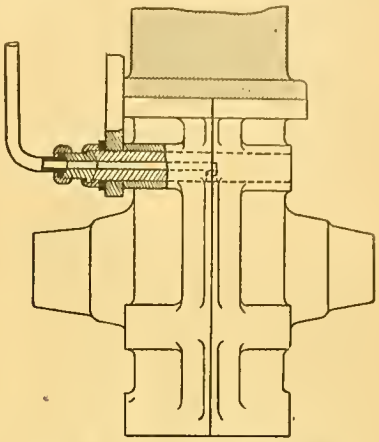
The machine is still almost unaltered, except that a countershaft, and, of course, chain-cum-belt transmission, now replace the hub gear model always used in these exciting events.

The N.U.T. models for 1916, with the exception of a few small details, are practically the same as in 1915, two extremely neat machines being the 3½ h.p. twin standard and the 6 h.p. standard, which we illustrate. The 3½ h.p. is fitted with a side-by-side valve J.A.P. engine, 70 × 64.5 mm., giving a capacity of 496 c.c. An S.A. three-speed countershaft gear is fitted, with kick-starter and chain-cum-belt transmission. The latest pattern Druid fork, which gives both an upward and backward motion, is a feature of this model. The neat cylindrical tank is still retained, while the large filler caps are a useful feature, gained by experience in the T.T. races, the lubrication being by a sight drip-feed pump. The riding position is very low, the top of the full-sized saddle being level with the top tube. The footrests are fitted amidships, which should give an extremely comfortable position.

The fitting of the rear brake shoe on the outside of the belt rim makes it an easy matter to remove the back wheel. The 6 h.p. model, which is intended for sidecar work, is almost identical in detail with the 3½ h.p. model. Long upturned footboards are fitted, and the sidecar lugs are brazed to the frame. The whole machine presents a substantial yet neat appearance.

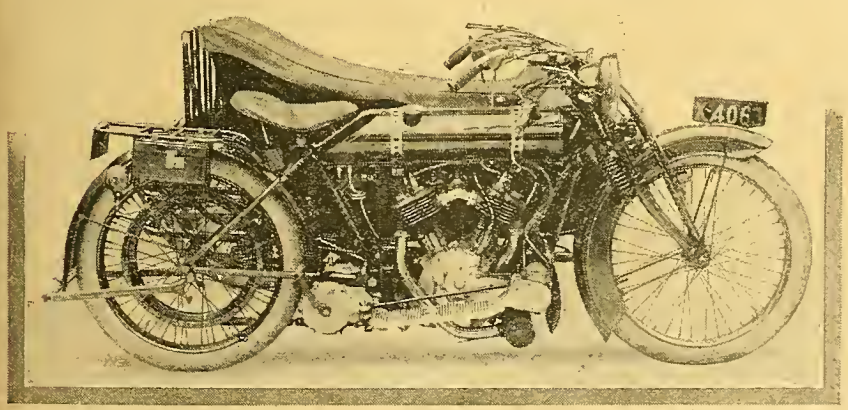
AN EXPERIMENTAL OILING SYSTEM.

IN our issue of October 21st we described and illustrated a new method of oiling on the two-stroke Revere machine. The engine on this mount is a Villiers, and it transpires that the system of oiling referred to, viz., by a pump to the hollowed out crank case bolt forming the engine hanger, is a system which has been introduced by the Villiers Engineering Co., Ltd., but which the company ask us to mention has not yet passed the experimental stage. The drawing accompanying will convey an accurate idea of the system, the oil passing direct into the crank case instead of *viâ* the induction pipe as on the 1915 Villiers, but,



The Villiers experimental oiling system.

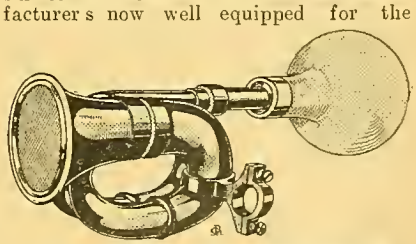
owing to the war, and the difficulties in obtaining labour and materials, it is not likely that it will be used on standard Villiers engines for some considerable time.



1916 model 6 h.p. N.U.T.-J.A.P. passenger outfit. Features to be noted are the three-speed countershaft gear and the latest pattern Druid forks.

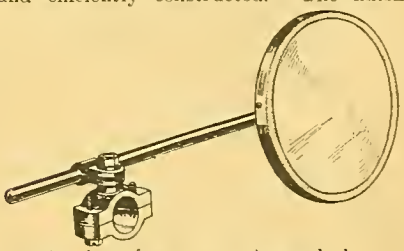
BRITISH MOTOR HORNS AND MIRRORS.

HITHERTO the production of motor cycle horns and mirrors has largely been in the hands of the Germans, and it is cheerful to find one or two British manufacturers now well equipped for the



The British-made black-finished Hill bulb horn.

production of these minor necessities. Thus it is good to announce that we have recently received a horn and back glass from Messrs. Ernest H. Hill, Ltd., Beta Works, Sheffield. These are of black finish, and are very strongly and efficiently constructed. The finish



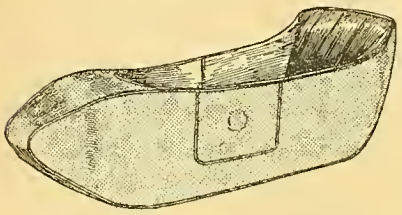
A mirror for motor cycles made by Ernest H. Hill, Ltd.

is excellent, and the provision made for their attachment to the machine is of ample dimensions.

WATSONIAN SIDECARS FOR 1916.

A Comprehensive Range.

THE chief feature of the Watsonian programme for 1916 is the Aero model produced for use with 3½ h.p. bicycles, when weight must be kept at as low a figure as possible. In this case the sidecar weighs but 29 lb., and is of unusually attractive exterior, besides being comfortable, almost luxurious, to ride in, and well fitted out for the comfort and convenience of the occupant.



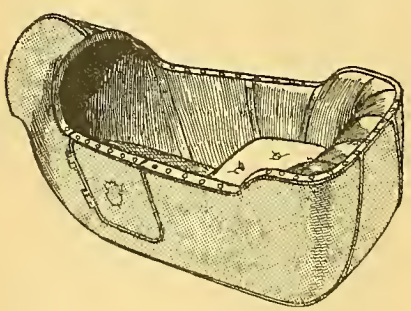
Watsonian tourist model sidecar.

Broadly speaking, the outline of the body, with its curved back and painted tapering front, resembles the French battleship of a year or two ago, and the resemblance would be more complete but for the absence of the familiar "tumble home" sides.

As can be seen in the sketch there is a ram bow, very pleasing to the eye, while the sides taper from the rounded back panel until they sweep in to follow the arched cover over the occupant's feet, and form a convenient edge to which the apron may be attached. Beneath the seat is a locker for such spares or extra tools as the owner may desire to carry.

As the panels are of three-ply wood, and the utmost care is taken with the joints and moulding, the whole structure is remarkably stiff and does not seem likely to develop rattle or strain under hard usage.

The above machine looks at its best fitted to, and is indeed designed for, a sporting machine. For touring mounts there is another new model, without the ram front, but with a more blunt outline and more room. The touring model is



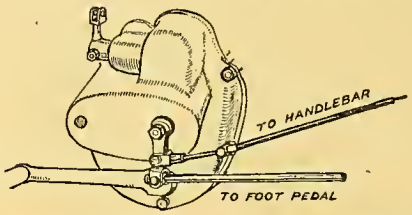
Novel lines of the Watsonian "Aero" model sidecar.

also beautifully upholstered, has a pocket in the door for maps, goggles, or other small details, a locker below the seat cushion, and weighs 30 lb.

Two new wicker bodies are to be marketed—the model S, which is the wicker equivalent of the sporting model Aero, and the new model T, which is made as the equivalent of the wooden Tourist model.

A FOOT OR HAND-CONTROLLED CLUTCH.

OWING to the Premier Co., Ltd., Coventry, being almost entirely on munition work, the output of motor cycles is naturally extremely limited, and the 1915 models (very few of which are on the road) will be continued with practically no change whatever, except in small details. A refinement which will be appreciated is the fitting of a Bowden hand control, in addition to the pedal, for operating the clutch. The Bowden cable is attached to the operating lever just above the rod from the foot control. This rod is attached in such a way that, if the clutch is operated by hand only, the rod will slide through the operating arm, so that



Combined handle-bar and foot-controlled clutch—a new fitting on the Premier.

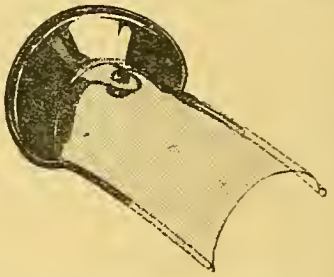
the pedal is not moved as well. Thus, it is truly a foot or hand control, and not simply interconnected. The chief advantage of this dual control is that the average clutch requires a considerable amount of force to operate it by hand, and so throws too great a strain on the cable; whereas with the Premier method it is possible to take the clutch out by foot, after which it is quite light work to hold it out and let it gradually in again by hand, while both feet are free.

RUDGES IN 1916.

THE Rudge-Whitworth Works, like most other motor cycle factories throughout the country, are so busily engaged on munitions that it has been found quite impossible to devote any attention to the question of modification to current models. Indeed, the Rudge being a Government controlled works, the only type of Rudge which is being made is the 3½ h.p. Roadster Multi, and this will be continued in 1916 as in 1915. Even prospective buyers of this machine have had to take a back seat, as the output, we are told, is absorbed by the British Government or our Allies. Rudge depots throughout the country have been practically drained of all motor cycle stock during the past few months.

"NO CHANGE."

The Lea-Francis and the James are two more manufacturers of popular types of motor cycles who propose no change in the specification of their 1916 models. The output of both firms, it is needless to mention, is greatly restricted owing to Government demands.

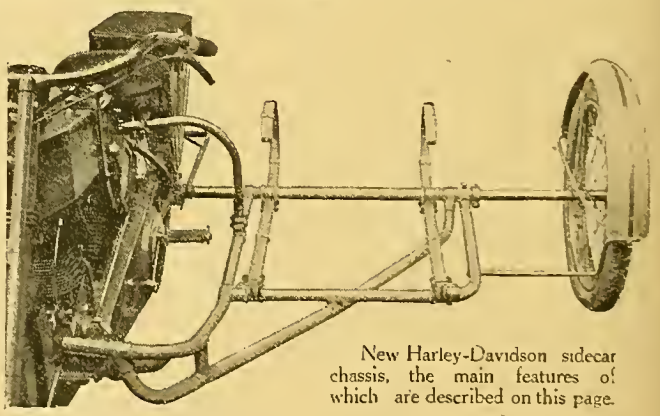


A Levis refinement. Extension on forward end of front mudguard, a useful addition that will be appreciated in very rainy weather.

1916 HARLEY-DAVIDSON SIDECAR CHASSIS.

THE accompanying illustration gives a very clear idea of the Harley-Davidson sidecar chassis, which, we may mention, is the same as that to which the ambulance for Russia, illustrated in our issue of the 28th ult., is attached. It will be noticed that the axle is telescopic, so that the width of the track is variable from 44in. to 56in. The mudguard is of exceptional width and very substantial, while the wheel has a voiturette rim and a 28in. × 3in. tyre, interchangeable with either tyre on the motor bicycle. The hub is said to be 100% over strength.

Another feature is the diagonal member running from the extremity of the main rear member to the forward attachment, stayed by lugs on the centre longitudinal member, and on the forward cross member. Compensating ball joints are provided to the four main points of attachment.



New Harley-Davidson sidecar chassis, the main features of which are described on this page.

"THE MOTOR CYCLE" RECRUITING SECTION.

A Limited Number of Vacancies in the Motor Machine Gun Service.

AS showing the patriotism of manufacturers in encouraging men desirous of enlisting, it is interesting to note that the following employees of the New Hudson Cycle Co. (Repairs Dept.) have recently joined the Motor Machine Gun Section, every one of them possessing excellent testimonials from the directorate:

B. Bourke.
A. Holroyd.
T. Rigby.
J. H. Beasley.
W. F. Fitchett.
E. J. Sheldon.
W. A. Bell.

Ambulance-driver Percy W. Moffat, who is known to all open competition riders and many readers as a consistent performer in the leading trials. His mount was a Douglas, and his principal performance was the winning of the Jarrott Cup in 1913. He is now driving a motor ambulance in France.

E. H. Dodds arrived from New South Wales last week, having paid his own passage home specially to enlist as a sidecarist-gunner in the Motor Machine Gun Service at 1s. 2½d. per day. At the outbreak of war he was a despatch rider to the New South Wales Government for a period of four months.

W. C. Comber, who during the last sixteen years has been in the service of the Duke of Portland, latterly as a chauffeur, enlisted in the M.M.G.S. as a car driver last week.

Last week's recruits in the M.M.G.S.:

J. H. Beasley (Birmingham).
J. C. D. Browning (Cullercoats).
C. S. Chalfont (Wembley).
H. A. Chitty (Clapham).
W. C. Comber (Worksop).
E. Didcote (Coventry).
E. H. Dodds (New South Wales).
A. Ellison (Wolverhampton).
W. J. Fitchett (Birmingham).
L. R. Gutsell (Shaftesbury).
C. W. Lister (Pudsey).
J. Lovatt (Coventry).
W. Price (Leicester).
A. Redding (Cambridge).
C. A. Reid (Whitley Bay).
G. S. Richards (Wembley).
J. R. Robinson (Chatburn).
J. M. Shotton (North Shields).
P. P. Simm (Cullercoats).
W. F. Sugden (Wernoth).
A. L. Warrender (Cannock).
E. G. Williams (Rhondda).

Only two were rejected by the doctor.

A dozen or so men are being selected for the M.M.G.S. each week from the applications received, in which should be mentioned age, height, experience, if medically fit, and when free to enlist.

Only experienced motor cyclists, preferably with sidecar experience, can be accepted at present.

The terms of enlistment in the M.M.G.S. are: Age, 19-38; enlistment for duration of war; pay, 1s. 2½d. per day, all found, usual separation allowance.

Applications, in brief, should be sent to the Editor, Mr. Geoffrey Smith, 19, Hertford Street, Coventry.

The next inspection is at the Coventry Recruiting Office, Masonic Buildings, on Wednesday next, the 17th inst., 2.30 to 4 p.m.

It may save needless correspondence if we repeat that the waiting list of despatch riders in the R.E. South Midland Divisional Area is now so long that no further applications should be sent in until further notice.

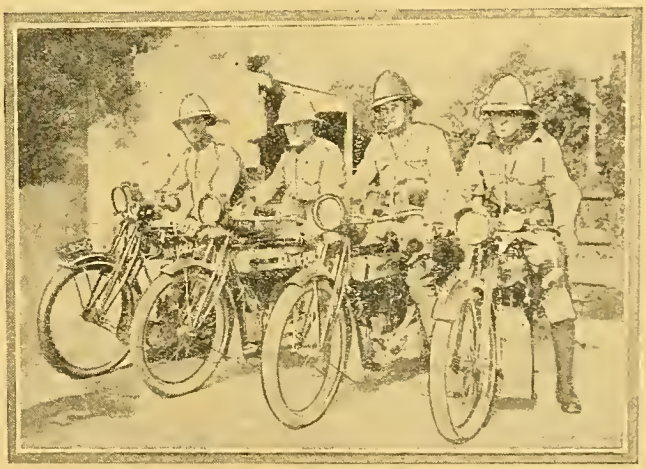
The newly-appointed secretary of the East Anglian Divisional Area is Capt. R. Wilson—Headquarters, East Anglian Divisional R.E., Ashburnham Road, Bedford—who asks motor cyclists in his district desirous of enlisting as despatch riders in the Royal Engineers to apply to him, as he has a definite call for ten motor cyclists per month.

Some of the riders attached to the Lowland Divisional Signal Company. Reading from left to right, the names are: Elkington (Douglas), Norton (Douglas), Allan (Douglas), Simpson (Bat), and Sutcliffe (Douglas)

A Sussex motor cyclist, writing on behalf of himself and a friend, says: "We are willing to enlist, but on making enquiries at the local recruiting offices have been met with such remarks as 'We are not recruiting for despatch riders,' and are given no advice how to proceed."

As these grumbles have become so frequent, we intend to repeat them until recruiting officers generally give advice to prospective recruits. The men referred to above have written to the editor appealing for particulars and advice how to enlist in a motor cycle section, and mention at the end of their letter, "We think you have done the country a valuable service, at any rate."

This is an example from one of many similar letters which we have received.



Four despatch riders, all hailing from Barnstaple, photographed preparatory to leaving for the Near East. The machines are two Triumphs, a Douglas, and a Sunbeam. We have to thank Mrs. P. Chanter, wife of Lance-Cpl. P. Chanter, for the original photograph.

The Whiting Spring Frame.

SEMI-ELLIPTIC SPRINGS APPLIED TO FRONT AND REAR.

JUST as *The Motor Cycle* persistently advocated the general adoption of the change speed gear, and so rendered the modern motor bicycle a go-anywhere, safe, and tractable mount, suitable for young or old, so has it worked equally hard to get the manufacturers to devote their attention to a properly sprung frame. For many years we have had spring forks, but it is not until recently that the question of rear springing has been studied. The result of our labours is beginning to bear fruit, and many makers are now going into the question carefully, so that as soon as normal times once more prevail the improvement in comfort will do much to popularise the motor cycle.

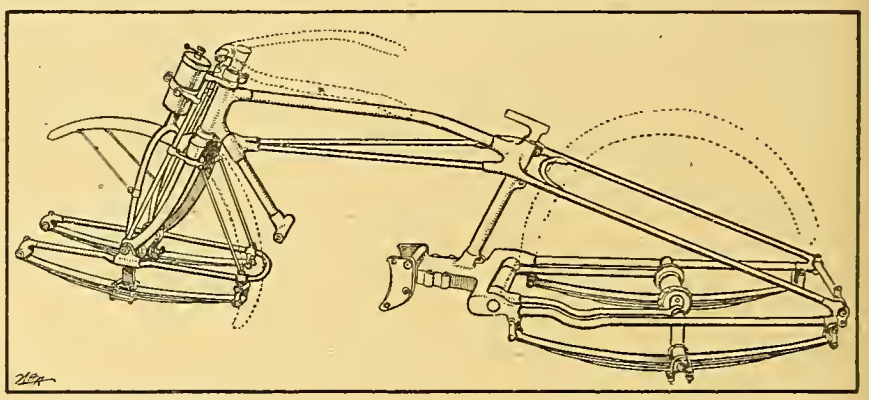
Not only is the properly sprung frame a real benefit in point of view of comfort, but beyond the comfort of the rider, valuable as this point is, other considerations have to be borne in mind, such as reduction in wear, greater ease of maintenance, and longer life for the tyres. Nuts will no longer become loose, and tyres will last much longer, if the frame and engine be adequately sprung.

The enormously increasing amount of heavy traffic due to the war has resulted in a serious deterioration of road surface, which is practically universal, and this state of affairs has made the demand for the introduction of spring frames even more necessary than it was before.

One of the latest devices of this kind owes its being to a clever Australian, Mr. Whiting, who in the early part of this year brought over one of his spring frames fitted with a Douglas engine.

Not an Untried Design.

It was clearly a success, and was favourably received by the few people whom the inventor and his colleague, Mr. Herbert Credgington, approached. This gave Mr. Whiting sufficient encouragement to build up a new and improved model, which we recently had the opportunity of inspecting. In his design, Mr. Whiting has adopted semi-elliptical leaf springs, wisely following automobile practice, and at the same time bearing in mind that this particular type of spring is smooth in action, almost devoid of rebound, and unlikely to break or give trouble. Not only in the springing, but also in the design of the frame itself, has a considerable amount of ingenuity been displayed. The frame gives a low riding position, is immensely strong, and is at the same time by no means heavy. The back forks are produced forward in a continuous line, so that they take the place of the secondary tube and terminate in a point at the base of the steering head. These two tubes are stayed by a substantial strut, and thus a triangle is formed giving great strength. The bottom bracket casting is specially designed to take the Jardine four-speed gear box, which is attached by means of bolts running through oval holes, thus providing means of adjusting the transmission chain. Alignment is preserved by the provision of a groove, along which the gear box slides.



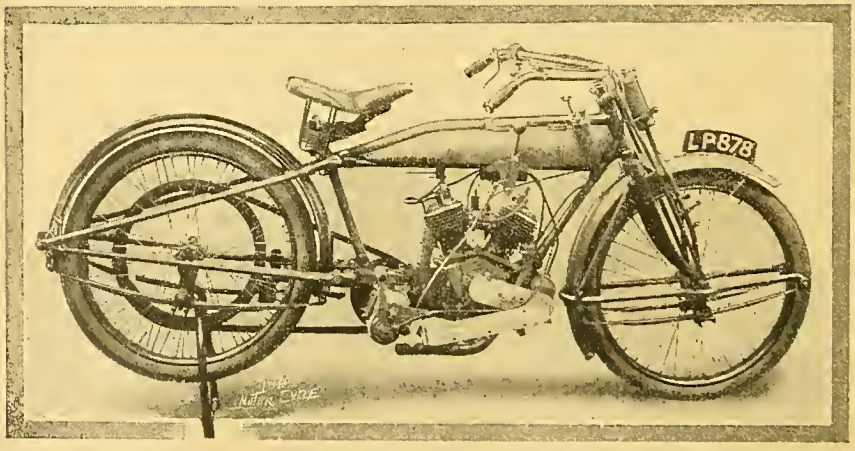
Showing details of construction of the Whiting spring frame.

This frame, we may mention, was built up by Mr. Whiting himself in the Midlands, is of entirely new design, and has not been previously described in any other journal. Turning first to the suspensions of the front wheel, it will be seen from the accompanying sketch that a V-shaped girder runs round the wheel, and is supported by stays on each side, extending from its rearmost end to the bottom of the fork crown. This girder serves as a form of attachment for the semi-elliptic springs which are provided with shackles at their rear. The upper part of the movable portion of the fork terminates in a dashpot arrangement, consisting of a phosphor-bronze piston working in a brass cylinder, which has a compression tap screwed into its top so that oil may be introduced from time to time. This device acts as an excellent shock absorber. The only unsprung portion of the frame is the short piece of mudguard to which the number plate is attached, and the manner in which it is bent up at the rear so as to prevent the oozing of mud and water on a wet day should be noted.

The Rear Springing.

Now, as regards the rear springing. The bottom bracket casting, which holds the gear box as it terminates in a fork, serves as a lug for the chain stays, and also acts as a support from the spindle on which the inner frame which carries the rear wheel moves. This is a device similar to that employed on the old Lagonda tricar, and serves to maintain lateral rigidity and to allow the wheel free vertical movement without altering the belt tension; thus the two arms of the inner frame act as radius rods, and are coupled directly to the centre of the semi-elliptical springs, which have shackles at each end. The spring clamps surround square blocks, which are pivoted at the base of the arms to which the wheels are attached, and so prevent jamming and allow the springs to work freely. Particular care has been exercised in the manufacture of the frame, and all moving parts, such as shackles, joints, and spindles, are provided with phosphor-bronze bushes.

The whole frame is ingenious, affords an excellent system of springing, and is



The Whiting spring frame as it looks when applied to a motor bicycle. The engine is a twin J.A.P., and the gear a Jardine.

The Whiting Spring Frame.—

not unsightly. The frame also lends itself readily to the attachment of a sidecar, and it is interesting to note that Mr. Whiting has the designs of a special sidecar in hand, in the frame of which the triangular method of construction is employed. Lugs are provided, by means of which the sidecar may be easily fixed to the rigid portion of the motor bicycle frame. The machine as a whole is thoroughly practical in every detail, and the specification is first class, such as a 4-5 h.p. J.A.P. engine, Jardine four-speed gear with chain-cum-belt drive, Best and Lloyd lubricator, and a capacious tank.

The interests of the Whiting spring frame are being looked after by Mr. Herbert Credgington, The Waverley Hotel, Southampton Row, London, W.C.

A Test of the Frame on the Road.

MANY spring frames appear to be efficient on paper, and yet in a road test do not come up to expectations, so to supplement the preceding description we gave the Whiting machines a good thirty miles run. Mr. Whiting being an Australian on his first visit to the Motherland, we took him down the Portsmouth Road, that favourite and historic highway from which Brooklands is but a stone's throw, so that he might see the famous track. He was mounted on the new model described in this issue, while for the first part of the journey we rode the original model fitted with a Douglas engine.

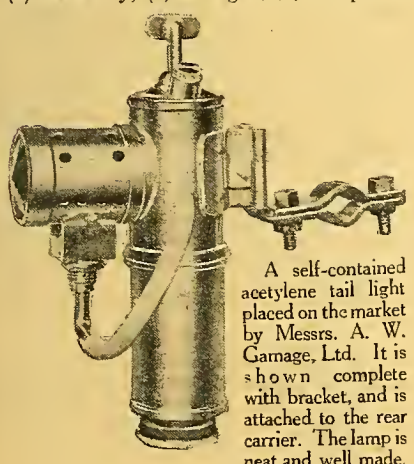
It was in Goodge Street where we first noticed the efficiency of the springing, as the surface is badly-worn wood, furrowed with sharp shallow pot-holes, which on a rigid frame motor bicycle are most keenly felt, but on the Whiting they were practically imperceptible. The next severe test was down Exhibition Road, South Kensington, at the bottom of which a steam roller was doing much needed repairs. We know this piece of road extremely well, and purposely made for every rough crossing or bad pot-hole we could find at a good smart pace. It only suffices to say that all road shocks were most efficiently absorbed, though when going over one very bad hole the front fork humped to its limit, owing to either the springs being a trifle light for our weight, or to the dash-pot not doing its duty. If the latter were the case, the matter can be easily remedied.

A good example of an ordinary rough road is that stretching from the Robin Hood Inn at the foot of Kingston Hill until the tramlines are reached. Here the value and efficiency of the springs were appreciated to the full. The machine was eminently comfortable, even though driven at a good speed, while the only effect of an excessively bad bump was a tendency to throw the rider off the saddle, which was not an unpleasant sensation, as the return was made without shock or jar. A circuitous route was purposely taken through Kingston, to find out how the machine would corner. We found that the motor bicycle would take corners at a good pace with absolute steadiness, and give the rider every sense of security, and this was undoubtedly due to an absence of side play. In the open country the machine was purposely driven fast, so that the springing might be adequately tested. The last severe test was the road from Cobham to Brooklands, which is in really bad condition. This was taken on the new 4-5 h.p. model, which we found excellent, though the springs were a trifle stiffer than those on the mount we had been riding. Altogether we were most satisfied with the Whiting spring frame, which certainly appears to fulfil the claims made for it by its inventor.

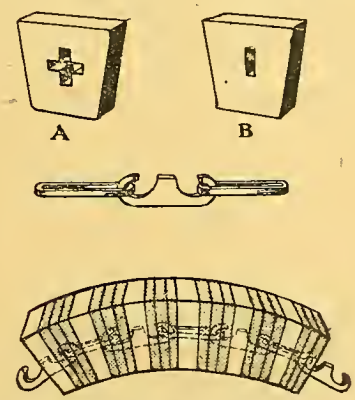
Road Test of Zilla Belt.

RECENTLY we have subjected a belt of the above-named make to a thorough road test, the machine on which it was tried being a 5-7 h.p. Abingdon of considerable vitality, fitted with belt drive from countershaft. Having now covered 1,000 miles with this belt, our riding being of the all-weather variety over mountainous roads, we are able to form some idea as to its merits compared with the rubber and canvas belts previously used.

It will be recalled that the Zilla belt consists of rubber and leather washers mounted alternately on a steel chain core, and the makers claim as its special merits (1) flexibility, (2) strength, (3) exceptional wearing qualities, and (4) exceptional gripping qualities.



A self-contained acetylene tail light placed on the market by Messrs. A. W. Gamage, Ltd. It is shown complete with bracket, and is attached to the rear carrier. The lamp is neat and well made.



The Zilla chain belt. A and B are leather or rubber blocks which fit over chain links. A fits over that part of the chain where the links join, and B over the centre portion of link.

When first the belt was fitted we certainly noticed a marked improvement in the transmission, there being no tendency for the belt to slip on sudden acceleration on up grades, but we could detect no traces of harshness in the drive, the pull being just as smooth as with the more elastic variety of belt.

The Zilla belt is considerably deeper than any other we have used, with the result that initial slack soon takes place as it beds down into the pulley. For some days we ran the belt much slacker than the makers recommend, but experienced no trouble with slip, and after the initial slack was taken up it kept its tension perfectly.

Extreme Flexibility.

As regards its wearing qualities we cannot speak too highly, and its flexibility is certainly a recommending feature, since it can be wound round a 1in. tube. The wear on the pulley may be slightly greater than with a rubber belt, but this is a negligible quantity. It does not slip in rain, but on crossing a watersplash every kind of belt we have ever used promptly relinquishes its duties, and the Zilla is no exception to this rule.

On account of its strength and its gripping qualities this belt is one of the most businesslike we have tried, and would appear to be specially suitable for high-powered sidecar machines with combination drive.

AN EARLY COMPETITION RIDER'S NEW ROLE.

MOST of the older competition riders will remember L. W. Bellinger, who figured successfully in trials and hill-climbs in the early days on Quadrants, and later on Indians when they were first introduced into this country, and with which firm he was connected for a considerable period. He is now a driver in the M.T. in France, where he has been practically since the outbreak of war.

CURRENT CHAT

TIMES TO LIGHT LAMPS.

Greenwich Time.

Nov.	11th	... ...	5.17 p.m.
,,	13th	... ...	5.14 ,,
,,	15th	... ...	5.11 ,,
,,	17th	... ...	5.8 ,,

In London half an hour earlier.

Thursday, November 25th.

A fortnight hence, the annual Buyers' Guide of *The Motor Cycle*, which this year will be illustrated, is due to appear.

Police Warning.

We understand the police are active in the neighbourhood of Ballycastle, so motor cyclists beware!

Motor Cyclists in the R.F.C.

Graham Price, a member of the committee of the Streatham and District Motor Cycle Club, who has been despatch riding in France since the early days of the war, has been granted a commission in the Royal Flying Corps. Lieut. Price may be remembered as an open trials competitor, his mount generally being a Bat.

Spare Valves for Two-strokes.

We wonder if the rumour is true that the War Office recently ordered a large consignment of spare valves for two-stroke Scott motor bicycles.

Military Douglas Stolen.

Gunner A. Dale, stationed at Shoreham Camp, has had stolen his 2¾ h.p. Douglas. Engine No. 20906, gear box No. 17441, frame No. 20510, registration No. HC 832. A reward is offered to anyone giving information to the police likely to lead to its recovery.

Coventry Club Suspends Activities.

Owing to the fact that practically every member of the Coventry and Warwickshire M.C. is either on military service or munition work, the committee has decided to suspend the club temporarily, as from the end of the present financial year, *i.e.*, December 31st.

From the Gallipoli Peninsula.

Corpl. A. J. Sproston, a well-known rider and trader, who has been on active service since the beginning of war, is now in the Dardanelles. A postcard from him dated September 15th only came to hand last week, so he may have been moved since. Sproston says that at present the use of their motor cycles is very limited owing to absence of roads.

Some Recent Balance Sheets.

The Triumph Cycle Co. are paying 6½% on the preference shares, 20% on the ordinary, and a 10% bonus.

Rudge-Whitworth, Ltd., are paying a 10% dividend, and putting a sum of £20,000 to reserve.

Rovers are likewise paying a 10% dividend. They are placing £30,000 to reserve, in addition to £7,500 to the fund for employees' dependants, and £10,000 to plant reserve fund.

AT A WESTERN AUSTRALIAN RACE MEETING.

The Goldfields Motor Club at certain times of the year use the dry bed of a lake near Kalgoorie for racing purposes. It provides an excellent surface, and the photograph was taken on the lake bed. The riders shown, H. Myers (B.S.A.) and A. V. Norton (Sunbeam), are successful W.A. competition men.

Severe Test for Machine Gun Sidecars.

Whereas the Triumph and Douglas machines intended for the use of despatch riders in the Royal Engineers Signal Section are (apart from the works test) given an extremely short test on the road before being taken over by the Government, it should be of interest to know that every Clyno motor machine gun sidecar outfit which is produced is given a hundred miles on the road by a works tester before being submitted to the Government Inspector, and subsequently every machine is given a further hundred miles test accompanied by the inspector. The fact that the runs take place in all kinds of weather adds severity to the trial, and such a testing should be the means of weeding out any single machine which may not be up to standard.

New Models.

Many 1916 models have been described in *The Motor Cycle* during the past few weeks, and for convenience of reference we give below an alphabetical list showing the dates on which these descriptions have appeared :

American Excelsior 7 h.p.	..	October	7th, page 346
Ariel 3-speed gear	.. ..	September	30th, page 316
Auto-wheel	.. .. ..	October	28th, page 418
Bamford variable gear	.. ..	September	2nd, page 227
Bradbury	.. .. ..	October	21st, page 401
Brough horizontal twin	..	September	9th, page 264
,,	..	October	28th, page 419
Calthorpe 2-stroke & 4 h.p. twin		October	7th, page 349
Campion 2 and 4-strokes	..	November	4th, page 442
Connaught	.. .. ..	October	14th, page 369
Douglas 4 h.p.	.. .. ..	October	7th, page 348
Dunkley lightweight and sidecar		October	14th, page 369
Edmund spring frame	.. ..	October	14th, page 366
Indian 2-stroke lightweight	..	October	14th, page 371
Indian 7 h.p. twin	.. ..	October	21st, page 394
Ivy 2 and 4-strokes	.. ..	October	14th, page 363
Jardine gears	.. ..	November	4th, page 444
I.E.S. 1 h.p. lightweight	..	October	21st, page 393
Levis	.. ..	October	21st, page 395
New Imperial	.. .. ..	October	14th, page 372
New Ryder 2 and 4-strokes	..	October	21st, page 393
Norton Sidecars	.. .. ..	October	21st, page 396
O.K.	.. ..	October	14th, page 373
Omega	.. ..	October	28th, page 418
P. and M.	.. .. ..	October	14th, page 370
Revere 2-stroke	.. .. ..	October	21st, page 393
Service 2¾h.p. 2-stroke & sidecar		September	2nd, page 228
Sturmey-Archer lightweight gear		October	28th, page 421
Vindec 6 h.p. and sidecar	..	October	28th, page 421
Wooler 2-stroke	.. .. ..	November	4th, page 445
Wulfruna	.. .. ..	October	14th, page 373
Yale 7 h.p. twin	.. ..	October	7th, page 357
Zenith	.. ..	October	21st, page 402

Imports and Exports.

The Board of Trade returns show that in October there was a drop in the imports and an increase in the exports of motor cycles over the previous month's figures. The new import duties came into effect on September 29th, and, though it is too early to gain an accurate idea of their effect the drop in the number of machines is worth noting. It is satisfactory to note the recovery of the exports, though this is still far behind what it was in the day before the war. We cannot expect any big increase in the number of British machines exported so long as the principal manufacturers are engaged on munitions. The actual figures are :

Imports.

October, 1915.—314 motor cycles, value £13,888 (complete with parts and tyres not imported with complete machines, £23,161).

September, 1915.—437 motor cycles, value £20,859.

October, 1914.—280 motor cycles, value £12,144.

Exports.

October, 1915.—880 motor cycles, value £38,257 (complete with parts and tyres not exported with complete machines, £64,825).

September, 1915.—637 motor cycles, value £28,847.

October, 1914.—1,124 motor cycles, value £50,982.

The Dangerous Dog.

A fatal motor cycle accident occurred at Leek Wootton, between Kenilworth and Warwick, one evening last week which was directly due to a dog. A sidecar outfit was passing through the village in question when a dog rushed across the road, colliding with the outfit with such force as to overturn it. The lady passenger suffered a fractured skull.

Presentation to a Motor Cyclist S.C.

Of the motor cyclists who are enrolled as special constables, under the ægis of the Automobile Association, a squad of fifteen are on duty each night at Fanum House. The Wednesday night squad is in charge of Sergt. F. A. Hardy (of the Motor Cycling Club), and so popular has he become with his men that they have presented him with a silver cigarette case.

The National War Funds.

At the week-end the principal relief funds stood as follow :

The Belgian Relief Fund	£1,060,000
The Queen's Work for Women Fund	166,756
The Times Fund for the Sick and Wounded	1,854,204
Weekly Dispatch Tobacco Fund ...	88,239
Daily Chronicle Christmas Gift Fund	7,009

Cork and District M.C.C.

The Cork and District Motor Cycle Club recently held its annual general meeting at the Imperial Hotel, Mr. Frank Daly presiding. The secretarial and financial reports presented were both of a satisfactory character, and the events of the year were well supported, despite the fact that twenty-five of the members of the club had joined the Colours. The new officers for 1916 were elected as follows: President, Mr. Frank Daly; hon. sec., R. S. Russell, 4, Prince's Street, Cork; asst. hon. sec., F. L. Deely, 68, South Mall; hon. treas., H. P. Debbin, King Street.

Paraffin as a Fuel.

A reader who has persevered with paraffin for his motor cycle, adding a quart to three quarts of petrol, suffered from knocking in his engine. The makers of his machine gave a remarkable explanation which frightened the owner of the machine. The paraffin, according to the works' representative, does not burn completely in the cylinder, but runs down the sides past the piston and thins the lubricating oil. This process continues until the oil in the crank case has lost its lubricating properties, and, as a result, the bearings begin to wear. Has any other reader an experience to confirm this? We hardly like to suggest that the explanation struck us at first as a very ingenious excuse for rapid bearing wear.

More New Models in this Issue.

Continuing our descriptions and illustrations of 1916 model motor cycles, in this issue we deal with the following well-known makes of British motor cycles, the illustrations and descriptions being mostly exclusive to *The Motor Cycle* as usual :

Scott Two-stroke, page 466.
New Ryder, page 465.
Nut-Jap, page 465.
Watsonian Sidecars, page 465.
1916 Enfield, page 465.
L.M.C. 6 h.p. Twin, page 465.

In addition to the above, we outline the programmes of the Rudge, A.J.S., and other companies who are making no change for 1916, and describe and illustrate the latest Whiting spring frame motor cycle, as well as the Berge—the latest Italian product.

Kent Lightweight Tour this Week-end.

It has been decided to run the Kent hill tour for lightweights on November 14th, meeting at Green Street Green at 11 a.m. After a tour round on a Clyno two-stroke, the organiser, T. J. Ross, of the Woolwich Club, reports the roads in fair trim.

Average Prices

We give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model, the average for the past week is quoted. If there were not at least two advertisements, then the last occasion on which they were quoted is given.

Make.	Year.	H.T.	Average for last week.	Latest weekly average obtainable
A.J.S.	1915	6 3-sp. sidecar	£85	—
"	1914	6 3-sp. sidecar	£74	—
"	1913	6 3-sp. sidecar	£55	—
"	1915	2¾ 3-speed	£46	—
Allon	1915	2¾ 2-speed	—	£30
Ariel	1914	3½ 3-sp. sidecar	£56	
"	1913	3½ 3-sp. sidecar	£41	—
Bat	1914	6 3-sp. sidecar	£55	—
Bradbury	1913	4 3-sp. sidecar	—	£40
B.S.A.	1915	4½ 3-sp. sidecar	£69	—
"	1914	4½ 3-sp. sidecar	£60	—
"	1913	3½ 2-sp. sidecar	—	£42
Calthorpe	1914	2 2-speed	£19	—
Clyno	1913	6 3-sp. sidecar	£45	—
"	1914	2½ 2-speed	£30	—
Douglas	1914	2¾ 2-sp. T.T.	£41	—
"	1914	2¾ 2-sp. kick start	£43	—
Enfield	1914	6 2-sp. sidecar	£66	—
"	1913	6 2-sp. sidecar	£52	—
"	1915	6 2-sp. sidecar	£81	—
"	1915	3 2-speed	£50	—
"	1914	3 2-speed	—	£41
H.-Davidson	1915	7 3-sp. sidecar	£74	—
Humber	1913	3½ 3-sp. sidecar	£32	—
Indian	1915	7 3-sp. sidecar	£72	—
"	1914	7 2-sp. sidecar	£64	—
"	1914	7 T.T. free eng.	—	£44
Ixion	1914	2½ 2-speed	—	£25
James	1915	4½ 3-sp. sidecar	£65	—
Lea-Francis	1913	3½ 2-speed	—	£42
Matchless	1914	8 3-sp. sidecar	—	£75
"	1913	8 2-sp. sidecar	—	£55
New Hudson	1914	6 3-sp. sidecar	—	£61
New Imperial	1915	2½ 2-speed	£29	—
"	1914	2½ 2-speed	£27	—
O.K.	1915	2 2-speed	£24	—
"	1914	2 2-speed	—	£25
P. & M.	1914	3½ 2-sp. sidecar	£52	—
"	1913	3½ 2-sp. sidecar	—	£47
Premier	1914	3½ 3-sp. sidecar	—	£49
"	1913	3½ 3-sp. sidecar	—	£41
Rex	1914	6 3-sp. sidecar	—	£60
Rover	1914	3½ 3-sp. sidecar	£54	—
"	1913	3½ 3-sp. sidecar	£40	—

CURRENT CHAT

SPECIAL FEATURES

IS THE CYCLE CAR DEAD?

DESCRIPTIONS AND ILLUSTRATIONS OF MANY NEW MODELS.

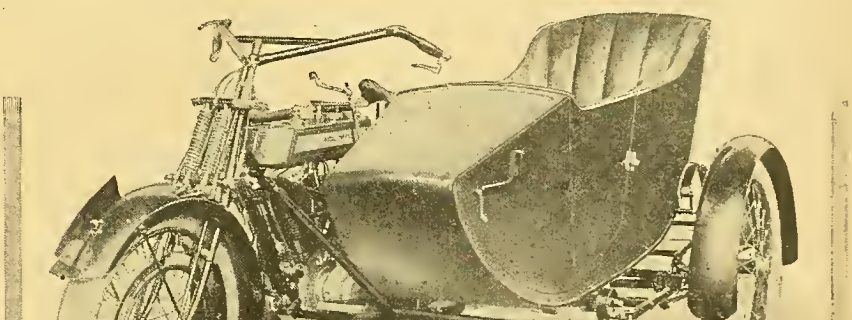
THE MODERN MOTOR CYCLE ENGINE

Average Prices.

Rudge	1913	3½ multi sidecar	—	£35
"	1913	3½ multi	—	£34
Scott	1914	3¾ 2-sp. sidecar	—	£53
"	1914	3¾ 2-speed	—	£44
"	1913	3¾ 2-sp. sidecar	—	£41
"	1913	3¾ 2-speed	—	£38
Sunbeam	1914	6 3-sp. sidecar	—	£88
"	1914	3½ 3-sp. sidecar	—	£61
"	1914	3½ 3-speed	—	£59
"	1915	3½ 3-speed	—	£66
Triumph	1914	4 3-sp. sidecar	£55	—
"	1914	4 3-speed	£45	—
"	1913	3½ 3-sp. sidecar	£44	—
"	1913	3½ 3-speed	£36	—
Williamson	1914	8 2-sp. sidecar	—	£58
Zenith	1914	8 Gradua sidecar	£68	—
"	1914	6 Gradua sidecar	—	£56

120 Petrol Tins Wanted.

We have received an appeal from a medical officer for 120 two-gallon petrol cans, to enable the men of his unit in the trenches to be supplied with drinking water. Empty tins should be sent by parcel post addressed to the Medical Officer, 2nd Black Watch, Bareilly Brigade, Meerut Division, Indian Expeditionary Force, A. If the sender encloses his or her name and address an acknowledgment will be made. Readers who send tins will be rendering services that will be felt immediately right in the front line trenches.



Next year's 6 h.p. passenger model Enfield. This is the Colonial model, and a feature is the good ground clearance of the crankcase. (See next page.)

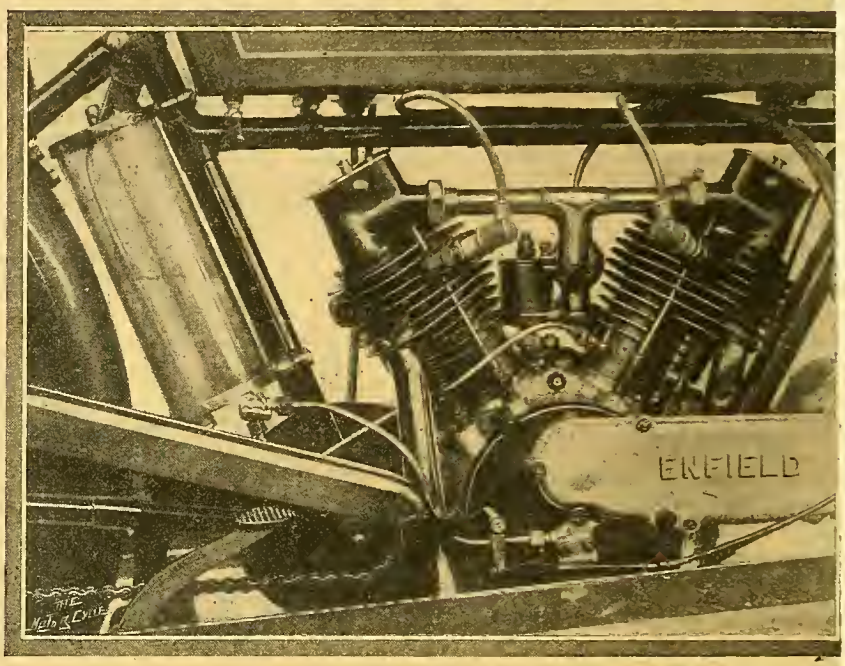
Royal Enfield 1916 Models.

Chain Drive Throughout; Enfield Two-speed Gear.

LIKE many other of the larger manufacturers, the Enfield Cycle Co., of Redditch, has been engaged to a great extent on Government work, and has also been supplying motor cycles to the Russian and Belgian Governments; thus, we must not expect to find any radical departures from this year's specifications, but detail improvements have been made where it has been found necessary.

To take the several models in order: The 2¼ h.p. (64 × 70 mm., 225 c.c.) two-stroke has proved so satisfactory that no alteration has been needed. It is supplied as before with the Enfield two-speed gear, which embodies a slipping clutch—an item found on only a few baby two-strokes—cush drive, and chain transmission, but owing to war conditions the price has been advanced to forty guineas.

The frame and forks of the 3 h.p. (60×75 mm., 425 c.c.) model are now of extra strength, and are on the same lines as those formerly supplied for Overseas use. The principal alteration lies in taking a supply of oil direct to the front cylinder, this supply being controlled by a tap close to the cylinder. The shape of the inlet pipe has been modified, so that the carburetter lies snugly between the cylinders, where it is kept nicely warm and at the same time quite accessible. This model is supplied as an ordinary roadster or a T.T. model, both at the old price, viz., 50 guineas. The latter can be fitted with special light mudguards, or the standard guards, which are well valanced, and footboards or footrests. These few improvements should add to the value of a machine which we know from experience to be excellent.

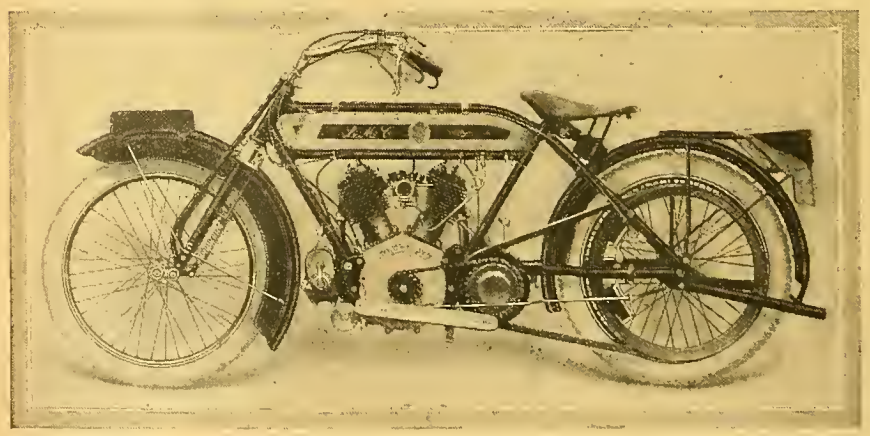


Engine of the latest 3 h.p. Enfield, showing new induction pipe design, and oil pipe leading direct to front cylinder with tap for turning oil on and off

The sidecar combination remains practically as heretofore, but the front brake now operates on a special brake drum fitted to the wheel, which makes the wheel quickly detachable, and is powerful in action—a valuable point on a sidecar machine. The sidecar is built and upholstered throughout by th Enfield Co. The price of the 6 h.p (76×85 mm., 770 c.c.) models has bee advanced to 85 guineas, or 100 guinea including a Lucas dynamo lighting s and Lucas horn. An 8 h.p. engine ca be fitted at an extra cost of 2 guineas.

The 6 h.p. L.M.C. Twin.

FOR 1916 the Lloyd Motor Engineering Company will concentrate its attention upon the 3½ h.p. single-cylinder L.M.C., which has an engine of 85 × 88 mm. = 499 c.c., and the 6 h.p. L.M.C., which has a twin-cylinder engine of 79 × 86 mm. = 842 c.c. Whereas the 3½ h.p. mount is well-known to our readers by reason of its outstanding performances in the different trials when ridden by L. A. Bees (who is no with the Motor Machine Gun Service the new twin-cylinder machine has nc been heard much of, mainly on account c the war putting a stop to the manu facturers' proposals in connection wit this new mount. Nevertheless, we ar able to illustrate the finished design, an it will be noticed that the engine, whic is to the design of Mr. W. J. Lloyd, i of the side-by-side valve pattern, lubri cated by drip feed. An Amac carburette is used, and a sensible sized petrol tan (having a capacity of two gallons) wi please the long-distance tourist. Th transmission is of the combined type, i conjunction with a Sturmey-Archer three speed countershaft gear. In the illustra tion the case enclosing the front chain ha been removed.

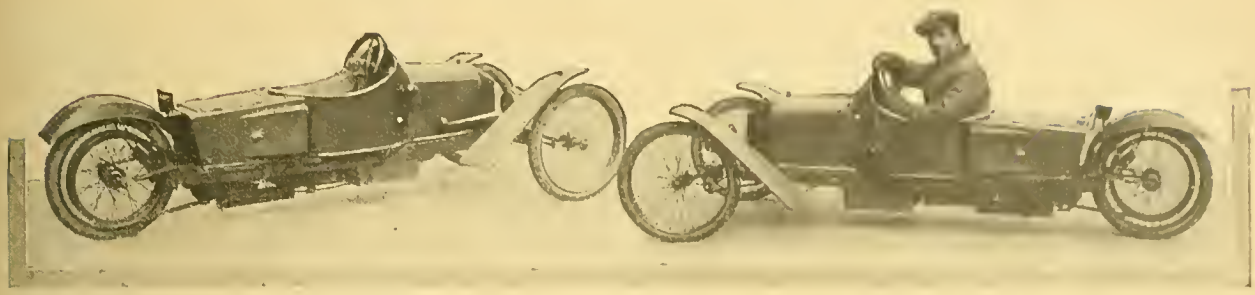


The 6 h.p. twin-cylinder 1916 model L.M.C. The chain cover was removed when the photograph was taken. A feature of this machine is the location of both brakes on the belt rim.

It will interest our Overseas readers t know that the ground clearance of th L.M.C. is 5½in. in combination with 54in. wheelbase, whilst the standard siz of tyres is 650 × 65 mm.

The 6 h.p. twin L.M.C. is a sound strongly built machine, retailing at £74 but the firm has never yet been in position to satisfy the demand, for th reasons stated above.

AN INGENIOUS MONOCAR.



The Binns three-wheeled monocar—a rakish looking home-built machine described on this page.

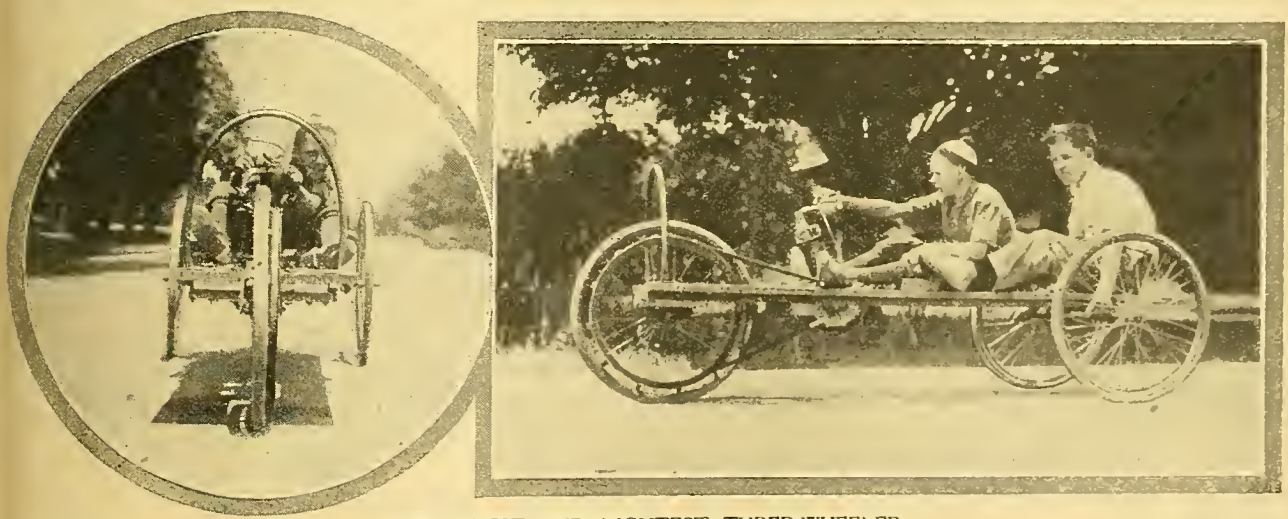
IT is not often that much enthusiasm can be aroused by a three-wheeled runabout built by an amateur, and we may frankly say that it is exceedingly rare to find such ingenuity displayed in the construction of a vehicle of this type as is the case with the runabout illustrated on this page. It has been built by Mr. P. J. Binns, of 87, Blackfriars Road, S.E., in his own workshop.

It has an ash frame, at the rear end of which the 8 h.p. J.A.P. engine is fitted tandem fashion. Underneath the seat there is a three-gallon petrol tank, while the dummy bonnet in front contains a tank holding one gallon of lubricating oil. The petrol tank, owing to its position, has to feed the fuel to the carburetter under pressure, and this is accomplished by blowing down a rubber pipe, at the end of which there is a tap. After the owner has given a good hearty blow down the pipe the pressure is maintained by the engine, the crank case compression being used for this purpose. The system is exceedingly simple, and works well, as pressure is maintained by the aid of two ball valves. Further, pressure is maintained for quite threequarters of an hour after stopping, and even if pressure has escaped and there is sufficient petrol in the carburetter to start the engine, pressure is again raised by the engine itself.

The lubrication is through a drip feed on the dash, the oil being supplied to the engine by crank case suction. The little dashboard contains a watch and switch, the latter allowing the two side lights, tail light, and dashboard light to be lighted, or the tail light only. Practically every part of the vehicle was made by Mr. Binns himself, including the lamps, and the side lamps especially are most ingenious, being manufactured out of bedstead knobs. Having no external wiring, their appearance is exceedingly neat.

The illustrations show on the left of the vehicle the hand-actuated clutch, which is also foot controlled. To start the vehicle, which is single geared, the clutch lever is pressed forward, the exhaust lever on the half steering wheel is depressed, and the cable starter smartly pulled up, when the engine fires, usually on the first pull, and the driver then takes his seat. On his depressing the clutch pedal the clutch hand lever flies back into its normal position. The clutch itself is 7in. in diameter, and is of the cork insert pattern.

The drive is by chain and belt. The carburetter is of the pilot jet type. The sparking plugs may be removed and various adjustments effected to the engine without removing the bonnet; and even the compression taps can be opened and petrol injected through lubricators, from which the copper pipes run down to the compression taps, these lubricators being situated on the outside of the bonnet. The chassis is suspended on quarter-elliptical springs fore and aft.



THE LATEST AND LIGHTEST THREE-WHEELER.

A Californian youngster is responsible for this buckboard, which is built up with three pedal cycle wheels, a motor cycle engine, and a few odds and ends. Drive is by belt direct from engine to front wheel and steering is by the back wheels, though how we are not in a position to say.

LETTERS TO THE EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Reversing a Scott.

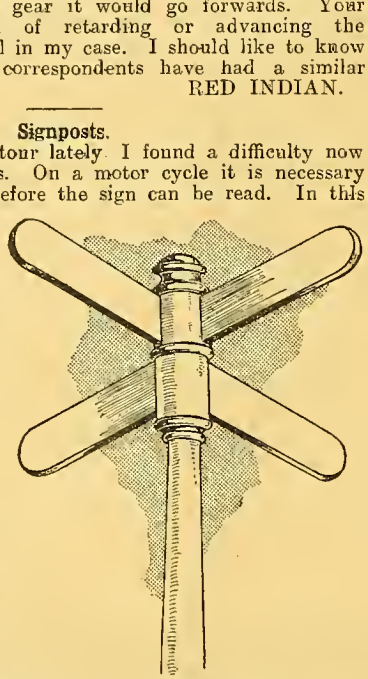
Sir,—I read with interest the account of a Scott reversing in your issue of October 28th, as the one I had formerly would reverse. It was a 1915 model fitted with a Splitdorf magneto.

It would reverse most unexpectedly, as, often after kick starting, when the low gear was gradnally let in, the machine would go backwards. I then used to stop the engine, and turn it over against compression. On kick starting again and letting in the low gear it would go forwards. Your correspondent's method of retarding or advancing the magneto was of no avail in my case. I should like to know if any other of your correspondents have had a similar experience. RED INDIAN.

Signposts.

Sir,—During a short tour lately I found a difficulty now and then with signposts. On a motor cycle it is necessary in some cases to stop before the sign can be read. In this case, if two of the arms were placed lower as shown there would be no trouble. As it is, they are made invisible by one another. At times they are a puzzle, and speed is lost examining them. Thanking you for past help,

$2\frac{3}{4}$.



The Modern Motor Cycle Engine.

Sir,—I was much interested by the contribution of A. Worsdale, but some of his criticisms strike one as unjust. He condemns the side-by-side valve arrangement, but offers no suggestion as to how this is to be improved. If overhead valves are adopted it introduces the complication of rocking levers and the supports, which will interfere with the free expansion and equal cooling of the cylinder head. Also the inertia of the operating mechanism is greater. I agree with him regarding making the tappet rods in tension instead of compression, but this might add complication.

Now for his big criticism—the cylinder. He remarks it is a masterpiece of design to use cast iron in tension. If he refers to any other prime movers he will still find this masterpiece of design still in evidence. And admitting cast iron is not the best of metals in tension, what alternative has a designer? Steel is such a difficult metal to cast without getting spongy places. Also he says that radiating fins are cast parallel; but this is not so, or the pattern would not draw from the sand without breaking down the mould.

I certainly think aluminium is not the best metal for crank cases, as the crank case forms the bed and support for the cylinder, besides being an important member in the frame. I consider that crank cases might well be pressed up from steel. I will close by remarking that it is easy to criticise, especially destructively, but difficult to suggest improvements.

B. CUTLER.

"Deserving of an Iron Cross."

Sir,—I have been looking for a reply to C. E. Thomas's letter under the above heading in *The Motor Cycle* of October 14th. To me his statements have proved that the Douglas was not ill-treated. It got three pump charges every morning for the thirty miles to be covered on a business trip. The machine has been ridden thus five days a week, and at 150 miles per week it has covered, say, 15,000 miles in close on two years, and is in a "fair condition." Yes; because it got ample oil. True, the rider put in too much oil at a time, and was thereby liable to have sooted plugs, etc.

Before the days of drip feeds ninety miles to one pumpful of a special oil were quite the rage, and engines did not suffer. Possibly the Editor can tell us again about the expert who, some years ago, did a big mileage without adding oil to his engine *en route*. I have forgotten the details of this successful experiment.

Now, the rider who puts in three pumpfuls of oil before doing thirty miles is better able to preserve his engine than those (and there are many) who at times fail to keep the drip flowing.

I believe the Triumph Co. have discarded the drip feed system for the old direct pump. Why? Not the fault of the system, but the average man behind it.

A rider with the experience of having covered 15,000 miles successfully within two years on the same motor cycle must know a little about the oiling his engine requires, and I say he is to be congratulated and not condemned. W.H.

[It is true that a rider was once reported to have ridden from Coventry to London without oiling his engine *en route*, under the observation of a contemporary, but we do not know why he did it, or the condition of the engine bearings at the finish.—ED.]

Spring Frame Design.

Sir,—I have examined with great interest the illustrations of spring frames in your issue of October 21st, and whilst I cannot but admire the ingenuity displayed in the various designs, let us hope that they are as efficient as their makers intend them to be.

Leaving out of the question front wheel springing, I prefer that the back wheel alone should have the spring movement, and that the carrier should be firmly fixed to the frame of the machine.

Judging from your illustrations the carriers of the Douglas, Matchless, Van Geert, and A.B.C. are fixed more or less firmly to the back wheel spindle attachment, and would share the vertical movements of the back wheels of the machines mentioned, the Indian being the only carrier fixed to the main frame.

When the weight of the rider is in the saddle of the Indian and A.B.C. the back springs naturally come into play, and the main frame is forced down somewhat, say, 1in.; the pivotal centres of the back wheel and chain driving mechanism respectively remain almost constant in relation one to the other, but with the Douglas the tendency is for the back wheel centre to become further away from the belt pulley centre, thus stretching the belt very considerably. Should the Douglas springs allow of a vertically inclined movement of the back wheel 2in. upwards, the belt would be called upon to stretch $\frac{1}{4}$in. top and bottom, total $\frac{1}{2}$in., by reason of the relative position of the countershaft pulley and the pivotal centre of the back forks. I may be wrong.

but I have worked the movement out to scale, and cannot see where I have erred. I, however, hope the mistake is mine.

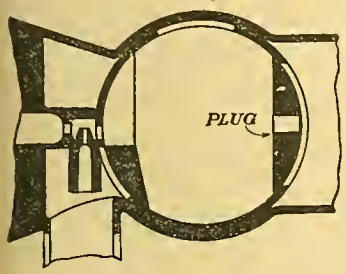
To make my meaning clearer, the more the Douglas is loaded (including bumps from pot-holes and other obstructions on the road), the further does the back wheel belt rim get from the countershaft pulley. Moreover, I should imagine that the inevitable flapper on the carrier would have a somewhat bumpy time. Perhaps Messrs. Douglas Bros. will assure us that this is not the case.

To my mind, the only possible method of keeping the back wheel the same distance from the countershaft when back wheel springs come into play is to pivot the back forks on the axis of the countershaft pulley. This could easily be done, but the modern practice of squeezing the back forks to almost a point would have to be departed from.

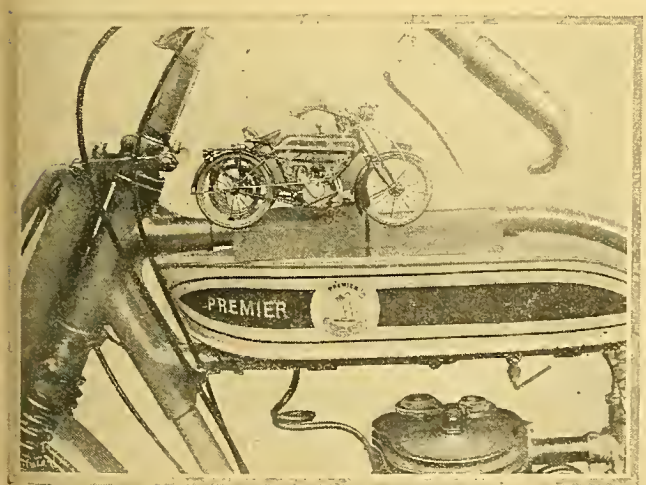
C. A. FORBES.

Easy Starting.

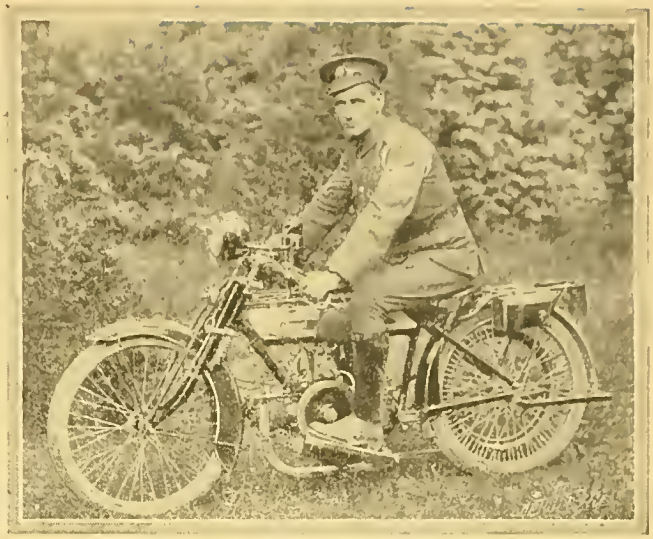
Sir,—Your readers may be interested in a small alteration I have effected to a Senspray carburetter fitted to my 3½ h.p. Rudge-Multi and sidecar. I have found it quite satisfactory as regards power and acceleration, but there was a difficulty in starting and running slowly. As my machine is a T.T. model—no clutch or kick-starter—both these qualities were desirable. Therefore, I drilled a $\frac{5}{76}$in. hole in the throttle valve next the engine, so that when the throttle was shut the hole was in centre of the inlet pipe. I then tapped this hole, and screwed into it bushes having various sized holes through their centres. I found that a bush having a $\frac{5}{32}$in. hole gives an immediate and unfailing start and really slow running. You will see that with this arrangement there is a tremendous suction on the jet at even the slowest speeds, provided the throttle is shut and air slightly open. It is impossible to get this suction to the same degree with the carburetter unaltered, as the air is opened at the same time as the throttle. I am enclosing a rough sketch, which will make the idea clear.



J. DOUGLAS.



A model of a Premier 3½ h.p. sidecar outfit mounted upon the tank of the original. With the exception of the wheels the model was made from scrap pieces of metal. The model, which has been made by Mr. J. Coles, of Westgate-on-Sea, has an overall length of 8½in., and the sidecar is a model of the Canoelet.



18,757 MILES WITHOUT TROUBLE.

Sergeant-Major Wilmore, of the A.S.C., and his Brough motor bicycle. The owner reports having covered 18,757 miles of military despatch work on this machine, and mechanical repairs have cost nothing.

The Lady Motor Cyclist: A Protest.

Sir,—I have read with interest in last week's issue of *The Motor Cycle* the protest as regards the dress of some lady motor cyclists, and I am pleased to see this serious state of affairs being taken up in the right way. It is true that of late we have seen some frightful illustrations of ladies in the press (thanks not in *The Motor Cycle*), some of them wearing riding breeches, other times they hold themselves up to the public ridicule wearing a suit of gentlemen's overalls, whilst one lady was actually standing on a gentleman's machine performing acrobatic tricks with her feet in the air—almost standing on her head—and to have this sort of thing thrust before the public gaze is most degrading and certainly does injury to the pastime. If a lady is to lose her self-respect in this way she should not make a public exhibition of herself, and if she cannot do the pastime any good, well, she should not do it any harm, for it is just this sort of thing that causes many who hitherto were contemplating joining our ranks to give up the idea in horror and disgust. It should be the aim of our sisters to look at all times neat, graceful, and feminine, not bold, mannish, and, shall I say, "slightly touched."

It is not necessary in any way for a lady to wander away from the ordinary walking costume for the purpose of riding a motor cycle, as to-day we have many different makes especially designed for "our" use. These we can get suitable for all riders, and there is no need for a lady to adapt herself to a machine which has been made for her requirements.

I appeal to the press to reject any photographs in future of "the lamb in wolf's clothing," and once this nonsense has died a natural death, aided by public ridicule, then the pastime will be largely taken up, and our friends will look forward to an outing with us just as in the days of the push cycle, and very shortly it will be "the fashion of the future."

It is ten years ago since I took to motor cycling, and I have always advocated an open frame, so that I could sit my steed with gracefulness and always look womanish.

MARY REID.

THE MOTOR CYCLE

BUYERS' GUIDE OF 1916 MODELS.

THURSDAY, NOVEMBER 25th!

This issue will be considerably enlarged and will contain an illustrated review of the various new pattern motor cycles.

Petroil Lubrication.

Sir,—I noticed a letter in *The Motor Cycle* for October 28th from a Connaught rider condemnatory of the "petroil" method of lubrication for two-strokes and recommending the substitution of another system in this machine.

Though the writer of this letter does not say what his troubles were, I feel that I must write to say that my experience of this machine and method of lubrication are such as to make me perfectly satisfied with both, and I cannot conceive of anyone fitting another lubrication system to this machine unless from a natural fondness for fitting "gadgets."

I have used a standard Connaught three-speed machine with sidecar since July, 1914, and this year toured with a 10 stone passenger (I am 12 stone myself) from Buckinghamshire to Scotland and *viâ* Dumfries to Stranraer, crossing over to Ireland, taking the Antrim coast road, and visiting Portrush, the Giant's Causeway, etc. This October I have toured with the same passenger from here (Stone) to Bodmin, Cornwall, taking the difficult road to Moretonhampstead and across Dartmoor, *via* Two Bridges, to Tavistock, Gunnislake, and Callington. With some occasional foot slogging the machine was able to ascend practically every hill. This serious touring would surely test any method of lubrication. However, since my return, I have had the cylinder off, and found everything in good order and apparently well lubricated. The exhaust ports had some deposit, and were scraped, but this was to be expected, as it had only been done once before.

The other week I fetched friends from the station three and a half miles away and a steady rise. These were a well nourished gentleman on the carrier, his wife and child in the sidecar, with a huge portmanteau across them in front; total 42 stone up.

Is it to be wondered at that I see little wrong with "petroil" or the proportion I use of 1 in 14?

(Dr.) T. S. LOGAN.

Ladies and Motor Cycles.

Sir,—Just lately I have seen illustrations of lady motor cyclists in *The Motor Cycle* which have caused me to make up my mind to drive. At first I felt rather nervous, as I thought the gas, air, spark, clutch, oil, gears, brakes, etc., were so much to remember that I should not be able to stop when I wanted to, but now I think it is lovely (my husband says he likes it in the sidecar). I enclose photograph of our Premier outfit.

MAY OTTON.

Mr. and Mrs. Otton, of Castle Cary, and their 3½ h.p. Premier sidecar outfit.

Dimming Bright Lights.

Sir,—As a matter of interest to your readers who have electric lamps fitted on their motor cycles, I note that the usual method of compliance with the Government lighting rules is the obscuration of the glass front of the head lamps. I have often wondered at the impractical and extravagant method of obtaining this light diminution, and would inform your readers that the best method at which they can attain the reduced lighting, and at the same time attain proportionately reduced current consumption, is by having a bulb of higher voltage inserted in the lamp. As an example, my firm (Ward and Goldstone) are providing a special 7½ volt bulb for 4 volt head lamps. The 7½ volt bulb in a 4 volt head lamp gives a red light sufficient to comply with the conditions for road lighting, and also the regulations as to volume of light.

The convenience and economy gained by using this method of light reduction are remarkable. For example, the Volex Giant dry battery lights the 4 volt head lamp bulb for about eighty hours in ordinary use, but when this special 7½ volt bulb is used upwards of some 200 hours of light are obtainable.

M. W. GOLDSTONE.

A Novel Three-wheeler.

Sir,—I recently saw in Bedford a very natty little three-wheeler with the wheels as on a sidecar outfit. What fascinated me was the neat War Office green finish, which was remarkably smart and workmanlike; also the very silent engine, which showed wonderful speed and acceleration. I think it was a horizontally-opposed twin, or two-stroke, or both. I did not care for the position of the wheels if it were to be designed as a complete chassis (as opposed to a bicycle and sidecar), but it overcomes the objection of the three tracks, and also brings it into direct comparison with, not the 8 h.p., but the 4 h.p. sidecar outfit, as it looked no heavier or more elaborate than something like a 4 h.p. Douglas with a wide and very low sidecar, but no handlebars, saddle, etc., and I think the petrol tank at the back. I do not think it is the same as the two-seated sidecar outfit steered from inside, which I think was called the H.S.M.

Could you tell me the name and power and price of this little "'bus," if you happen to know? I meant to explain that there were two, both brand new and driven by mechanics, and that they were registered AM.

I am just leaving for the Dardanelles, and would like to hear the name of this little vehicle if you can tell me.

R. F. MEREDITH (Lieut.)

[Doubtless our correspondent met with two of the new Scott three-wheelers described in our last issue, as they are now being tested by the War Office authorities.—Ed.]

A Trial for Armlet Wearers—A Proposal.

Sir,—I read with interest in the daily press that khaki armlets are to be issued to men who are either unfit for service, or who have been invalided out of the Army.

We have had of late trials, races, and hill-climbs for special constables, munition workers, the Army, and the Navy. Why should we now not have these for wearers of the armlet?

I received a commission in August, 1914, and was invalided out of the Army in January of this year, but I am able to ride a motor cycle. I was not allowed to compete in the Army events, as I am not entitled to wear uniform, and neither am I eligible to ride as a munition worker or special constable.

There must be many others like me, and also a great number of motor cyclists who have been refused service.

I therefore write to ask you to organise, if possible, a trial or trials for armlet wearers *when* we get our armlets. I see no reason now why open trials should not be run—even the hardy Bristol M.C.C., which ran its New Year and Easter open trials this year, in both of which I competed, has bowed before the storm, and has decided not to run its Land's End trial this winter.

Surely the manufacturers would now support an open trial, provided that entrants had to be armlet wearers, for are not many of our experts unfit for service?

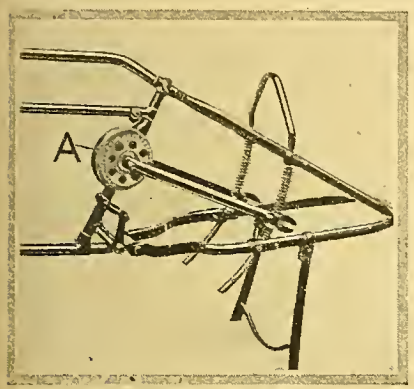
I hope this letter will catch the eye of some sporting club secretary, who will provide the trial asked for, against which there can be no objection of any sort.

E. RIDER TROWARD.

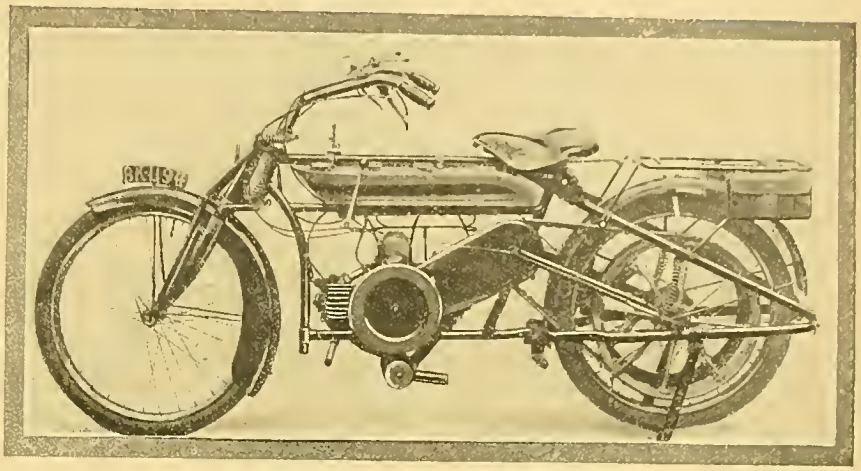
The Morley Spring Frame.

A Despatch Rider's Attempt to Solve the Rear-springing Problem.

A RATHER novel rear springing device has been patented and adapted to a Douglas motor cycle by Mr. E. W. Morley. The rear portion of the bicycle frame has been extended in order to form a substantial support for the springing portions. An additional pair of chain stays are inserted to carry the wheel, and are attached to the main frame at the point A in the smaller illustration, where they are hinged. The countershaft pulley is also mounted at this point in order that the distance between the pulley centres shall not vary, and also that the angle of movement of the wheel shall be the best for reducing as far as possible the strain on the radius rods.



The Morley spring frame



Douglas machine fitted with the Morley spring frame.

The springing is obtained by supporting the ends of these radius rods on two coiled springs. The stays are prevented from moving sideways by inserting two curved supports upon which the stays slide in bronze bearings. These supports also form guides to keep the springs in position. Two small springs are fitted under the stays to take up any recoil.

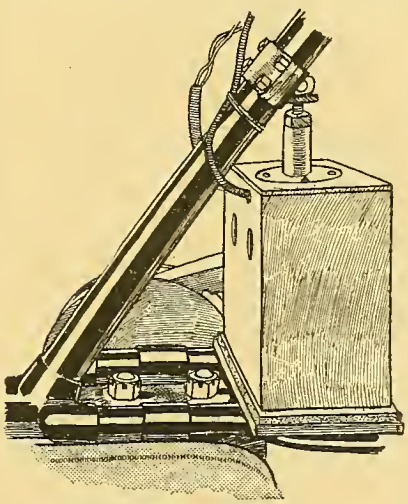
It would appear as though these sliding members would be considerably affected by mud and wet, while it also seems as though the position of the countershaft renders the belt extremely short, and we should think it would be apt to get in the way of the rider's legs. We are told that this frame has been thoroughly tested over the very worst roads in both England and France, and has proved most satisfactory.

How to Carry an Accumulator.

Two Excellent Ideas Neatly Carried Out by a Practical Motor Cyclist.

WHILST we were on a recent visit to Messrs. Brown and Barlow, Ltd., Mr. Evans, the works manager, showed to us an extremely interesting gadget for securing the accumulator in place on his New Hudson. As is usual with machines owned by enthusiasts, the device is by no means temporary, but, on the contrary, is substantial and well thought out, being so arranged that there is no possibility whatever of acid jumping out of the accumulator, spreading over the case, and ruining the padding used to prevent rattling. The accumulator is bedded down on a thick rubber sheet, and is held rigidly in position by a bar of wood lined with more rubber, the whole being pressed down by the lid of the tin box enclosing the accumulator.

As can be seen from the sketch, this tin box is mounted on the bottom bracket of the machine immediately behind the securing nuts of the gear box, there being a wooden platform held in position between the two tubes to which the gear box is attached, and on this platform yet another thick rubber pad, the wooden platform and the pad being kept in position relative to one another by small pegs. Upon the rubber pad goes the metal accumulator box, whilst on the seat tube of the bicycle is a small adjustable clip having a lug to which is attached a short screw with a clamp end, adjusting nut, and locking collar. The clamp end fits down upon the lid of the accumulator box, which then is pressed down hard upon its rubber pad by the adjusting screw, and the whole locked in position by the lock nut shown. Wires go through holes drilled in the side of the metal box, are carried upwards to a switch below the saddle, and then taken along the top tube of the bicycle to a small car side lamp mounted in a bracket as a motor cycle head lamp. The switch had to be placed in this position owing to the mischievous nature of small boys, who, if they are able, switch on the lamp and waste current whilst the owner is away. Since the earlier troubles of accumulators (and some of the modern ones, too) are caused by the accumulators working loose inside their boxes and spilling quantities of the acid on the securing padding, this device is bound to be copied by other motor cyclists having electric light installations, and a simpler or more rigid attachment could scarcely be imagined.

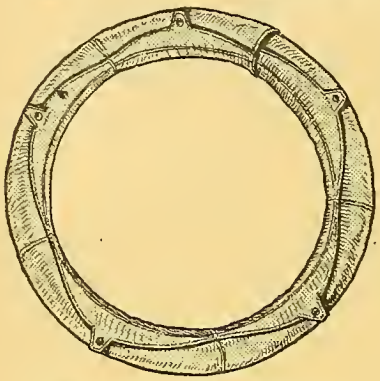


Location of accumulator on New Hudson belonging to Mr. Evans, works manager of Messrs. Brown and Barlow.

On the same machine was another device, evolved from the rider's desire that the engine should not show any external signs of oil, because, however careful one may be, some is almost certain to spray out from the compression release valve. On the New Hudson the compression release valve is housed inside a tube. At the end of this tube is a long copper tube, by which the oil is carried to the magneto chain drive case, and the oil blown out serves to lubricate the chain.

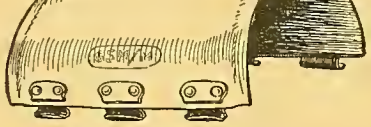
SOME DUNLOP NOVELTIES.

THE Dunlop Rubber Co., Ltd., have lately placed on the market several new motor cycle accessories. Probably the most novel of these is the cover bag, which we



Dunlop waterproof cover for spare outer covers.

illustrate. This is quite a useful accessory, tending as it does to preserve the spare outer cover considered essential by riders of passenger machines on



New Dunlop tyre gaiter.

tours of any length. It is made of American cloth, and the inner edge is stiffened by means of segments of wire, arranged at intervals. These spring into position when folded round the cover, and are secured by eyes fastening on to steel hooks. It will be noticed that each segment is provided with a tab allowing it to be pulled into position.

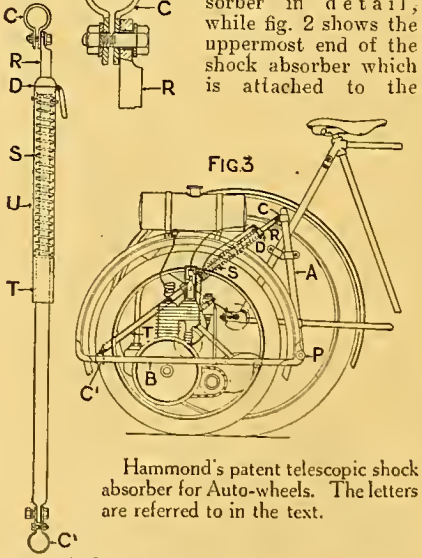
The Dunlop gaiter is another useful accessory, and should always be carried in the tool bag in case of a bad cut. It is fixed by being hooked into the rim. A gaiter of this kind will often allow a rider to return safely home even after his cover is damaged beyond repair.

The third accessory which we illustrate is an inner tube bag, a well-made article, in which three 65 mm. or 2½in. motor cycle tubes may be easily stored in perfect safety in the sidecar locker.

Tube bag sold by the Dunlop Co.

THE AUTO-WHEEL SHOCK ABSORBER.

PEOPLE have often noticed how Auto-wheel attachments bump right off the road when the surface is rough. When this happens a great deal of power is lost. The engine races, and when it comes down to the ground it naturally skids, causing an abnormal amount of tyre wear. The accompanying drawing shows how a device made by Mr. E. Hammond, Elmers End Road, Beckenham, should overcome this trouble. Fig. 1 shows the shock absorber in detail, while fig. 2 shows the uppermost end of the shock absorber which is attached to the



Hammond's patent telescopic shock absorber for Auto-wheels. The letters are referred to in the text.

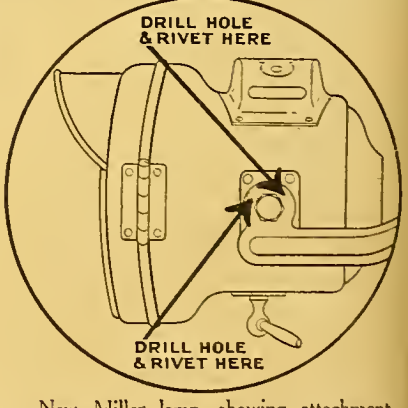
post of the Auto-wheel, and fig. 3 shows the device in use.

The clip C is attached at the upper end and secured to the post A of the Auto-wheel, and the clip C¹ has its lower end fixed to the frame or chassis B. The rod R is made a free sliding fit in the tubular extension T. A spiral spring S is placed on the rod R, the lower end of the spring engaging and compressing the top part of the tube T, and the upper end of the spring engaging with and compressing the lower side of the adjustable sliding collar D, which is capable of being fixed in any desired position by means of a small hand lever.

The shield U is for protecting the spring and sliding rod from dust and wet, but is not fitted to the shock absorber unless specially ordered, at a price of 2s extra. It is obviously necessary for the spring to be protected, consequently, in our opinion, the extra price should be added to the total cost, which is at present 7s. 6d. In using the device the tyre of the Auto-wheel should be pumped on the hard side. We certainly think the idea is good, and should be a boon to Auto-wheel users.

ADJUSTABLE HEAD LAMPS.

MESSRS. H. MILLER AND CO. send us an illustration showing how an adjustable lamp may be prevented from swivelling, and thus made to conform to the new lighting regulations. All that is necessary is to drill one or two small holes,



New Miller lamp, showing attachment to comply with the new non-swivelling regulations.

after the lamp is in position, through the girder bracket and the boss of the lamp, and insert small pegs which can be screwed or riveted to the bracket. This makes a much neater job than soldering. We have used a similar method on one of our own lamps for the last few months. Non-compliance with this regulation may lead to the confiscation not only of the lamp, but the whole machine, as well as a heavy fine.

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

A Cracked Crank Case.

[?] The aluminium crank case of my machine has cracked at one of the frame lugs, and allows oil to escape when the engine is running. I am told the only thing I can do is to have a new crank case. Can you suggest any way of stopping this leakage?—S.H.

Your best plan will be to take the crank case to a firm of aluminium founders, and see if they can weld the crack. We should think this would be quite easy to do, but it is impossible to say without actually seeing the fracture.

Knocking on Hills.

[?] I have a 2½ h.p. 1915 single-cylinder lightweight. When new it would take full air, and go up almost any hill on top. Now, however, after having run 800 miles, it will not take full air, and is very much inclined to knock, and does so on almost any hill. Is this due to carbon deposit, and, if so, is not 800 miles a very short distance to go before getting carbonised? The ignition is fixed.—G.J.M.

The trouble may be due to a partially obstructed jet. It is quite possible that the engine requires to be cleaned of carbon deposit, but it ought to run at least 1,000 miles before this is necessary. We do not altogether agree with fixed ignition on an engine of this type. See that the tappet clearances are correct.

Pre-ignition.

[?] I have for some time been troubled with the curious behaviour of my two-stroke. If I travel all out for a brief period (about thirty-five to forty miles per hour) the engine will suddenly knock, and the machine will come to a standstill just as if the brakes were hard on. I may mention that when this knock occurs it is quite impossible to free the engine by the clutch or by the gear lever, but as soon as the machine has stopped I can at once insert the low gear and start off again for about an hour when this will again occur. A friend suggested overheating.—W.A.C.

You are obviously over-driving your machine. The trouble is overheating or pre-ignition, caused by an excess of carbon deposit or a plug which is not suitable, probably the latter. You ought to use a good single-point plug of first-class manufacture. Drive slower and use more oil.

Difficulty in Starting.

[?] Will you please give me some advice? I am a novice, and about six weeks ago I bought a 1913 5·6 h.p. single-cylinder free engine motor cycle, and at all times I have a terrible job to get the engine to start. I put the machine on the stand, inject a little petrol in the compression tap, and pedal hard. Sometimes the engine will start like that, but nine times out of ten it only explodes in the silencer. The only way I can start the engine is to run it on the road, and when it has started to fire suddenly to take the clutch out and retard the spark, but I find this dangerous; also the exhaust pipe and chamber get red-hot. If I open the air lever it has a tendency to stop the engine unless it is going fairly fast. I use a Senspray carburetter, and have fitted a new sparking plug, also a new compression tap. None of these seems to make any difference to the starting of the machine, and I am afraid to go for a ride for the fear of having to push the machine home.—C.S.

Advance the spark halfway, inject a little petrol (not too much), close the air, and open the throttle about a quarter or one-third, and the engine, if properly adjusted, should start quite easily. The sparking plug should be of the single point type, and the points should not be too close together; try a gap of just under 1 mm. It is quite natural for the engine not to take full air unless it is running fairly fast, but for the exhaust pipe and exhaust chamber to get red-hot is quite wrong, and seems to indicate that the timing of the spark is too late; always run with it as far advanced as possible. You might try new valve springs. Also make sure that the contact breaker is quite clean, and that the points do not separate more than ½ mm.

Annual Buyers' Guide
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Misfiring.

[?] My 3½ h.p. single-cylinder machine has recently started missing fire when the ignition lever is fully advanced, but it goes all right when the lever is about one-third retarded. I have examined the platinum points, carbon brushes, plug, and valve timing, and find everything in order, while the compression is good. I have also cleaned out the carburetter. The platinum points break with the lever two-thirds advanced and the piston at the top of the firing stroke. The machine has gone perfectly up to just lately. I shall be obliged if you will kindly give me your advice.—P.G.

Are you sure that the magneto points separate properly when the spark is fully advanced? Possibly owing to wear, the points do not break adequately in this position. Watch the contact breaker carefully while some one turns the engine, and see the spark is advanced while you do this. If this point is correct try new valve springs.

The Effect of Explosion in Silencer.

[?] I shall be obliged if you can tell me the cause of the engine backfiring. It did so on starting the engine a few days ago. The explosion took place in the exhaust box and caused a fire, which did not, fortunately, do any damage, as it was put out by chemical extinguishers. The machine had only come back after being overhauled by the agents from whom I bought it second-hand. The machine is with a firm near here (Bandon). The firm seems to think that the cause of the accident—backfiring—was due to one of two causes: the exhaust valves leaking or the timing gear being set wrongly. I am anxious to know as soon as possible, so as to get the thing put right in the correct way.—F.N.A.

There is always a danger of fire in this way, especially if there is any petrol leaking from the carburetter, and if the carburetter is over the silencer. What happens is that when you attempt to start the engine the first charge is not fired, and is carried away into the silencer. The next charge, which is fired, causes an explosion in the silencer, and if any petrol has dropped on it a fire is caused. Of course, if the timing is incorrect and the inlet valve is opening at the wrong time you will get a backfire through the carburetter and cause a fire in this way.

Difficulty in Starting.

(1.) I have a 1915 2½ h.p. two-stroke machine, and I find great difficulty in starting. I have examined the carburetter and sparking plug, but cannot find any fault. If when running the machine I keep opening and shutting decompressor smartly it gives a loud explosion, and then starts away all right, and runs for about half a mile, and then suddenly ceases to fire, but as soon as I lift the decompressor it does the same as when starting. Sometimes it refuses to start unless I change the plug, but still the old plug seems to spark all right outside cylinder. (2.) I am troubled a great deal with four-stroking, and it is only when I have a load on or am going up an incline that it will two-stroke. I have fitted an 18 jet in my carburetter and adjusted the petrol level, and always drive with the air fully opened. I have been told I should get at least eighty miles per gallon of petrol, whereas I only get about sixty.—W.W.

(1.) The symptoms point to the fact that you are starting on too strong a mixture. Probably you flood the carburetter vigorously, and inject petrol as well. To render the mixture explosive you open and shut the decompressor, thereby admitting air which corrects the fault. Try a good single-point plug of first-class manufacture. (2.) The fault is a common one with two-strokes, and appears to be practically incurable. This may be exaggerated through the use of too large a jet, which might also cause the difficulty in starting. Yes, you should get about eighty miles to the gallon. Using a smaller jet would probably rectify this trouble also.

READER'S REPLY.

Winter Riding.

I have been a reader of your valuable paper for many years, and an all-weather cyclist for the last two years, and I noticed in *The Motor Cycle* for October 28th that your correspondent "H.C.S." asks for information *re* keeping enamel and plating bright, and yet reducing cleaning after a wet ride to a minimum. You advise the use of vaseline, but may I make a suggestion? I have ridden my 2¾ h.p. two-speed Royal Enfield in all weathers, and only use it on Saturday afternoons or Sundays, and yet I have no rust. The fact is that I have smeared all parts with raw linseed oil very freely, and although I cannot say it looks pleasing it is a splendid preservative. A coating twice a winter will keep out any amount of wet. I have often found many useful suggestions in *The Motor Cycle* from various motor cyclists, and I trust that my suggestion may prove of some value to some all-weather rider.—H.R.

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"F.N.J." (Bucks). — Grado multi-pulley. Wear on belt and reliability.

"C.A.J." (York).—Philipson governor pulley for sidecar work. Also folding sidecars able to pass through a 3ft. doorway.

"T.A.B." (Newburn-on-Tyne).—6 h.p. Royal Enfield and sidecar. Reliability, hill-climbing, petrol consumption, and wear on tyres. Also £9 Lucas dynamo lighting set.

RECOMMENDED ROUTES.

BIRMINGHAM TO ACTON (CHESHIRE).—R.W.C.

Birmingham, Sutton Coldfield, Lichfield, Rugeley, Weston, Stone, Pipe Gate, Woore, Nantwich, Tarporley, Acton. Approximately 52 miles.

CHEAM TO BLETCHLEY.—W.F.J.

You cannot get from Cheam to Bletchley without passing through a considerable portion of the Metropolis, and you should time your journey so that you go through this portion in daylight. Cheam, past "The Plough" (Malden), Kingston, over Kingston Bridge, where turn right and follow the main road to Hounslow, then go through Heston, Norwood Green, Greenford, Greenford Green, Harrow-on-the-Hill, and thence to Watford. This part of the journey is clearly shown on the R.A.C. Official Map of Recommended Routes Round London, obtainable from these offices, price 1s. 8d. post free. Continue through St. Albans, Dunstable, Fenny Stratford to Bletchley.

FROM HOLYHEAD TO HONITON, HONITON TO BRAINTREE, AND BRAINTREE TO HOLYHEAD.—T.U.B.

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HILL-CLIMBING IN CHILE.

The Valparaiso Motor Club recently held a hill-climb at which British machines—both four and two-stroke—did remarkably well, securing three first and two second places. Our pictures show—(Left) Harold Wilson (Junior Triumph) first in the 300 c.c. class and second in the 450 c.c. class. (Right) Edmund Maillard (3½ h.p. Triumph) has a tumble at speed, but it did not prevent him getting first place. He also made fastest time of the day, beating 7 h.p. twins.

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All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. Replies should be addressed, "No. 000, c/o 'The Motor Cycle,' Coventry"; or if "London" is added to the address, then to the number given, c/o "The Motor Cycle," 20, Tudor Street, E.C.

DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

Abingdon.

ABINGDON, 1915, 6-7h.p., chain-cum-belt model, little used; £70.—Freeman, Brighton Rd., Redhill, Surrey. [5445

ONE 1914 Abingdon Combination, coachbuilt, countershaft 2-speed and F.E., B. and B. carburetter, Dunlop tyres, Brooks B220 saddle, lamps, horn, and all tools, and Cowey speedometer, in new condition; any trial; £40.—116, Rathbone St., Canning Town. [5683

A.J.S.

1915 A.J.S., 2¾h.p., 3-speed, little used, accessories; £45.—Smith, Skellgate, Ripon. [X3199

A.J.S., 6h.p., complete with sidecar, just delivered; £95.—Turpins, 22 and 29, Preston Rd., Brighton. [0716

1916 A.J.S. Models, early delivery, order now.—Williams, Chapel Ash Depot, Wolverhampton. [X3237

1913½ A.J.S. Combination; offers; must sell; reason given.—Brooklands Cottage, Vickers Works, Dartford. [X3125

1915 6h.p. A.J.S. Combination, absolutely in stock; this luxurious outfit complete only costs £97/6; exchanges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X1485

Halifax Motor Exchange

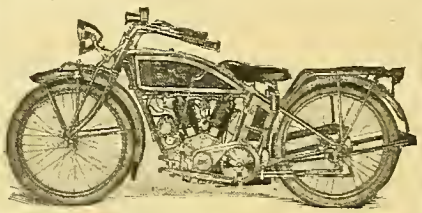
68, HORTON ST. HALIFAX.

'Phone—766. Telegrams—"Perfection."

EXCELSIOR.

THE GOOD OLD X

7 h.p., Twin, 84 × 89, mechanical and hand lubrication, kick starter, high-tension magneto, spring forks, 2-gallon petrol capacity, 3-speed countershaft gear, multiple-disc clutch with hand and foot control, handle-bar control, spring seat-pillar, 3in. non-skid tyre, finish Excelsior grey, every possible refinement incorporated.



STANDARD MODEL £80

With electrical equipment £90

Or with high-class coachbuilt Sidecar, **£9 10s.** extra. Deferred payments, 2% extra and balance in 12 monthly payments.

Exchange liberally considered.

We are sole Yorkshire distributers. Yorkshire dealers supplied.

SOLO MACHINES.

1915 (new) **DIAMOND**, 2½ h.p., 2-stroke ...	£28 13
1915 2¾ h.p. 2-speed **CONNAUGHT** (new) ..	£39 18
1915 2½ h.p. 2-speed **WOLF-J.A.P.** (new) ..	£37 0
1915 2½ h.p. **ROYAL RUBY**, 2-speed	£36 10
1912 3½ h.p. magneto **N.S.U.**	£23 10
1912 3½ h.p. 2-speed F.E. **BRADBURY**	£29 10
2¾ h.p. 2-speed **DOUGLAS**	£28 10
8 h.p. 3-speed **CHATER-LEA** and coach Sc.	£39 10
3½ h.p. magneto **REX**, spring forks	£15 10
1910 3½ h.p. tourist **TRIUMPH**	£22 10
KERRY, 3 h.p., magneto, Saxon forks	£12 10
TRIUMPH, 3½ h.p., magneto, spring forks..	£19 19
5½ h.p. magneto **REX**, spring forks	£15 10
M.M.C., 3 h.p., magneto	£11 10
N.S.U., twin, 2-speed, spring forks	£15 10

£55 10 0 **1914 7-9 h.p. 2-speed Red INDIAN, with electrical equipment, Swan red coach-built Sidecar with superb coach-built body, electric sidecar lamp, apron, and screen.**

SIDECAR COMBINATIONS.

1914 7-9 h.p. twin **PREMIER**, chain drive, countershaft gear, coach Sidecar	£59 10
1914 6 h.p. **REX** Sidette, nearly new	£52 10
8 h.p. w.-c. **WILLIAMSON** (new)	£99 5
1912 3¾ h.p. 2-speed twin **PREMIER** and smart coachbuilt Sidecar	£34 10
1913 6 h.p. 2-speed F.E. **REX**, chain drive, smart coach Sidecar	£45 10
1913 **RUDGE** Multi and Sidecar	£41 10
1912 6 h.p. 2-speed **REX** and Sidecar	£34 10
1910 3½ h.p. 2-speed **REX** and Sidecar	£24 10
1909 5-6h.p. 2-speed **REX** and Sidecar	£25 10
6 h.p. 3-speed **PEUGEOT**, fine condition ...	£26 10

Cash offers wanted.

New **MORGAN** and accessories (November delivery)	£111 0
1914 Sporting **MORGAN** and accessories ..	£82 10
RITZ, 10 h.p., 4-cylinder, 2-seater (new)..	£145 0

MISCELLANEOUS.

Lucas Large Motor Cycle Horn	16/-
New F.R.S. Large Head Lamp and Generator	39/6
Lucas King of the Road and Generator	32/6
Miller's Head Lamp and Generator	29/6

DEFENCE OF THE REALM ACT

Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade Labour Exchange, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S., 1915, 2¾h.p., 3-speed, cost £66, as new; £50.—Young, 2 and 3, The Parade, High Rd., Kilburn. [5505

1915 A.J.S., 2 speeds, done 1,000 miles only, complete Lucas lamps, etc.—Cross, Agent, Rotherham. [X2776

1915 2¾h.p. A.J.S., lamps, horn, speedometer, in good condition; £48.—Campbell, Goal Farm, Pirbright. [X3163

1915 6h.p. A.J.S., brand new, with horn; first £74; buying car.—274, Gloucester Rd., Horfield, Bristol. [5881

A.J.S., 1913, 2¾h.p., 2-speed, overhauled by makers, many 1915 improvements; £55.—33, Roscoe St., Middlesbrough. [X3203

A.J.S., 1913, and coach sidecar, Cowey speedometer, Lucas lamps, nearly new tyres; £55.—Edward, 36, Corn Exchange, Leeds. [5872

1915 A.J.S. 6h.p. Combination, complete with Lucas lamps, etc., done little work; 90 gns.—Cross, Effingham Sq., Rotherham. [X3226

A.J.S. 6h.p. Combination, 1914, in exceptional nice order and condition, guaranteed; 50 gns.—Percy and Co., 337, Euston Rd., London. [5712

A.J.S.—Prompt delivery of all models, 6h.p., 4h.p. and 2¾h.p.—P. J. Evans, Birmingham and district agent, 87-91, John Bright St. [5726

A.J.S. 1915 6h.p. Combination, screen, Lucas lamps and horn, first-class condition throughout; £84 cash.—Griffiths, Chemist, Kidsgrove, Staffs. [X3151

A.J.S., 2¾h.p., new May, 1915, 3 speeds, done 2,000, lamp, horn, spares, Stewart speedometer, splendid condition; £50.—Nutt, Pass's Bank, Bridport. [5785

1915 4h.p. A.J.S., 3-speed, Stevens coachbuilt sidecar, 4½ months old, as new; £70, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0751

A.J.S., 1913, 6h.p., 3-speed, perfect condition, just overhauled; 39 gns., very great bargain; exchanges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [0728

A.J.S. Combination, late 1914, in first-class condition, engine as new, speedometer, lamps, horn, spare cover, tube, chain, all accessories; owner bought 1915; nearest £70.—Hessian, 8, Lorne St., Stockton-on-Tees. [X3210

A.J.S., 1914, 6h.p., Cairns C.B. touring sidecar, totally enclosed hood and wind screen, Lucas lamps and horn, Cowey speedometer, A.J.S. spring pillar saddle, tools, spares, little used, perfect condition; £68.—Manager, Manchester Corporation Sewage Works, Urmston. [X3014

1915 4h.p. A.J.S., 3-speed, Stevens coachbuilt sidecar, 5 months old, speedometer, all wheels interchangeable, 650×65, enclosed chain drive, free engine kick starter, hand controlled clutch, perfect condition price £70 cash.—Box 9,596, *The Motor Cycle* Offices, Coventry. [X3209

6h.p. A.J.S., 1914, 3-speed countershaft gear and free engine, fitted with Gloria sidecar, fitted with Lucas lighting set, Lucas horn, rear light, tools, and spares, any severe trial given, mechanically sound, as new; 70 gns.; rare opportunity.—Wauchope's, 9, Shoe Lane, London. [X3171

THIS ADVERT.

is a failure without your enquiry — help us make a success of it, and send it along.

IN STOCK.

1915 4 h.p. **A.J.S.** Can be supplied with **A.J.S.** Sidecar.	£69	6
1915 3½ h.p. **ROVER,** countershaft Com'n	£84	7
1915 4½ h.p. 3-speed **JAMES** Combination, hood and screen, and lamps	£76	0
1915 3 h.p. T.T. **ENFIELD**	£52	10
1914 **TRIUMPH** 3-speed Combination, fine condition	£52	0
1914 2¾ h.p. T.T. **DOUGLAS**	£38	0
1913 2¾ h.p. **CALCOTT,** just overhauled	£20	0
1915 T.T. 7 h.p. **INDIAN,** clutch model, nearly new	£50	0
1912 4 h.p. **REX,** 2-speed	£20	0
1911 3½ h.p. **TRIUMPH,** overhauled	£25	0
1910 F.E. **TRIUMPH,** overhauled	£27	0
1915 **HARLEY-DAVIDSON,** 11J, electrically equipped, complete with luxurious Gloria coach-built Sidecar to match, only few weeks' old car	£90	0
1915 **IXION,** 2-stroke, practically new	£26	0
1914 3½ h.p. T.T. **SINGER,** like new	£38	0

TWO STROKES.

1915 **JAMES,** 2-speed	£38	10
1915 Lady's **METRO,** 2-speed	£38	10
1915 **IVY,** single geared	£29	10
1915 **ROYAL RUBY**	£29	10
1915 **HOBART,** 2-speed	£38	10
1915 **SPARKBROOK,** 2-speed	£37	16
1915 **EXCELSIOR,** single-geared	£30	16
1915 **METRO,** sporting model	£28	10
1915 **LEVIS,** 2-speed	£44	0
1915 **IXION**	£28	10

1915 **SINGER** Light Car, finished in green	£235
1913 **HUMBERETTE,** a.-c., nice condition, complete with Stepney, hood, and screen	£60

STEWART SPEEDOMETERS from stock	£2	10	0
JUNIOR LONG HORNS from stock	£1	5	0
F.R.S. LAMPS, big sets	£3	8	6
F.R.S. LAMPS, major sets	£3	18	6
F.R.S. LAMPS, Douglas sets, from stock	£2	0	0

SECOND-HAND ACCESSORIES.

Lucas Handle-bar Mirror	5/-
A.J.S. Sidecar Hood, new	35/-
Pair of Knee Grips	3/6
Lomax Backrest	3/-
Exhaust Whistle, brass	2/6
P. & H. Lamp and Generator, nearly new	£1 0
Large Horn, suitable for Morgan	15/-
Sidecar Body, wicker	7/6
Motor Cycle Speedometer	£1 5
Sidecar, art cane, canoe fronted, complete	£4 0
1914 Rudge Multi Tank	£1 0
Good Spare Plugs ..... each	9d.
Electric Rear Lamp	5/-
Brooks Saddle, B150	15/-
N.A.B. Seat-pillar	5/-

The North Wales Motor Exchange,

HOLT ST., WREXHAM.

Telephone: 283.

Telegrams: "Motor Exchange, Wrexham."

MOTOR CYCLES FOR SALE.

Douglas.

1914 T.T. Douglas, in good condition; £40.—Seen 223, High Rd., Kilburn. [5785

1914 2¾h.p. Douglas, complete, lamps, etc.; £40.—Cross, Jeweller, Rotherham. [X3229

DOUGLAS, 1912, 2¾h.p., 2 speeds; £27.—31, Eancradale Rd., Hither Green, S.E. [5548

1913 T.T. Douglas, in good condition; £33.—Seen any time, 223, High Rd., Kilburn. [5787

1914 2-speed Douglas; best offer over £32.—Smith, 26, Bowness Rd., Barrow-in-Furness. [X3258

DOUGLAS Military Model in stock; £54/12.—Turpins, 22 and 29, Preston Rd., Brighton. [0713

1914 Douglas, 2 speeds, F.E., lamps, Klaxon, new tyres; £40.—77, Hammersmith Rd., W. [5854

1915 Douglas, T.T., lamps, horn, complete, perfect; £46.—T. B. Grice, Beetle, Cumberland. [X3120

1914 2-speed Douglas, with lamp and horn, in grand condition; £35.—Thos. Booth, Frodsham. [X3287

SPECIAL 1913¾ T.T. Douglas, very fast; £37/10.—Sayer, Lake View, Northwood, Middlesex. [X2579

DOUGLAS, 2 speeds, and free, new forks, tyres, first-class condition; £36.—107, Matthias Rd., N. [5355

DOUGLAS, 1914, T.T., 2-speed, lamps, accessories, as new; £42.—Greco, 32, High St., Reigate. [5833

DOUGLAS, T.T. model, 1914, 2 speeds, £42; 1912, 2 speeds, clutch, £29.—Sycamore, Ramsey, Hunts. [5872

4 h.p. Douglas, all accessories, speedometer, etc., excellent condition.—King, Wigginton, York. [X3235

DOUGLAS, 1913 model U, 2-speed, accessories, splendid condition; £32/10.—27, Merton Rd., Bootle. [X3122

DOUGLAS, just overhauled, guaranteed sound; £16.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [5531

DOUGLAS, War Office model, actually in stock; no waiting; £54/12.—Jackson Bros., Horsham, Sussex. [X3018

DOUGLAS, 2¾h.p., late 1914, 2 speeds, accessories, like new; £42.—Auto Mart, 133, Hammersmith Rd., W. [5747

DOUGLAS, 1914, 2¾h.p., 2-speed, in first-class condition.—Alex. Mather and Son, Orwell Terrace, Edinburgh. [5561

1914 2¾h.p. Douglas, lamps and horn, any examination; £41.—Nurton, 29, Montpelier Vale, Blackheath. [5814

£14/14.—1910 Douglas, good order, well tyred, lamp, horn, tools; trial with pleasure.—Holl, Bakery, Buckingham. [5844

DOUGLAS, 1914, delivered March, 1915; owner active service; £40; wonderful bargain.—15, Pelham St., South Kensington. [5541

1913 T.T. Douglas, 2-speed, adjustable pulley, accessories, new condition; £35. — Blencathra, Walton-on-Thames. [X3218

DOUGLAS Lady's 1915, model X, 3-speed, lamp, horn, etc., as new, £53.—Gibb, Gough, Douglas Depot, Gloucester. [X3256

DOUGLAS, 1915, 2¾h.p., 3-speed, condition as new, had little use; first offer over £40.—4, Thornton St., Kempston, Bedford. [5735

LATE 1914 T.T. Douglas, 2¾h.p., 2-speed, lamps, little used, as new; 40 gns.—3, Lime Villas, Oakfield Rd., Anerley, S.E. [5823

DOUGLAS, 1915, immediate delivery any 2¾h.p. model, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [9203

DOUGLAS.—Immediate delivery from stock; not agents only, but Douglas experts and specialists.—Gibb, Gough, Gloucester. [X3538

DOUGLAS, 1912, 2¾h.p., standard model, new Dunlop back tyre; £20.—The Premier Motor Co., Aston Rd., Birmingham. [5897

1915 Douglas Model U, 3-speed, Amac, speedometer, lamp, horn, handle-bars optional; £46/10.—Gibb, Gough, Douglas Depot, Gloucester. [X3255

DOUGLAS.—If it is to be a Douglas, write to Alexander's, the Scottish agents and specialists, Edinburgh. T.A.: Motocycles, Edinburgh. [5142

DOUGLAS, 2¾h.p., 1912, 2-speed, free engine, kick-start, footboards, and accessories; £28.—Colmore Depot, 31, Colmore Row, Birmingham. [5924

DOUGLAS, 1913¾, 2¾h.p., 2-speed, clutch, speedometer, Lucas horn, many spares, exceptional condition; £37.—Temple Roberts, Liskeard. [5736

DOUGLAS V. 1914, 2 speeds, £43/10; 1911 2-speed Douglas, £29/10; exchanges entertained.—Motories, 68, Horton St., Halifax. [0707

DOUGLAS, 1913, 2-speed, semi-T.T., usual accessories, perfect condition; £36.—F. Halsey, 199, Uxbridge Rd., Mill End, Rickmansworth, Herts. [5839

1915 Douglas, 2¾h.p., Colonial model, 2-speed, lamp, horn, speedometer, excellent condition; £50.—2nd Lieut. A. O. Scriven, 10th Suffolks, Colchester. [5704

WHAT HO!!

Single cylinder **ROVER** Motor Cycle, vertical engine, mechanical valves, Druid spring forks, Bosch waterproof magneto, P. & M. two-speed gear and free engine, kick starter, all-chain drive, 26in wheels, and complete with **Farlow Sidecar,**

the lot £12 the lot.

Being short of mechanics, we haven't time to overhaul this combination; hence reason of low price.

Don't write—wire the money or you miss this "snap."

NEW MACHINES IN STOCK.

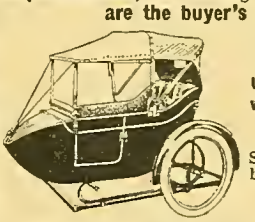
1915 6 h.p. **ENFIELD** Combination, just received	80 gns.
1915 6 h.p. 3-speed **J.H.** Combination	84 gns.
1915 12 h.p. **TRUMBULL** Cycle Car, 4-cyl., water-cooled, detachable wheels, all on	£120 0
4 h.p. **WOLF-J.A.P.,** all chain drive, countershaft gear box, kick starter, spring forks	£44 0

SECOND-HAND BARGAINS.

5-6 h.p. **CHATER-J.A.P.,** Bosch, 2-speed, Druids	£18 0
8 h.p. **WILLIAMSON,** W.C., and Canoelet sidecar	£50 0
1914 6 h.p. **ENFIELD** Combination	£60 0
1915 2-sp. 2-str. **NEW HUDSON,** done 500	28 gns.
1915 **B.S.A.** Combination, all chain drive	£63 0
3½ h.p. 1908 **REX,** M.O.V., Bosch, B & B carb.	£18 0
3½ h.p. 1909 **REX** de Luxe, 2-sp., handle st'g	£19 0
6 h.p. **ZENITH,** clutch model and Sidecar	£40 0

FARLOW SIDECARS.

Built throughout in our own factory. Farlow Sidecars have that pleasing style, exquisite finish, and lasting qualities which are the buyer's ideal.

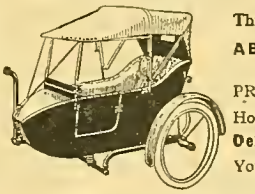


MODEL 3.

Underslung chassis with Luggage Carrier combined.

Splendidly made and built for hard work.

£10 15 0



This is MODEL No. 1.

A BEAUTIFUL LIGHT SIDECAR.

PRICE 9 Guineas.

Hood £2. Screen £1.

Delivery from Stock.

Your Agent will supply

NEW MOTOR CYCLE FRAMES.

Fully Guaranteed.

25/- each.

ODD BARGAINS.

New F.R.S. "Big" lamp set, shop-soiled	48/-
Farlow underslung coach-built sidecar	£6
Latest mechanical horn, black and nickel	£1
Cowey Speedometer for 26 × 2¼ wheel	£2
Cowey Speedometer for Morgan	£2 5
Wicker Sidecar, good order	£2 5
Set of Millers Cycle Car Lamps and Generator, new	£3
5 h.p. J.A.P. Air-cooled Eng., fine condition	12 gns.
Lukin Cycle Car Carburetter, new condition	15/-
Cox Cycle Car Carburetter	10/-
Spare Belt Carrier	3/6
Bosch Magneto, single-cylinder, new	£5 0
Bosch Magneto, twin-cylinder, new	£5 10

FARRAR'S MOTORS

Telephone 919

Hopwood Lane, HALIFAX.

MOTOR CYCLES FOR SALE.

Douglas.

DOUGLAS, late 1914, model U, all accessories, new Palmer back, perfect condition; £42, or nearest. —J. H. Taylor, 6, Montpelier Vale, Blackheath, S.E. [5865

1914½ Douglas, 2¾h.p., in perfect condition, with speedometer, lamp, and other accessories, owner enlisting; £48.—Arthur Robinson, The Hollies, Ledbury. [5816

DOUGLAS, 2¾h.p., T.T., 1915, 2-speed, 2 tail lamps, new back tyre, knee-grips, spare cover, belt, and chain, tool kit; £46, or near offer.—Mason, Old Manor, Hereford. [X3116

DOUGLAS, Douglas!—Write us your requirements. We can supply from stock various latest models of this famed machine.—Alexander's, 115, Lothian Rd., Edinburgh. [5141

DOUGLAS, 2¾h.p., 1915 model U, 3-speed, just arrived from works, in stock; immediate delivery; £54.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [5606

DOUGLAS, 1911, fitted 2¼in. tyres, P. and H. head and tail lamps, horn, tools, etc., all in perfect running condition; £19.—Sussex Cycle Car Co., 76, Grand Parade, Brighton. [X2773

1914 T.T. Douglas, Amac carburetter, head lamp, generator, horn, tools, etc., in excellent condition; £40, or near offer.—Rex Mundy, 132, Great Portland St., W. [5809

DOUGLAS 1914 3½h.p. Combination, luxurious sidecar, wind screen, clutch, 2-speed, spare belt, chain, just overhauled, F.R.S. lamp; £48.—Glazebrook, Castle Rd., Kenilworth. [X3261

DOUGLAS, 1911, 2¾h.p., 2-speed, free engine model, in good condition, just overhauled, F.R.S. lamp set, horn, spares, tools, etc.; £24/10.—Hunts, Ltd., 117, Long Acre, London, W.C. [X3061

1914 Douglas, model V, Bosch mag., T.T. bars, lamp, horn, speedometer, engine guaranteed excellent, good tyres, complete; £38.—Robinson's Garage, Green St., Cambridge. [6865

2¾h.p. Douglas, 1913, all accessories, complete, front and rear lights with separate generators, 2-speed gear, new tyres and tubes, just been overhauled.—Collins, Fulham House, Putney Bridge. [5913

1915 Douglas 3½h.p. 2-speed Combination, clutch, kick start, new Phœnix coachbuilt torpedo sidecar; £50; will separate; heavier combination wanted, Zenith preferred.—Lt. Barber, Thames Haven, Essex. [5645

1914 Douglas, 2¾h.p., 2-speed, hardly used, all lamps, speedometer, full kit of tools and insurance policy 10 months to run; £45, a real bargain, or easy payments.—Jones, The Broadway, Muswell Hill. [5524

1915 Douglas, brand new, model U, 2-speed, £50/10; also War Office model, £54/12; actually in stock, first cheque secures.—The Walbro Motor Co., High St., Saffron Walden, Essex. 'Phone: 45. [X3208

DOUGLAS, 1915, model U, 3-speed gear and free engine, fitted with dropped handle-bars, separate generator, lamp, horn, spare belt and inner tube with case combined; £50; condition like new.—Wauchope's, 9, Shoe Lane, London. [X3187

DOUGLAS, late 1914, 2¾h.p. T.T. model, practically new, large tyres, F.R.S. lamp, Low generator, speedometer, waterproof kit bag, etc.; exceptional bargain, guaranteed, £45.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0552

DOUGLAS, 1914, 2¾h.p. T.T. model, 2-speed, footboards, long exhaust pipe, complete with P. and H. lamp, rear lamp, Lucas horn, Jones speedometer, excellent condition throughout; £45; exchange entertained. —Ideal Cycle Co., Thundersley, Essex. [5677

DOUGLAS Model U, £50/8; Douglas Model V, £50/8; War Office Model, £54/12; Douglas Model W, £56/14; Douglas Model X, £56/14.—Above models actually in stock at Sole Wholesale and Retail Midland Distributing Agents, Colmore Depot, 31, Colmore Row, Birmingham. [X2344

DOUGLAS.—We can deliver from stock the latest models, including the actual War Office all-black. Send us your money; we will send the machine you want. No waiting. Remember, we are the people for Douglases.—Sole district agents, The Colmore Depot, 31 Renshaw St., Liverpool. [5674

DOUGLAS, new 1915 models, delivery from stock; model V, 2-speed, £50/8; model U, 3-speed, £52/10; War Office model, T.T., 2-speed, V, £54/12; buy from Wauchope's, where extended payment or exchange is arranged to customers' satisfaction.—9, Shoe Lane, Fleet St., London. [X3186

Elswick.

ELSWICK-PRECISION, 3-speed gear, 2¾h.p., 1914 machine, special winter mudguard, and accessories; £28.—Colmore Depot, 31, Colmore Row, Birmingham. [5933

Enfield.

ENFIELD Combination, 1915, electric light, 3 months old; £85.—Pooss, Commercial Rd., Bournemouth. [5594

1915 Enfield, 2¼h.p., 2-speed, 2-stroke, all accessories, head and tail lamps, horn, overalls, etc., condition perfect; £32/10.—Lieut. George Lofthouse, Wakefield. [X3155

DEAL STREET,

COLLIERS MOTORIES

HALIFAX.

NEW MODELS.

1915 ROYAL RUBY, 2½ h.p., 2-stroke £29 10
1915 ROYAL RUBY, 6 h.p. J.A.P., 3-speed £87 0
1915 ROYAL RUBY, 2½ h.p. J.A.P., 2-speed £39 10
1915 ROYAL RUBY, 2-stroke, 2-speed £36 10
1916 4-cylinder CALTHORPE Minor .....185 gns.
1915 WILLIAMSON 3-speed CY-CL-CA ...£120 0
1916 OVERLAND 4-cylinder touring Car, latest model, electric lighting, starter, etc. £275 0

LIGHTWEIGHTS.

New 2¾ h.p. DOUGLAS, War Office model . £54 12
1915 (new) 2½ h.p. 2-speed WOLF-J.A.P. .. £37 0
1915 NEW DIAMOND, 2-stroke (new) £28 13
1914 2¾ h.p., 2-speed, Model V, DOUGLAS £39 10
MOTOSACOCHE, magneto, lightweight £10 16
1911 2¾ h.p. 2-speed DOUGLAS £23 10

FOR VALUE.

We offer a Brand New latest type (just delivered from makers) £65 6 h.p. 2-speed REX at 10% discount. If you have no customer for your present machine, we give you this discount in addition to a liberal exchange allowance. With REX Coach-built Sidecar, £12 10s. extra. Why wait for deliveries or pay 5% to 33⅓% extra? Trade supplied. Exchange offers wanted.

SPECIAL BARGAIN.

1912 6 h.p. 2-speed Free-engine REX DE LUXE, and luxurious coach-built Sidecar. Complete with front and rear lamp, horn, pump, toolbag, and tools £31 10

CASH BARGAINS.

1915 EXCELSIOR de Luxe, electric lighting, horn, and speedometer, nearly new £74 10
1915 4½ h.p. All-chain Drive B.S.A., countershaft 3-speed, Millford Sidecar and accessories £62 10
1915 6 h.p. Countershaft 3-speed ROYAL RUBY-J.A.P. and Bramblo Sidecar, only done 100 miles; cost £101 14s. £79 10
New WILLIAMSON Sidecar Combination . Offers
ROVER, 3½ h.p., 3-speed, and Rover Sidecar £46 10
15 h.p. 4-cylinder RENO 5-seated Car £65 0
1913 7-9 h.p. Twin QUADRANT and Quadrant coach-built Sidecar £49 10
1913 3½ h.p. RUDGE Multi £38 10
1913 6 h.p. ENFIELD Combination £53 10
1913 6 h.p. 2-speed REX and Sidecar £44 10
1913 3½ h.p. 3-speed TORPEDO-PRECISION and Sidecar, require slight attention £29 10
1912 6 h.p. 2-speed REX and Sidecar £37 10
1912 6 h.p. 2-speed free-engine REX £33 10
1912 3½ h.p. N.S.U. and Sidecar £24 10
1912 3½ h.p. LINCOLN-ELK £19 10
1912 3½ h.p. 2-speed BRADBURY and S'car £32 10
P. & M., 3½ h.p., 2-speed, grand condition .. £29 10
1912 (Nov.) SCOTT and Sidecar £38 10
1910 3½ h.p. 2-speed REX and Sidecar £24 10
1910 5-6 h.p. 2-speed REX and Sidecar £26 10
PEUGEOT, 5-6 h.p., 3 speeds, twin £19 19
F.N., 4-cylinder, magneto, spring forks £12 10
P. & M., 3½ h.p., 2-speed, and Sidecar £24 10
N.S.U., 2-speed, F.E., twin, spring forks ... £13 10
REX, 5½ h.p., twin, magneto, tourist £15 10
REX, 3½ h.p., magneto, spriog forks £14 10
5½ h.p. F.E. Twin REX, specially good £17 10

£58 10 0

7-9 h.p. 2-seater PREMIER Light Car, chain drive, light, fast, and good hill-climber, hood, screen, horn, and lamps. Any trial or examination.

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MOTOR CYCLES FOR SALE.

Enfield.

ENFIELD Combination, bought last month, perfect; best offer over £75.—Dowding, Little Haven, Pembrokeshire. [X2933

1915 3½h.p. Enfield and sidecar, and accessories, in new condition; seen any time; £55.—223, High Rd., Kilburn. [5784

ROYAL Enfield Latest Combination, Lucas electric lighting set; seen any time.—Sprigens, 22, Berkeley Rd., Crouch End, N. [X3157

1914 Enfield 6h.p. Combination, practically new, mileage 980, speedometer; £58.—Osborne, 177, New Park Rd., Brixton. [5603

ENFIELD 6h.p. Coach Combination, speedometer, lamps, tools, excellent condition; price £50.—White, 9, Eardley Rd., Streatham. [5852

ENFIELD 1914 6h.p. Combination, complete, head, side, and rear lamps, horn, etc., perfect order; £58. —Batchelor, Clarence St., Kingston. [X3252

1915 Enfield 6h.p. Combination, complete, lamp sets, horn, speedometer, not done 3,000, as new; £65. —W. Holloway, Sidbury, Worcester. [X3131

ENFIELD 1914 6h.p. Combination, speedometer, lamps, etc., overhauled, and in perfect condition; £63.—Mylam, 197, London Rd., West Croydon. [5875

ENFIELD, 3h.p., July, 1915, ridden under 100 miles, as new, bad to kick start, otherwise perfect; £45. —Chamberlain, Land Agent, Enville, Stourbridge. [5564

2¾h.p. Enfield, perfect condition, just overhauled, speedometer, new tyre, accessories; bargain, £19; seen appointment.—Minerva, Shoreham Beach, Sussex. [5579

ENFIELD Combination, 6h.p., with Lucas head and tail lamp, horn, special engine, condition as new; £68.—Colmore Depot, 31, Colmore Row, Birmingham. [5937

ENFIELDS, Enfields!—Latest 1915-16 models in stock. You can't do better than get one of these, and now at Alexander's, 115, Lothian Rd., Edinburgh. [5143

1912 6h.p. Enfield, special wide coachbuilt sidecar to seat 2, accessories, etc.; £45, cash or easy terms. —R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0722

ROYAL Enfields.—Immediate delivery all models at Alexander's, 115, Lothian Rd., Edinburgh. Also a few guaranteed bargains in 1914 and 1915 second-hand Enfields. [5150

ENFIELD, 1913, 3h.p., twin, 2 speeds, F.E., kick starter, speedometer, lamps, etc., splendid condition; £40; after 7 p.m., Saturday 2 p.m.—15, Dorset Rd., Wimbledon. [5766

ENFIELD 1914 Coach Combination, heap accessories; 65 gns.; deferred payments arranged.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5656

ENFIELD 1915 3h.p. Solo Twin Model, can be delivered from stock; £52/10; exchanges or extended terms.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0481

ENFIELD Combination, 6h.p., 1913, coachbuilt sidecar, perfect running order; £55, or near offer; trial any time by appointment.—Apply, Weiss, Longfield Mills, Heckmondwike. [X3010

ENFIELD, September, 1914, 2¾h.p., 2-speed, kick starter, Watford, mechanical horn, Lucas lamp, electric rear, accessories, splendid condition; £34.—140, Wyndcliff Rd., Charlton, S.E. [5713

ENFIELD 1915 6h.p. Combination, electric lighting outfit, speedometer, 2-seater coachbuilt sidecar, screen, spring handle-bars, condition perfect; £90.—Merok, Tenuyson Rd., Mill Hill, N.W. [5547

6h.p. 1913 Royal Enfield Combination, a nice reliable motor cycle and sidecar, with all accessories, complete; £50; guaranteed; any severe trial given; tuition free.—Wauchope's, 9, Shoe Lane, London. [X3196

ENFIELD 2-speed 6h.p. Combination, late 1913, fully equipped in every way, new tyres, full kit of tools, chains, spares, etc., Lucas car generator and lamps; trial willingly; £55 cash.—Burow, Palace, Alton, Hants. [X2782

ROYAL Enfield Combination, £84; 3h.p. twin, 50 gns.; 2¼h.p. 2-stroke, 38 gns.; immediate delivery all models.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0571

ENFIELD, 6h.p., coachbuilt sidecar, new August, 1914, complete lamps, mechanical horn, spares, etc., new oversize tyres front and back, perfect condition; £63.—Lloyd, 32, Campbell Rd., Longsight, Manchester. [X0846

6h.p. Royal Enfield Motor Bicycle and sidecar, 1914, 2-speed combination, property of an officer going to the Front, includes all accessories and speedometer; £67/10; opportunity.—Seen at Wauchope's, 9, Shoe Lane, London. [X3174

ENFIELDS, all models actually in stock.—6h.p. combinations, 3h.p. 2-speed twins, T.T. and touring models, also 2¼h.p. 2-speed 2-stroke.—P. J. Evans, 87-91, John Bright St., Birmingham, controlling district agent. [5729

ROYAL Enfield, 3h.p., 1915, twin, kick-start, 2-speed, little used, like new, horn, lamps, Watford speedometer, Peter Union puncture-proof band; £46, without accessories £42. — Thompson, Briars, Fenham, Newcastle-on-Tyne. [X3227

MOTOR CYCLES FOR SALE.

Juno.

JUNO-J.A.P., latest model, new, 6h.p., Stormey-Archer countershaft gear; £78/5/6.

JUNO-VILLIERS, 2½h.p., 2-stroke, second-hand; £22, or on gradual payments.—Seen at 248, Bishopsgate, London. [5858

Kerry.

1912 3½h.p. Kerry-Abingdon, free engine, lamp, horn, and tools.—Colmore Depot, 31, Colmore Row, Birmingham. [5923

Lea-Francis.

LEA-FRANCIS, 1915¾ (September), Montgomery special sidecar, head and rear lighting, Stewart signal, practically unused; cost £92, £75.—2nd Lieut. Wheeler, M.M.G.S., Bisley. [X2580

Levis.

LEVIS 2-speed in stock; £44.—Cox, 29, Green St., Cambridge. [5635

LEVIS, 1915½, almost new, only done 500 miles; £25.— 1, King St., Acton. [5700

1914 Levis, 2¼h.p., lamp, horn, perfect order; 25 gns.—895, Fulham Rd., S.W. [5891

LEVIS Popular Models actually in stock; £28/1; no waiting.—Jackson Bros., Horsham, Sussex. [X3019

1915 Popular Levis, single and 2-speed, in stock.—Wilkin and Co., Hunters Bar, Sheffield. [5743

LEVIS, 1914, 2½h.p., 2-speed, speedometer, lamps, spares, as new; £29.—O'Neill, 28, Wellesley Rd., Liverpool. [5851

1915 Levis, 2½h.p., almost new condition, lamps, horn, etc.; £21 cash, no offers.—Borow, Palace Alton, Hants. [X2783

1915 2½h.p. Levis, Edmund spring frame, Enfield 2-speed, chain drive; £46.—Wilkin and Co., Hunters Bar, Sheffield. [5742

1915 2½h.p. Levis, 2 speeds, good condition, full accessories, officer going Front; £24.—2, Grove Mansions, Hammersmith. [5768

LEVIS Popular Model, new end of September, not done 200 miles, condition as new; £25, no offers.—Maynard, Hairdresser, Bude. [5588

1915 Levis, 2¼h.p., Popular model, absolutely in stock; £28/1; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6410

LEVIS, Levis!—Popular £28/1, and No. 1 model £36/17, in stock; cash or easy payments.—Alexander's, 115, Lothian Rd., Edinburgh. [5147

LEVISES, No. 1's and Populars and 2-speeds delivered ex. stock; deferred payments arranged.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5659

LEVIS 2-stroke Motor Cycles, latest 1915 models.—Sole London and district agents, Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent. [0711

Lincoln-Elk.

LINCOLN-ELK, 1913½, 3¼-4h.p., mag., new tyres; £18/10.—36, Skelbrook St., Earlsfield. [X2574

1913 3½h.p. Lincoln-Elk, 2-speed gear, and free engine, all accessories, basket sidecar, excellent condition; bargain, £25.—165a, Westbourne Grove, London, W. [X3141

THROUGH Enlistment must sell.—Lincoln-Elk, 3h.p., 1911-12, Bosch, B.B., Pedley, exhaust whistle, splendid condition; £16/10.—Clarke, 15, Denbeigh Rd., West Ealing. [X3051

Martin.

1914 Martin-Jap, 2¾h.p. racer, 60 per hour; £33.—Nightingale and Co., Crawley. [X3045

MARTIN-J.A.P. Motor Cycles, new 1916 models, from stock. 2¾h.p., single gear, £32/10; ditto, fitted with 2-speed Enfield gear, £37/10.—Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., W.C. 'Phone: Regent 1432. [5200

Matchless.

MATCHLESS Combination, 8h.p., T.T., overhead valves; £36.—82, Caledonian Rd. [5777

1912 6h.p. Matchless Combination, 2-speed, excellent condition; £38.—Lacey, Ironmonger, Stratford-on-Avon. [X2931

MATCHLESS Combination, 8h.p., 2-speed, lamps, speedometer, etc.; £45.—216, Lake Rd., Portsmouth. [X3295

1914 Matchless 3½h.p. Twin, 3-speed, kick starter; £37.—The Premier Motor Co., Aston Rd., Birmingham. [5899

MATCHLESS, perfect condition, coachbuilt sidecar, 2-speed; £45, or near offer.—86, Boundary Rd., East Ham. [X3147

1913 7h.p. Matchless, Canoelet sidecar, all accessories; £55, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0721

MATCHLESS 1914 8B. Combination, M.A.G. engine, lamps, generator, horn, etc., excellent condition; £75.—Jones, 37, Kyverdale Rd., Stamford Hill. [5684

MATCHLESS, 8h.p., 1913, free engine, speedometer, lamp, horn, rear lamp, wicker sidecar; £45, or £40 solo.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [55-2

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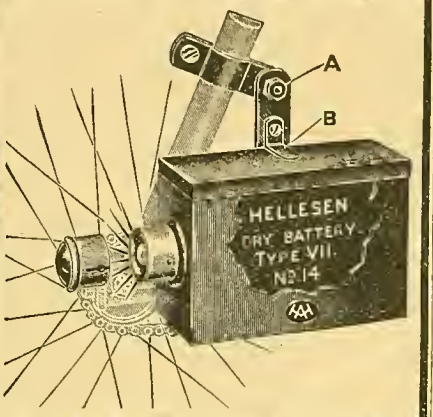

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H.H. BADGE HOLDER. Small, neat, and well-plated. Fig. 778. Price 1/1

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MOTOR CYCLES FOR SALE.

Matchless.

MATCHLESS Combination, 1915½, 8B, 7h.p. M.A.G. engine, Lucas horn, lamps, Cowey speedometer, spring wheel sidecar, all in perfect condition; £90.—Box L1,750, *The Motor Cycle* Offices, 20, Tudor St., E.C. [5584

Moto-Reve.

MOTO-REVE Twin Lightweight, mag., Druids; seen running; £10/10.—45, Church Rd., Acton. [5905

Motosacoche.

MOTOSACOCHE 3½h.p. Twin, 2-speed model, £60.—In stock at Alexander's, 115, Lothian Rd., Edinburgh. [5148

MOTOSACOCHE, 1913, 3½h.p., twin T.T. model, overhead exhaust valves, 2-speed countershaft gear, clutch and kick starter, very fast and reliable machine; going cheap, £30; cash or extended terms.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0551

Neall.

NEALL-PRECISION, 3¾h.p., 3-speed, free engine, with coachbuilt sidecar, done 10,000 miles only, perfect; £41.—Harriss, 332, Wellingboro' Rd., Northampton. [X3266

New Hudson.

NEW Hudson, 2-stroke, 2-speed, good tyres, reliable mount; £25.—31, Sharsted St., Kennington. [5763

1914 6h.p. New Hudson Combination, 3-speed Armstrong; any trial.—Crawford, 106, Morris St., Oldham. [X2923

3½-4h.p. New Hudson Combination, 1914, splendid running condition; £43/10.—Fermaine, Rushall, Walsall. [X3238

NEW Hudson, 1915, 2¼h.p., 2-stroke, 2-speed, T. and M., lamp, horn, studded rear tyre, as new; £32.—Lockington, Malden Rd., Malden, Surrey. [5732

1914 6h.p. New Hudson Combination, 3-speed, clutch, kick start, just overhauled; £60.—Box 9,550, *The Motor Cycle* Offices, Coventry. [X2502

NEW Hudson, 2-stroke, from £36; all models from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0603

1913 3½h.p. New Hudson-Jap and sidecar, 3 speeds, splendid condition, speedometer, tools, lamps, spare cover and tubes; any trial; £43.—153, Peckham Park Rd., S.E. [X3065

NEW Hudson, 1914-15, 2¼h.p., 2-stroke, 2-speed, new condition, new lamp set, rear light, horn, tools, new spare belt, chain, tube, fast, done Birdlip; bargain, £32.—Prebble, Spa Hotel, Bath. [5632

NEW Hudson, 3½h.p., countershaft 3-speed gear; £63; delivery from stock.—Exeter Motor Cycle and Light Car Co., Ltd., 7, Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0570

6h.p. New Hudson, 3-speed, and free engine model, fitted with a 2-seat, coachbuilt Bowser sidecar, speedometer, lamp, Lucas rear light; the complete turnout, £57/10.—Wauchope's, 9, Shoe Lane, London. [X3178

NEW Hudson.—Order your 1916 model now; actually in stock, models A, C, D, and E, and Big Six; write full particulars; deferred payments arranged.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5661

New Imperial.

NEW Imperials, lightweights in stock.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [5536

1915 New Imperial, 2¼h.p., 2 speeds; £36/15; delivery from stock.—Nightingale and Co., Crawley. [X3047

NEW Imperial, 1913, 2½h.p., excellent condition; £17.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [5536a

1915 2¾h.p. New Imperial J.A.P., 2-speed, actually in stock; price 35 gns.; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6408

NEW Imperial-Jap's, 1915, new machines, for delivery from stock; 2-speed models £36/15.—Wauchope's, 9, Shoe Lane, Fleet St., London. [X3179

NEW Imperial-Jap, 2½h.p., 2-speed, variable ignition, new March, 1915, not ridden 500 miles; owner enlisted; £30.—Wareing, Greenacres, Heaton, Bolton [X2910

1914 New Imperial, 2½h.p., 2 speeds, spares and accessories; 25 gns., or exchange good combination.—Buckingham, Cycle Agent, Mollland, South Molton. [X2779

NEW Imperial-Jap Light Tourists, both models in stock, with and without clutch and kick starter; £37/18 and £44/4.—Crow Bros., 190, High St., Guildford. [5776

NEW Imperials in Stock for immediate delivery, light tourist, kick-starter, and ladies models; prices from 35 gns.—P. J. Evans, Birmingham and district agent, 87-91, John Bright St. [5725

NEW Imperial.—The latest models of these famous machines are the finest value obtainable; prices from 35 gns., and delivery from stock.—The Colmore Depot, 31, Renshaw St., Liverpool. [5673

1915 New Imperial-Jap, 2-speed, lamp, horn, etc., all in beautiful condition; owner going to Front, must sell at once; machine cost £40, and is honestly worth £35, great bargain, 27 gns.—Owner, c/o Julian, Broad St., Reading. 'Phone: 1024. [0736

MOTOR CYCLES FOR SALE.

New Imperial.

3½h.p. 1915½ New Imperial-Jap, 3-speed, clutch, kick start, T.T. bars, 3 months old, mileage 1,800, complete with lamp, rear lamp, mechanical horn, speedometer, spare chain and belt; bargain, £55; exchanges.—Ideal Cycle Co., Thundersley, Essex. [5678

Norton.

1914 3½h.p. 3-speed Norton, excellent condition; £48.—Parker and Son, St. Ives, Hunts. [5803

1915 Big Four Norton Combination, just arrived, with hood, screen; £88/17/6.—Wilkin and Co., Hunters Bar, Sheffield. [5740

NORTONS.—All models actually in stock for immediate delivery.—P. J. Evans, Birmingham Agent, 87-91, John Bright St. [5736

NORTON, 1914½, Big Four, P. and H. lamp, Lucas horn, Cowey, carefully used, excellent condition; £45.—18, Western Rd., Oxford. [5539

NORTON, the Big Four, 3-speed countershaft gear, chain drive, £68/15/6; in stock for immediate delivery.—Alexander's, 115, Lothian Rd., Edinburgh. [5149

1915 Norton Big Four, Sturmey-Archer 3-speed countershaft, chain and belt, absolutely in stock; £64/10, plus 5%; exchauges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X1487

1915 T.T. Norton, new in August, with Philipson pulley, lamps, mechanical horn, featherweight coachbuilt sidecar, very sporting combination; £47/10.—Lieut. Storey, R.F.C. Mess, Dover. [5850

N.S.U.

N.S.U., 3h.p., m.o.v., Bosch mag., B. and B., variable jet, running order; £5/10.—Steel, 25, Elmore St., Islington. [5543

O.K.

O.K. Junior, 2-speed, Mark III; £33/1/6.—In stock at Alexander's, 115, Lothian Rd., Edinburgh. [5157

O.K. Junior, 1915, in splendid condition, very little used; 23 gns., great bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X2346

1915 O.K., 2½h.p., 2-speed, J.A.P., very little used, tyres good as new, lamps, etc.; £28.—Thomas, Homstead, Rottingdean, Brighton. [5819

O.K., 1915, 2½h.p., 2-stroke, mark V, 2-speed, 500 miles, no lamp or horn; genuine bargain, £23, no offers; Saturday afternoon.—N., 69, Roydene Rd., Plumstead, S.E. [5848

P. and M.

P. and M., 1915 (March), 2½ tyres, B500 saddle, condition as new; £62.—John Sudbury, Wonersh Park, Guildford. [X3049

1911 P. and M., just overhauled, 3½h.p., 2-speed, chain drive, coachbuilt sidecar, complete; £32.—Proctor, 27, Greenhill Crescent, Harrow. [X2932

P. and M., 1913, 2-speed, kick-start, undershung sidecar, luggage and petrol carrier, all accessories, had little use; £42.—Spurling, The Cottage, 2, Brondesbury Park, N.W. [5886

P. and M., 1914, and coachbuilt sidecar, in splendid condition, complete with Lucas lamps, horn, Cowey speedometer, and £5 insurance policy; £48/10, no offers.—The Walsall Garage, Walsall. [X2426

Peugeot.

6h.p. Peugeot and large sidecar, in perfect running order; trial; lamps, etc.; £20.—Norman, Baker, Soham, Cambs. [X3012

Precision.

1914 3¾h.p. Precision and sidecar, new condition; £22.—123, Bond St., Macclesfield. [X3246

1913 ¾h.p. Precision, wicker sidecar, good tyres; £ .—Dyhall, North Market Rd., Gt. Yarmouth. [X3064

PRECISION, 3¾h.p., single-cyl., Bosch mag., B. and B., new tyres, perfect condition, £18; low coachbuilt sidecar, £3.—The Premier Motor Co., Aston Rd., Birmingham. [5900

Premier.

1914 Premier, 3½h.p., 3 speeds, excellent condition; £34.—Nightingale and Co., Crawley. [X3044

1915 3½h.p. Premier, 3 speeds, countershaft, not 1,000 miles; £45.—Nightingale and Co., Crawley. [X3046

PREMIER, 1913, 3½h.p., 3-speed, fine condition; £33.—Hemsley, Market St., Ashby-de-la-Zouch. [X3263

PREMIER, 1914½, 2½h.p., 3-speed, clutch, as new; first reasonable offer.—Norfolk Villa, Joseph's Rd., Guildford. [5620

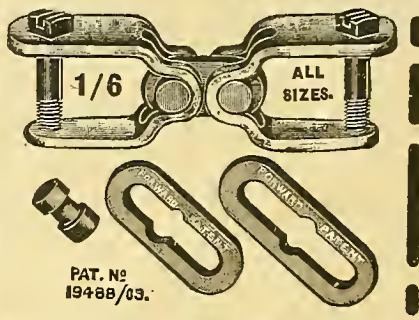
PREMIER, 2½h.p., new 1st April, perfect order, guaranteed; £30, or exchange 3½h.p.—A. J. Hill, Nuffield, Sussex. [5568

1913 Premier, 3½h.p., 3-speed gear and clutch, also sidecar, and accessories; £35. — Colmore Depot, 31, Colmore Row, Birmingham. [5927

1913½ 3½h.p. Premier, 2-speed, countershaft, with 1914 £11/11 coachbuilt sidecar, perfect condition; any trial; £48.—Clarke, Jeweller, Stowmarket, Suffolk. [5720

1913¾ Premier, 3½h.p., 2-speed countershaft, comfortable cane torpedo sidecar, lamps, horn, etc., splendid condition; £50, or near offer.—Morris, Chemist, Sutton, Surrey. [5885

FORWARD



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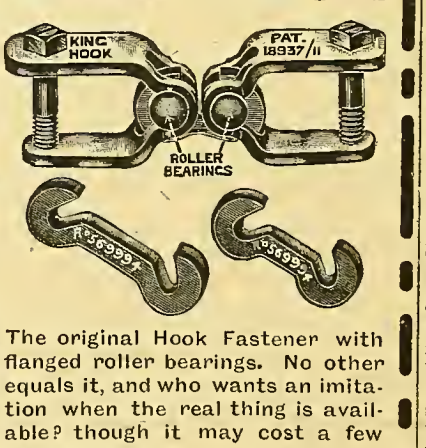

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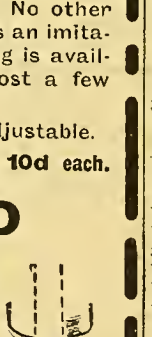

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PREMIER, 2½h.p., 1913, 3-speed gear, Palmer tyres, lamp, horn, speedometer, new spare tube, accessories; £20; splendid condition; appointment.—C.G.B., 52, Lauercost Rd., Tulse Hill, London. [5591

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PREMIER, late 1914, 3½h.p., 3-speed countershaft, splendid condition, new Dunlop covers and tubes, Binks carburetter, Millers 52/- lamp set new, new belt, Millford coachbuilt sidecar, Corvette; £60.—Gladden, High St., Chesham, Bucks. [X3021

PREMIER, 1913, 3½h.p., Armstrong 3-speed, free engine clutch, kick start, Bramble coachbuilt sidecar, rainproof apron, lamps, speedometer, excellent condition; £45.—Townsend, 6, Pavilion Parade, Woodlam, Wormwood Scrubbs, W. [5571

PREMIER, 3½h.p., late 1914, countershaft 3-speed, and coachbuilt sidecar, complete, in first-rate running order; £55; owner returning to Colonies, wants 2¾h.p. Douglas; seen by appointment.—Vaughan, 72, Lyncroft Gardens, Hampstead, N.W. [5759

Quadrant.

3½h.p. Quadrant, B. and B., spring forks, in good order; must sell; £10/10.—Holloway, The Retreat, Bradford-on-Avon. [5646

Radco.

RADCO 2-strokes, single gear £25/5, 2-speed £33.—Immediate delivery from Alexander's, 115, Lothian Rd., Edinburgh. [5152

RADCO, 2½h.p., 1915, only done 100 miles, all accessories, excellent condition; trial; £25.—C. Adams, 52, Park Rd., Aldershot. [5601

Radmill.

RADMILL, 3½h.p., free engine, new tyres, 1914-15 machine, complete with full range of accessories; £30.—Colmore Depot, 31, Colmore Row, Birmingham. [5928

Regal.

REGAL-J.A.P., 1913¾, 2¾h.p. T.T. twin, in very good condition, very speedy, spares; bargain, £21/15; ill-health cause of sale.—After 7.30 p.m., A.E.L., 65, Kellett Rd., Brixton, S.W. Seen at garage any time, South Eastern, Herne Hill, S.W. [5889

Rex.

REX, 5-6h.p. twin, sidecar, accessories; £20, offers.—34, Beverstone Rd., Thornton Heath. [5843

3½h.p. Rex, good running order; £15.—W. Brandish, Triumph Garage, Foleshill Rd., Coventry. [X3302

REX, 3½h.p., Bosch, Binks, Druids, adjustable pulley, lamps, horn; £17.—Gill, 21, Shrewsbury St., Old Trafford, Manchester. [X3215

REX, 5-6h.p., 2 speeds, F.E., Bosch, with Canoelet coachbuilt sidecar; £25; exchanges.—Speechley, 45, Church Rd., Acton. [5903

REX 5-6h.p. Twin, clutch, mag., B. and B. carburetter, good order; £13.—The Laurel Motor Co., High St., Woodford Green. [5671

3½h.p. Rex, 2-speed, handle-starter, Bosch, Amac, Whittle, lamp, perfect order; £16; enamelled grey.—Railway Garage, Staines. [5917

REX 6h.p. Twin, free engine, handle starter, and sidecar, fast, powerful; sacrifice £38.—Atkinson, 3, Town Hall Buildings, East Ham. [5575

REX, 3½h.p., mag., T.T. bars, lamps, horn, new Dunlop belt, low, nice condition; a bargain, £11.—Hairdresser, Derby Rd., Chesterfield. [X3054

1913 Rex, 6h.p., and sidecar, 2-speed, kick starter, engine just overhauled by makers; bargain, £36.—Harry Lewthwaite, Egremont, Cumberland. [X3240

REX Combination, twin-cyl., good sidecar, 6h.p. engine, re-bushed, Bosch mag., B. and B. (new), lamp, complete; £20.—Farrant, High St., Cobham. [5707

REX 6h.p. 2-speed Coachbuilt Combination, delivered August, 1915, only done 150 miles; cost £77/10, accept £59/10.—Collier, Deal St., Halifax. [0706

1912 4h.p. Rex and Torpedo sidecar, 2 speeds, N.S.U. and clutch, 5 gn. speedometer, very little used; £35, bargain.—Seen Brownings Garage, 68, Gt. Percy St., Pentonville, W.C. [5537

1914 6h.p. Rex, with Oloria coach sidecar, 3-speed chain drive, speedometer, lamps, horn, tools, spare chains, etc., in splendid order; nearest £65.—Full particulars from Cooper, 114, Polwarth Gardens, Edinburgh. [X3041

3½h.p. Rex Model de Luxe, free engine, Bosch mag., low 16in. frame, 1915 B. and B. carburetter, Dunlop tyres, splendid order and condition, powerful, fast, accessories, complete, £19; coachbuilt sidecar, plated rim, Clincher studded, £5.—17, Bedford Sq., Commercial Rd., E. [X3130

Rex-Jap.

1913 8h.p. Rex-Jap (1914 engine), P.M.C. 16 gn. sidecar, not done 3,000 miles; £50.—Wilkin and Co., Hunters Bar, Sheffield. [5745

1913 6h.p. Rex-Jap, 2-speed, coachbuilt sidecar, lamp, horn, and tail lamp; £52.—The Premier Motor Co., Aston Rd., Birmingham. [5901

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Rex-Jap.

REX-J.A.P. 8h.p. De Luxe Combination, recently overhauled and re-enamelled, appearance as new; £48; or exchange for good solo mount.—Newling, 77, Brook Green, W. [6773

A BARGAIN.—Rex-Jap, 6h.p., 3-speed gear, complete with coachbuilt sidecar, glass screen, in splendid condition, not been run above 200 miles; £66.—Arthur Dyus, 81, Grimsby Rd., Grimsby. [5565

Rover.

ROVER, 1912, clutch, 1914 engine; £23 cash.—33, Roscoe St., Middlesbrough. [X3202

1915 Rover, 3 speeds; immediate delivery; £66/10.—Nightingale and Co., Crawley. [X3048

ROVER Combination, 1914, 3-speed, £50; also 1913, £47.—Cox, 29, Green St., Cambridge. [5637

1912 Rover, 3½h.p., 3-speed, good condition; £26.—39, Wakehurst Rd., Clapham Junction. [5560

1915 3½h.p. Rover Combination, just arrived; £84/7.—Wilkin and Co., Hunters Bar, Sheffield. [5741

ROVER, 3½h.p., 2-speed, free engine, lamps, coachbuilt sidecar; £38.—124, Hambrough Rd., Southall. [5751

FOR Sale, 1914 Rover motor cycle, 3-speed, in good condition; what offers?—Parry, 2, Kohinoor Villas, Barmouth. [X2978

ROVER, 1914½, T.T. model, Binks, lamps, etc.; £42; owner on active service.—Tranter and Hancox, Cycle Agents, Belper. [X2928

1913 Rover, 3½h.p., 3-speed, clutch, and sidecar, excellent condition, lamps, etc.; £40.—27, Kirkstall Rd., Hunters Bar, Sheffield. [X2576

ROVER, 1912, 3½h.p., free engine, Cowey speedometer, very good condition; £26.—The Premier Motor Co., Aston Rd., Birmingham. [5515

ROVER, 3½h.p., 1915½, T.T. model, Philipson pulley, practically as new; £48; exchange entertained.—Ideal Cycle Co., Thundersley, Essex. [5679.

1915 Rover Combination, special demonstration turnout, £10/10 of accessories; £75, bargain.—Colmore Depot, 31, Colmore Row, Birmingham. [5919

LATE 1913 T.T. Rover, just been re-built and thoroughly overhauled, no 39; genuine bargain, £32; approval.—C.C.R. Motor Works, St. Ann's Well Rd., Nottingham. [X3050

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ROVER, 1915, new, 3½h.p. T.T. models, in stock, with hand-controlled Philipson pulley; £56; exchanges or extended terms.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0492

ROVER, 3-speed, 3½h.p., 1913½, with coachbuilt Rover sidecar, all in splendid condition, suitable for office work; £40.—Apply, M C., No. L1,767, *The Motor Cycle* Offices, 20, Tudor St., E.C. [5612

ROVER, 1915, 3½h.p., counter-shaft 3-speed, four months' use; owner going France; just thoroughly overhauled; nearest offer £60.—Lieut. T. S. Green, 10th North Staffords, Penkridge Camp, Stafford. [X2577

ROVERS.—Immediate delivery all models, 3½h.p. sporting models, with Philipson pulley, de luxe coachbuilt combination, and 3-speed countershaft models.—P. J. Evans, controlling Birmingham and district agent, 87-91, John Bright St. [5724

Royal Ruby.

ROYAL Ruby 2-strokes, 2½h.p. Villiers engine; £29.—Immediate delivery at Alexander's, 115, Lothian Rd., Edinburgh. [5151

ROYAL Ruby, 1915, 2½h.p. J.A.P., 3 speeds, clutch, aluminium footboards, accessories, practically brand new machine; £35.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [5792

Rudge.

RUDGE and Sidecar, 1913, topping condition; best over £20.—441, Brighton Rd., Croydon. [5647

1915 3½h.p. Multi Rudge and sidecar, in good condition; £55.—Seen 223, High Rd., Kilburn. [5783

1912 3½h.p. Rudge, free engine; £27; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0724

RUDGE, 1911 clutch model, new tyres, lamps, speedometer, excellent condition; £28.—Rogers, 42, Church Rd., Hendon. [5869

RUDGE Multi, 1912-13, 3½h.p., complete with lamp, horn, and tools; £28.—Colmore Depot, 31, Colmore Row, Birmingham. [5932

RUDGE Multi, 5-6h.p., fitted with Swan sidecar, 2 lamps, all spanking order; £45.—Fenlor, 36, Clarence St., Kingston-on-Thames. [X3253

1913 3½h.p Rudge, 2-speed, wicker sidecar, good condition; £35.—Motorist, East Brae, Littleover Lane, Old Normanton, Derby. [X3060

1912-13 Rudge Multi and Large Sidecar, all accessories, good order; £32. — Smith, Old Kays, Tulton Rd., Tottington, Lancashire. [X3264

RUDGE, 1912¾, 3½h.p., free engine, tyres as new, Lucas set, mud-shields; genuine bargain, 19 gns.—67, Newington Green Rd., Canonbury, N. [5818

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RUDGE Multi, early 1913, Millford sidecar, good condition throughout, lamps, horn, fast; £36.—B., 514, West Green Rd., Green Lanes, London, N. [5546

1913 3½h.p. Free Engine Rudge, in splendid condition, complete with accessories; £25.—Colmore Depot, 31, Colmore Row, Birmingham. [5925

3½h.p. Rudge Multi, 1913, speedometer, lamps, horn, mirror, rear Kempshall done 100, perfect condition, spares; £32.—Lieut. Child, 15th D.L.I., Penkridge Camp, Stafford. [5890

1914 Rudge Multi, 3½h.p., special engine, semi-T.T. bars, clutch, pedals, large tank, foot oiler, accessories, spares, only used solo, nearly new; £42.—225, White Horse Lane, South Norwood. [5821

1914 Rudge Multi, with sidecar, in splendid condition, new belt, lamps, etc.; sell £44, worth £50; or exchange with 1914 Douglas and £4 cash; owner wants solo machine.—2, Belmont Rd., Luton, Beds. [5538

1915 Rudge Multi, 5-6h.p., new April, little used, lamps (unused), horn, speedometer, tools, spares, Rudge coach sidecar, screen, hood, apron, everything latest; 65 gns.—Write appointment and trial, 151, Grove Lane, S.E. [5870

1915 5-6h.p. Rudge Multi and Bramble sidecar, horn, handle-bar mirror, 2 lamps, speedometer, spare belt, 2 inner tubes, outer cover, Binks carburetter, in good condition; £55, or nearest; Midlands.—Box 9,593, *The Motor Cycle* Offices, Coventry. [X3162

3½h.p. Rudge Multi Motor Cycle, late 1913, engine in perfect condition, new front tyre, complete with horn, lamp, and all accessories, and new set of overalls; must be sold at once, owner enlisting.—Harnett, Stag Lane, Buckhurst Hill. [5592

Scott.

1912 Scott and coachbuilt sidecar, Binks, splendid condition; cheap for cash.—52, Lower Hastings St., Leicester. [5643

SCOTT and Canoelet, in good order, lamps, horn, speedometer, and spares; £35.—Watson, Haslingfield, Cambs. [X2503

1913 Scott, grand condition; a real bargain, £48.—Apply, The Northern Sidecar and Motor Co., Ltd., N.S.C. Works, Darlington. [5616

SCOTT, late 1913, and Scott 1915 sidecar, in perfect condition, just been thoroughly overhauled; £50.—Sunbeam Depot, 94, Western Rd., Hove, Sussex. [5853

1914 Scott, underslung Myers sidecar, good condition, owner joined Flying Corps.—Write for particulars, Longstaff, 89, Garney Valley, Bishop Auckland, Durham. [X2785

1914 Scott, Binks 3-jet carburetter, Jones speedometer, new extra heavy Dunlop on back, head and rear lamps, perfect; bargain, £41.—Wilson, 72, High St., Ibstock, Leicester. [X3150

SCOTT and Sidecar, perfect condition, Binks and Scott carburetters, tyres as new, new special sidecar, any trial; £48/10.—Eaves, 165, Clifton Rd., Balsall Heath, Birmingham. [5769

3¾h.p. Scott, late 1914, 2-stroke, 2-speed, kick starter, Binks carburetter, Lucas lamp and generator, Klaxon horn, touring and T.T. bars, spare set chains, spare plugs, tube, case, all tools, tyres and condition perfect; £46.—Stewart, 54, Grove Av., Norwich. [5715

Sheffield Minor.

SHEFFIELD Minors.—Immediate delivery of this exceptionally fine 2½h.p. 2-stroke single-speed, 28 gns.; 2-speed, 33 gns., including 1916 improvements.—Colmore Depot, 31, Colmore Row, Birmingham. [X2340

Singer.

SINGER, T.T., 3½h.p., 1912, speedometer, Dunlop belt, perfect; £24.—108, Broadway, Cricklewood. [5822

4½h.p. Singer, Oct., 1913, 3-speed, free engine, lamp, original tyres good as new; £40.—Steele, Harpley. [X0560

1912 Singer, 3½h.p., 3-speed, clutch, kick start, lamps, etc.; £26.—The Laurel Motor Co., High St., Woodford Green. [5669

4½h.p. Singer and sidecar, coachbuilt, new 1914, Lucas lamps, horn, 3 spare tyres, tubes, valves, variable pulley, extra tools, splendid condition; £45, at once.—Hughes, Westwood Lane, Lower Ince, Wigan. [X2911

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6h.p. Twin Sparkbrook Sidecar Combination, slightly shop-soiled; special clearance price, £77/10.—Batten Bros., Cullompton. [X3042

Sun.

SUN, 2¾h.p. Precision engine, in splendid order, lamp, horn, etc.; to clear, £18/10.—Dance, Outfitter, Trowbridge. [5705

SUN-VILLIERS, 2½h.p., 1915, hardly used, complete range of accessories; £25, bargain. — Colmore Depot, 31, Colmore Row, Birmingham. [5929

Sunbeam.

SUNBEAM, new, 3½h.p., 1915 combination, actually in stock.—Moss, Wem. [X3305

SUNBEAM, 2¾h.p., 2-speed, clutch, kick starter, equal to new.—23, Balby Rd., Doncaster. [X2514

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Sunbeam.

3½h.p. 1916 T.T. Roadster Sunbeam in stock.—A. J. Young and Co., Ltd., Newmarket. [5595

SUNBEAM, 1914, 3½h.p., and Swan sidecar, splendid order; £60.—39, Sheet St., Windsor. [X3146

IMMEDIATE Delivery new 3½h.p. Sunbeam, latest model.—Wippell Bros. and Row, Exeter. [5675

JUST Delivered, 1916 3½h.p. Sunbeam, 70 gns.—Arthur Dyas, 81, Grimsby Rd., Grimsby. [5567

SUNBEAM, 6h.p., 1914, Millford sidecar, in exceptionally good condition; £75.—Newton, Cromford, Matlock. [X3020

A BARGAIN.—3½h.p. Sunbeam, in perfect condition, like new; £55.—Arthur Dyas, 81, Grimsby Rd., Grimsby. [5566

SUNBEAM, 1915, 3½h.p., new May, excellent condition, accessories; £60; bought 6h.p.—Naylor, Leahaven, Kidderminster. [5884

1914-15 3½h.p. 3-speed Sunbeam, tip-top condition, lamp, horn, generator, complete; £49.—Tom Green, Ingatestone, Essex. [5760

1915 Sunbeam, 3½h.p., and Ivy sidecar, run 2,000 miles, perfect., 3 lamps, and speedometer; £75.—Foulkes, Shawbury, Salop. [X3262

SUNBEAM, 3½h.p., late 1915½, done 1,500, perfect, with accessories; £64.—Box L1,766, *The Motor Cycle* Offices, 20, Tudor St., E.C. [5611

1914¾ 6h.p. Sunbeam, Gloria sidecar, large Lucas lamps, Lucas horn, Cowey speedometer, spares, in excellent condition; cost £120, accept £78; private owner.—29, Barlow Moor Rd., Didsbury, Manchester. [X3292

1914 6h.p. 3-speed Sunbeam, Gloria spring wheel sidecar, hood, screen, Lucas accessories, speedometer, etc., perfect condition; cost £128, £80, or near offer; Derbyshire.—Box 9,592, *The Motor Cycle* Offices, Coventry. [X3198

SUNBEAM, 1916, 3½h.p., T.T., 3-speed, chain drive, brand new; £73/10; trade not entertained.—Cambridge and district agents, Robinson's Garage, Green St., Cambridge. [0612

SUNBEAM, 6h.p., 1914¾, Canoelet de luxe combination, 3 speeds, Lucas lamps, horn, mirror, Jones speedometer, Perry links, aprons, under 4,000 miles, beautiful condition; £89.—Feiron, Woodcroft Av., Mill Hill, London. [X3296

SUNBEAM, 1915 model, 3½h.p., countershaft 3-speed gear, and free engine model, been used but little and carefully, includes speedometer, Lucas lighting set, Lucas horn, complete set of tools, and some spares, condition as good as new; £68; unprecedented opportunity; first cheque secures.—Wauchope's, 9, Shoe Lane, London. [X3181

Triumph.

1911 Clutch Triumph, good condition; £25.—Seen 223, High Rd., Kilburn. [5786

1911 T.T. Triumph, Grado gear, fast, low; bargain.—Stuart, Hatfield Heath, Essex. [6827

1913 Triumph, 2-speed, and sidecar, all accessories; bargain, £40.—11, Clifton Rd., W. [5719

EARLY Triumph, low, Splitdorf, good condition; £12, offer.—35, Lyttleton Rd., Leyton. [5829

TRIUMPH, 1912, good as new; £25.—Grove, 224, Fore Street, Upper Edmonton, London. [5795

TRIUMPH, T.T., late 1913, Grado; £37; also cane sidecar.—Brandon, Furnisher, Berkhamsted. [5586

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TRIUMPH, 1907, 2-speed gear, with sidecar; £22/10; running well.—Wauchope's, 9, Shoe Lane, London. [X3195

TRIUMPH Junior, 1914½, splendid running order; £32.—Mason, Glenfinnart, Luard Rd., Cambridge. [X3248

TRIUMPH, 1914, 4h.p., 3-speed, guaranteed perfect; £43.—Macrae and Tolfree, 2, Castle Terrace, Edinburgh. [5533

3½h.p. Triumph, Grado gear, new tyres, 1915 Amac, engine perfect; £20.—27, Elmhurst Rd., Enfield Wash. [5817

TRIUMPH, 4h.p., late 1914, nearly new, 3-speed gear; £45; wanted, Douglas.—76, Summerley St., Earlsfield, S.W. [5652

TRIUMPH, 3½h.p., 1913, clutch model, accessories, excellent condition; sacrifice £27/10.—Sinclair, East Molesey. [X3201

1913 Triumph, 3-speed, Gloria coachbuilt sidecar, perfect condition; 38 gns.—Kay, 49, Bridge St., Gainsborough. [5753

TRIUMPH Junior, 1915, as new, speedometer, Lucas lamps, horn, etc.; £40.—Mylam, 197, London Rd., West Croydon. [5874

TRIUMPH, 1907, N.S.U. 2-speed and clutch, perfect. Lucas lamp, horn; £15.—Compton, Elder House, Walrow, Highbridge. [5651

TRIUMPH, 1914, 3-speed, 4h.p., O.B. sidecar, accessories, thoroughly overhauled; £52.—55, High St., Maidstone. No offers. [5551

1910 Triumph, Villiers free engine, in good order, complete with lamps; £19.—Springett, Haslemere, Billericay, Essex. [6750

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TRIUMPH, 1911, 3½h.p., free engine, complete with lamp and horn; £21.—Colmore Depot, 31, Colmore Row, Birmingham. [5926

1912 Triumph, free engine, as new, 4,084 miles, Cowey speedometer, spare belt and tube; £32/10.—33, Cockspur St., S.W. [5544

TRIUMPH, 1910, in perfect order, new tyres, rebushed, all accessories; £20, bargain.—Holman Steddy, Birchington-on-Sea. [X3068

TRIUMPH, 3½h.p., 1909, re-enamelled and plated by makers, splendid condition; £16.—Harper, Craven Arms and Clun, Salop [X3165

TRIUMPH, 1912, clutch model, excellent condition, lamps, horn, decompressor, spare valve.—Miller, 49, Tonsley Hill, Wandsworth. [5815

1912 Free Engine Triumph, good condition throughout; any trial; £29/10.—W. Brandish, Triumph Garage, Foleshill Rd., Coventry. [X3298

TRIUMPH, 1913, T.T., 2-speed N.S.U., and clutch, speedometer, horn, lamp, and tools, £37/10.—259, Warwick Rd., Kensington (Garage). [5553

TRIUMPH, 3½h.p., 1912, 3-speed Armstrong, and sidecar; sell 28 gns. Wanted, 2-stroke lightweight.—Tott, 81, High St., Ponders End [X2935

1913 Triumph, 3½h.p., 3 speeds (Sturmey), and sidecar, complete with accessories; £37.—Colmore Depot, 31, Colmore Row, Birmingham. [5920

1913 3½h.p. 3-speed Triumph, with Canoelet coachbuilt sidecar; £50, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0734

1913 3½h.p. Triumph, 2-speed, free engine, complete with sidecar and accessories; £33.—Colmore Depot, 31, Colmore Row, Birmingham [5921

1914 3-speed Triumph, Lucas front and rear lamps, condition guaranteed as new; £47.—W. Brandish, Triumph Garage, Foleshill Rd., Coventry. [X3299

LATE 1914 4h.p. Triumph and Millford family sidecar, 3 lamps, horn, speedometer, spares, perfect condition; £60.—Phillips, Sunbury, St. Cross, Farnham. [5639

1915 Triumph and Sidecar, 3-speed, speedometer, lamps, etc., all as new; £55, lowest; owner enlisted.—Apply, White, 21, Burghill Rd., Sydenham [X3013

TRIUMPH, 1914, 3-speed, and new coach sidecar; £55; deferred payments arranged.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [5657

1913 3-speed Triumph, with brand new 17 gn. Gloria sidecar, luggage rail, all accessories, perfect; £50, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff [0720

TRIUMPH, 1911, 3½h.p., single speed, complete lighting set, new Avon back tyre, excellent condition, just overhauled, £19.—H.B., Nurses Cottage, Sutton Rd., near Maidstone. [X3249

1913 Triumph, free engine, speedometer, 2 gas lamps, Mabon gear and clutch, all new tyres, only done 3,000 miles; £37/10.—W. J. Machrell, The Druid's Head, Broadway, Deptford [5779

TRIUMPH, 1910, cylinder, pistons, connecting rod, bushes, valves, tappets new this month, T.T. bars, all accessories, tyres perfect; £25, or nearest.—Law, Officer's Club, Penkridge Camp, Staffs [X2780

4h.p. 1914 Triumph, 3-speed and free engine, touring model, fitted with Gloria sidecar, including all accessories; price £48, guaranteed; opportunity to secure a reliable bargain.—Wauchope's, 9, Shoe Lane, London [X3190

TRIUMPH, 3½h.p., magnificent condition, extra fast, climb anything, only wants seeing, £22; another ditto, with 2 speeds, and Montgomery sidecar, perfect, £30; car wanted.—Brooks, Church St., Caversham, Reading. [5609

1914 Triumph, 4h.p., 3-speed, large P. and H. head light, rear lamp, horn, knee grips; overhauled at a cost of £14, in magnificent condition throughout, only 44 gns.—Julian, Broad St., Reading. Biggest dealer in the South 'Phone: 1024 [X0801

TRIUMPH and Gloria sidecar, both new this year, 4h.p., 3-speed hub, Lucas best accessories, trip speedometer, Pillion seat, back-rest, spare tyres, valves, tubes, etc.; cost £90, sacrifice £55, nearest; appointment.—Booth, Paddington Infirmary, W. [X3063

TRIUMPH, 1913, 3-speed, magnificent £17 1915 Gloria coachbuilt sidecar, absolutely as new and unscratched, luggage grid, tyres in splendid condition, speedometer, head and tail lamps, horn, etc., whole outfit in magnificent condition and one of the smartest and most luxurious on the road; cost over £83, accept for quick sale 45 gns.—Julian, Broad St., Reading. 'Phone: 1024. [X3143

Tyler.

TYLER 2-strokes, 2½h.p. 3-speed; £33/1/6.—In stock at Alexander's, 115, Lothian Rd., Edinburgh. [5156

2½h.p. Tyler, 2-stroke, 2-speed, 1915 model, complete, with all accessories; £27/10.—Wauchope's, 9, Shoe Lane, London. [X3182

Velocette.

VELOCETTE 2-stroke, model D, 2-speed, the economical 2-stroke; £36/10; chain drive.—Immediate delivery at Alexander's, 115, Lothian Rd., Edinburgh. [5154

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Rattle in Two-stroke Engines.

WHY does a two-stroke engine rattle is a question very much akin to the old query "Why does an engine konk?" There are many answers to each of these questions, but none hitherto has been entirely convincing. It is, therefore, more than likely that the cause is not the same in every engine. In fact, there is but little unanimity amongst users regarding either the cause or the cure. A sound theory is that the rattle is caused by piston tap, due not to the change of angularity of the connecting rod, but to the piston being blown across the cylinder by the rush of incoming gases against the baffle plate on the piston head. But if this be the cause, new engines should rattle as well as old, and the rattle does not as a rule occur during the first few hundred miles, and a cure would be effected by admitting the inlet gas on both sides, though in this case the scavenging would probably be very faulty. It would be interesting to hear whether those engines which are designed to admit the charge through a valve at the cylinder head ever rattle.

It is also suggested that carbon on the piston head is the cause. This collects all round the edge, forms a hard ring, and touches the cylinder head at the top of the stroke. Filing the edge of the piston is sometimes found to be a cure in this case. A dirty engine can produce rattle as well as knocking either when combined with overloading or not. Here again we find great differences of opinion, for some riders assert that overloading alone is a frequent cause of rattle, while others assert that rattle ceases when the engine has work to do.

Again, it has been urged that rattle in a two-stroke is equivalent to konking in a four-stroke engine; others deny this, for they assert that they can make their engines konk as well as rattle. Other possible causes are stuck piston rings and faulty crankshafts or connecting rods, and the rings catching the lip of the ports; this last is naturally more likely to occur when the ports are wide.

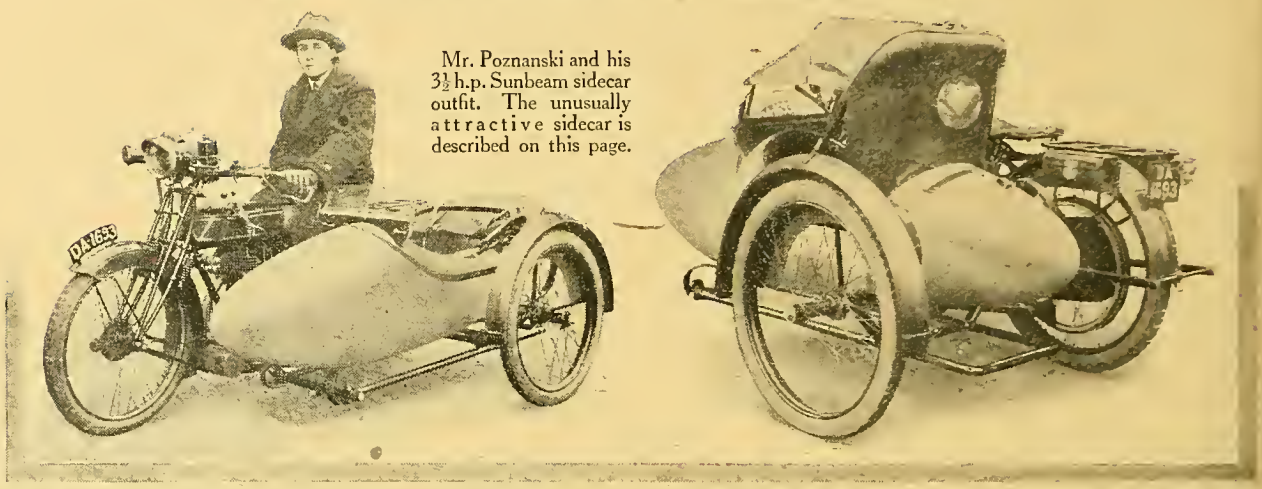
It is possible that an offset gudgeon pin or a gudgeon pin set higher up in the piston might mitigate, if not cure, the trouble. We are, however, of opinion that, if an engine is kept clean, especially the ports and piston head, the rattle will be much less likely to make itself felt.

Crank Cases.

IN view of the rapidly increasing uses for aluminium in connection with motor vehicles and aeroplanes for warlike purposes, it is quite conceivable that ere long there may be a shortage of this material. Consequently, it behoves manufacturers of motor cars and motor cycles to look ahead for an efficient substitute. The reason aluminium has been used for the crank cases of motor cycles is, of course, wholly and solely its lightness. In some respects aluminium is an entirely unsuitable material. We refer to its porous nature, which renders it difficult to arrange a firm security for the cylinder holding-down bolts. Now, there is no reason whatever why we should use a cast iron cylinder mounted on an aluminium crank case split vertically. There would be certain advantages, such as the elimination of another joint and rendering the internal parts more readily accessible, in casting the cylinder in one piece with the top half of the crank case, the lower half to be a stamped steel casing, or, for that matter, a cast iron base could be used A disadvantage of cast iron, however, is its susceptibility to damage in the event of the crank case fouling any obstruction, but, after all, an impact on the crank case of an engine, sufficient to break metal, is a most unusual occurrence.

An index to the advertisements in this issue will be found on the page facing the back cover.

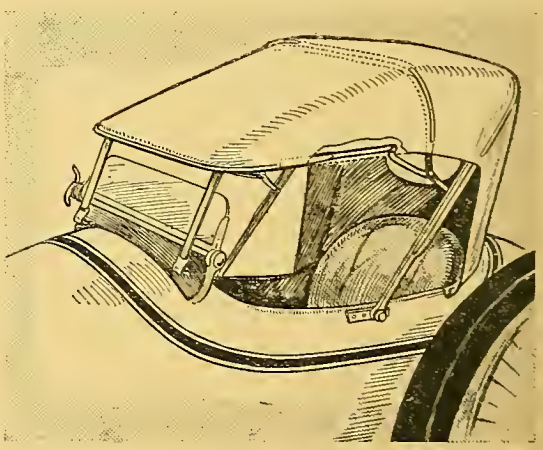
A STREAMLINE SIDECAR.



Mr. Poznanski and his 3½ h.p. Sunbeam sidecar outfit. The unusually attractive sidecar is described on this page.

WE recently had the opportunity of seeing an exceedingly neatly designed sidecar body which has been invented by Mr. Poznanski, a Russian gentleman who has lately been in Russia in charge of 400 Sunbeam motor cycles which have been supplied to the Russian Army. The body was made by Messrs. Haywood, of Wolverhampton, and is of an exceedingly attractive appearance, forming a practically perfect ovoid. It is constructed of metal, shaped on a wooden frame, the metal, which, by the way, is of no constructional importance as it forms merely a mould, is absolutely smooth, and, moreover, beautifully finished. It has a neat half screen in front, and a well upholstered back, while behind there is a spacious locker capable of containing spares and other useful articles.

The hood is worthy of attention, being of very smart design, and one of the illustrations shows how compactly it may be stowed away when not in use. The joints of the body are all brazed and are invisible. The sidecar axle tube passes through the hollowed out portion of the body, and is not noticeable unless actually looked for. The Millford chassis has been very slightly altered to render it suitable for the special body.



Hood and screen fitted to Poznanski's sidecar.

Motor Cycling on the Australian Goldfields.

(BY A CORRESPONDENT IN WESTERN AUSTRALIA.)

HOME readers will probably be interested in the doings of fellow-motorists on the goldfields of Western Australia. Motoring here on roads that are universally rough and bumpy is perhaps not so pleasurable as on the beautiful roads of England, but still it is fast becoming popular, and is now being followed keenly by many riders in the Kalgoorlie and Boulder City districts. British machines are the most popular, B.S.A. being first in favour, followed by Douglas, Triumph, Rudge, and others, with a few Indians. At present we have only one cycle car, though several are being built privately.

Some time ago the Goldfields Motor Club was formed, and it has successfully run several sports meetings and road races. The club's proudest possession is its unique natural racing track, Lake Perkolille, which is situated about twenty-two miles from Kalgoorlie. It is remarkable for the fact that during the dry season its hard clay surface is perfectly flat, and the heaviest motor cars and motor cycles can race on it all day without at all cutting up its surface. The lake is about two miles long by one and a quarter miles wide, and a splendid circular track of two and a half miles can easily be pegged off which is perfectly safe, and can carry any pace which the machines are capable of. A straight mile can be run down the centre, with plenty of room for starting and stopping.

The lake is surrounded by low rolling hills with plenty of natural shade, the only drawback—a very slight one—being that water has to be carted from a place called Kanowna, ten miles away.

Owing to the exceptionally wet season the club has been unable to use the lake since last Christmas.

COUNTERSHAFT.

Dimming Electric Lights.

I notice many of the car men are dimming electric lamps by slipping a small tulip-shaped cap of black material over the bulb, its sides being slashed like a mediæval swashbuckler's jacket. One at least of the firms catering for motor cyclists has adopted a more excellent way. It may not be public knowledge that Messrs. Lucas now market a duplex bulb for use with their head lamps; there are two filaments, one faint and the other bright, operated by a switch embodied in the lamp socket. This method is economical of current, and leaves half or full illumination instantly at the rider's service.

The Absolute Limit.

One of my soldier visitors home on leave says the absolute limit is to be sent with a despatch through Ypres on a wet night with steel-studded covers. No lamps are allowed—that should go without saying. Ypres is shelled intermittently at all hours of the day and night, and the never-too-excellent paving is freely scarred with shell holes. Supposing the unfortunate D.R. manages to dodge shells and old craters alike, and can see his way sufficiently distinctly to dodge ruined houses in the inky gloom, his reserve intelligence and courage can be devoted to keeping the machine upright on a surface so vile that a traction engine might be pardoned for capsizing on it at 2 m.p.h. The M.M.G.S. men say their job isn't a tea party, but that it is slacking compared with the lot of certain D.R.'s who are well up near the Front.

Three-wheeler Design.

Mr. A. A. Scott's latest notion in the way of a modern three-wheeler suggests a contrast alike with the *fin de siècle* sidecar and various obsolete inventions on other lines. Among them I specially remember the Avon Trimobile, which some readers will recall as consisting, broadly speaking, of the front half of a De Dion tricycle and the rear half of any old two-seated small car. It had its faults, as all motor vehicles of the same date had theirs; but can anybody tell me why the designers of three-wheelers will do anything and everything rather than put their single front wheel in the centre of the chassis? [Many designers prefer two tracks to three.—ED.] If you put it out to one side, as the common practice is, you spoil the balance of your vehicle and you weaken the frame; not improbably, you further complicate the steering. There is not the least reason in the world why a vehicle should not be evolved on these lines, which would look better and last better than any lop-sided three-wheeler, besides being easier to manipulate, weighing no more, and costing no more. But we began our three-wheel passenger development with a lop-sided idea, and it looks as if we were too conservative to abandon it or even to give a more healthy-looking plan a decent trial. We should at least hear no more of broken frames if we discarded the lop-sided ideal; and there are large areas in this particular market where detachability, the basic principle of the original sidecar boom, has long ceased to be either desirable or possible.

An 8 Cwt. Sidecar Outfit.

Little did I think in the early days, when we all saw a crude wicker chair flimsily attached to a 2 h.p. Minerva and marvelled greatly, that I should ever live to ride in a sidecar outfit *de luxe* scaling 8 cwt. Yet this is the exact weight of a combination in which I was riding the other day, a dynamo set accounting for the best part of the last cwt. The outfit had just recorded its 3,500th mile, and was still running excellently, though it had never been decarbonised; engines carbon up comparatively slowly if worked on a small throttle opening, with just the wee trickle of oil required for gentle speeds. The back tyre, a Palmer cord 700 × 80 mm. light car type, had no ribbing left on it, but would have been good for a considerable mileage if the owner had not left it standing in a pool of oil during a month of disuse; at least that is how I should diagnose a single patch of the tread, which was worn right down to the casing, the remainder of the periphery being in first-rate order.

Brake Control on Spring Frames.

The one *caveat* we shall have to enter when the rear-sprung frame at last comes into its own has reference to brake control. Our main brakes have always been mounted on the back wheel, and though our transmissions are becoming more reliable, we must still refrain from fixing the service drum on the gear box after car practice. If the rear portion of the frame is constantly varying its position, we shall be unable to use the rigid rods employed at present for actuating the rear brake. I know such rods work well on cars, but they are usually 6ft. or so in length, so the angularity is small, and the rods have a certain degree of elasticity. A couple of feet is nearer the distance between pedal and brake crank on a motor bicycle, and the angularity therefore forbids rigid control rods. It looks as if Bowden wire would have a fresh innings. There will be some prejudice against it amongst the old brigade at the outset, for we suffered many things with the push bicycle rim brakes hastily fitted to the original motor cycles of 1900 or so; but I see no reason why the famous firm should not rise to the emergency. Its wire can stand strains a hundred times heavier than motor cycle braking occasions; when the boom comes I hope the Bowden people will be well ahead with substantial long range adjusters, heavy cables, and well-butted sheathing. It will be needed! Perhaps we may see final shaft transmission, and the main brake on the countershaft.

HINTS AND TIPS FOR WINTER RIDING.

Some Methods of Protecting both Rider and Machine.

By H. MORTIMER BATTEN.

THE season of rain and puddle is at hand, and since many riders—some from choice, some from necessity—use their machines throughout the winter months, an article on the above subject is, I suppose, seasonable.

In the first place we have to accept the fact that 90% of the machines on the road are hopelessly inefficient as regards mudguarding and personal protection. Thus it is that the rider who wishes to remain on the road during the winter months must make special preparation for the season—both as regards his own personal comfort and the welfare of the machine.

Prevention Better than Cure.

Every practical rider knows the hopelessness of cleaning his mount during the winter months. Personally, I abandoned the habit something like ten years ago, and instead I make a rule of starting the winter with the machine thoroughly waterproof, so far as it is possible to make it. If this is done properly no material damage can result by neglect of the cleaning process, and the ultimate spring cleaning should reveal a machine little the worse for the lusty bucketing it has undergone. Certainly it is in better condition than if no special preparations had been made, for any amount of time spent in cleaning cannot overcome the mischief done by the exposure of those parts, which really should be protected, to the road and the weather.

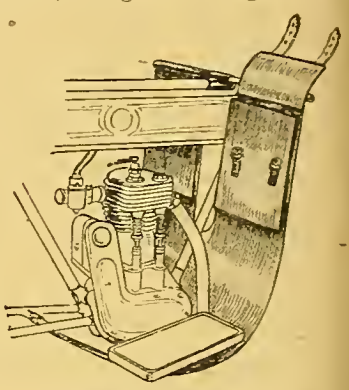
Front view of latest model Scott, showing good shield design.

I am inclined to think, too, that constant cleaning is a mistake, for it is almost impossible to clean a machine thoroughly without working grit into the cycle bearings.

Guard against Winter Atmosphere.

Again, it must be remembered that deterioration goes on not only when the machine is on the road, for it is the damp atmosphere of winter that takes off the lustre even more than mud and rain. Copious polishing between the intervals of use in no way protects the machine from the detrimental effects of the atmosphere. On the contrary, each polishing takes life out of the plated parts, so obviously it is a better plan to protect these parts from the atmosphere, and then leave them severely alone.

Many riders experience trouble with their wheel hubs from the effects of winter riding, and this is really not to be wondered at when one realises the usual system of lubricating these parts. Ordinary hub or engine oil is generally used, and probably the hub is caked with mud during each periodical oiling. Under such conditions it is almost impossible to prevent grit, either from the hub or from the spokes, falling into the oil cups, and thus finding its way to the cones. Further, the oil, being thin, hangs about the joints of the wheel bearings, and the action of the wheel causes it to "squelch" in and out, carrying finely ground grit with it.



The College mud-shield for fitting to existing machines.

The cycle bearings suffer most by winter riding, and the problem of protecting them is perfectly simple. First purchase a tin of thick grease (the stiffer the better) and a grease injector with screw-down plunger. Remove the oil cups from the wheels and make neat little wooden plugs to screw in their place. Pack the hubs cram-jam full of grease and replace the plugs.

This system of lubrication is far more permanent than the oilcan system, and the grease, being thick, acts as a packing, and prevents grit working in at the cones. It does not squelch in and out of the bearings, but forms in a solid lump round the loose joints.

The steering head and other parts can, of course, be similarly treated, and when properly packed require no further attention for at least 1,000 miles.

Every rider takes a sneaking interest in his plated parts, even though he upbraids their existence, and a very simple and handy way of waterproofing these parts, also those enamelled parts which are particu-

The P. and M. leg shield is in one piece, provision being made for the cooling of the cylinder.

Hints and Tips for Winter Riding.—

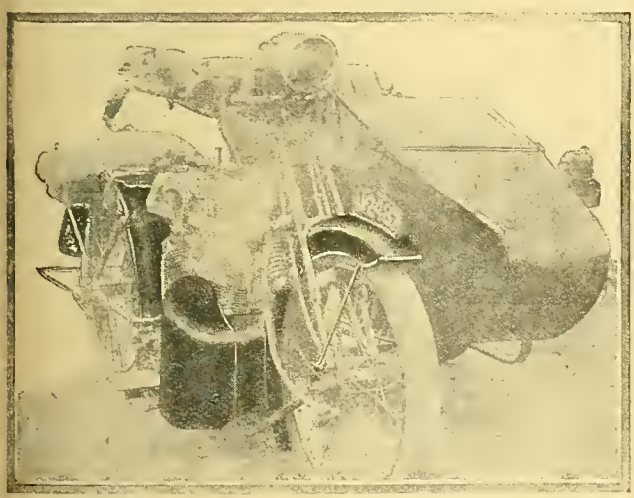
larly exposed to road contributions, is to paint them liberally with a coating of beeswax dissolved in petrol. Keep a tin of the solution handy, and daub it on every time the machine is cleaned. A soft bristled brush should be used, and the mixture made to the consistency of cream.

The preparation does not add to the appearance of things, but it is quite the most practical method I have come across. As regards handle-bars, the best plan is to wrap them from beginning to end in insulation tape.

Guarding against Chill.

Having accomplished these seemingly commonplace duties the next thing to aim at is to protect one's lower members from mud and wet. Of course, this is easily done by piling on snow shoes, overalls, and waders, but this kind of protection is of a very superficial order, and it is far better to get down to the very root of things. If the mudguarding is at all as it should be there is no need to don special suits of armour for winter riding, and the thing to aim at is to prevent the slush from reaching one's person, particularly one's feet. So long as one's feet are exposed to damp and cold, chill is sure to follow, and on a long ride this chill gradually creeps upwards through one's limbs in spite of thick and heavy clothing. If, on the other hand, a rider can succeed in keeping his feet and legs dry and warm, the trouble is largely overcome.

The Kumfurt Accessories Co. have tackled the mudguarding question very ably and thoughtfully, and most of their fitments are genuinely efficient in making



A.J.S. leg shield, which protects engine and magneto in addition to the rider's feet.

up what is usually lacking for one's personal comfort. The fitments that particularly take my fancy are the Hammock footboards—in that they fill the bill on the point of chief importance, that of keeping one's feet and legs dry and secure from draught. They also afford a degree of protection for the magneto (if placed low down), engine, and transmission, and, finally, they are designed to save the machine in case of a fall.

I have many times previously pointed out the comfort of leg shields, and personally I would not contemplate the winter months with a machine unequipped in this direction. At the same time I am compelled

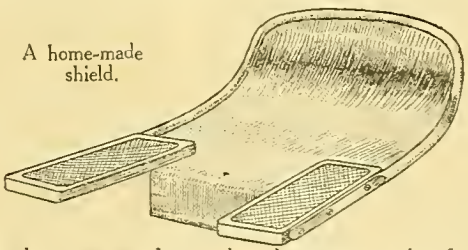
The Kumfurt hammock leg shields and footboards, designed to protect the rider and insulate him from road shock.

to own that the fitments necessary for winter riding often defeat their own ends when it comes to the dry roads of the summer months. It is then that their presence creates something like a vacuum behind the rider, with the result that the dust whips in and makes an intimate acquaintance with those parts of one's person the shields are primarily intended to protect.

I suppose this is why makers do not fit leg shields as standard. The average rider is a fair weather rider, and he would regard their presence as an unnecessary and troublesome encumbrance. It would appear to be difficult to design a shielding system which meets the demands of winter and summer also, and it seems to me that, for a long time to come, we shall have to be content with the "quick detachable" variety, and really they leave little to be desired if riders will but sample them.

A Home-made Leg Shield.

An adequate leg shield, which can be adapted to most machines, is very easy to make for those who prefer the home-made variety. All that is required is a length of ⅜in. round iron, flattened and drilled at the ends to be screwed to the footboards. A glance at the accompanying sketch explains matters. The



A home-made shield.

iron is bent upwards so that it protects the feet and ankles of the rider, while being insufficiently high to prevent the necessary cooling current from reaching the engine. A piece of American cloth is then sewn to this supporting frame, thus entirely enclosing the intervening space. It is a good plan to allow a weighted strip of the fabric to hang down to within

Hints and Tips for Winter Riding.—

an inch or two of the road, as this prevents mud thrown up by the front wheel finding its way to the transmission and the machine generally.

Some years ago I rode with a contrivance of this sort attached to my ancient P. and M., and it served admirably throughout the winter. Many times I rode without overalls in a dress suit on that machine, an idiot in an opera hat clinging to the carrier, and, strange to say, the topmost portion of the opera hat was the only portion of our attire to collect road splash!

The Comfort of a Third Wheel.

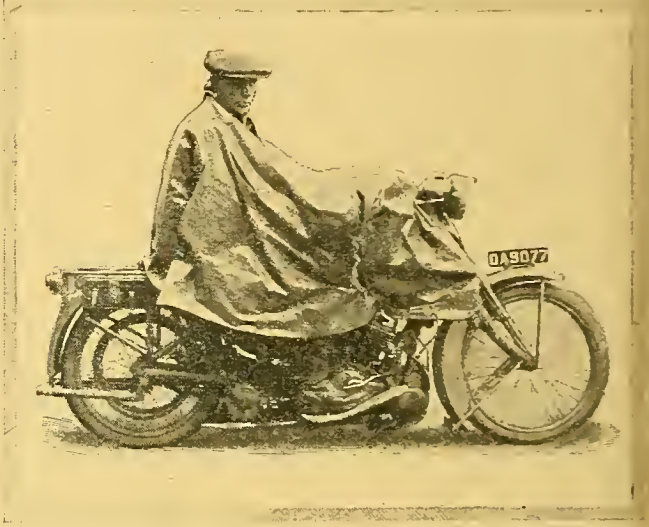
Last autumn I advocated in this journal the use of light and inexpensive sidecars as stabilisers for solo machines during the winter months, and though such an attachment takes the polish off one's road speed in windy weather or on hilly roads, the convenience of the third wheel far outweighs any such trivial drawbacks. A dry pair of gloves, a duster, and sundry odds and ends in the way of personal equipment can be kept clean and dry under the sidecar apron, and this ample carrying room is very convenient in addition to the extra degree of stability in city traffic.

My present business outfit, a 3½ h.p. Sunbeam fitted with the maker's leg shields, and with "Empire" featherweight sidecar attached, reaches my ideal as a winter mount. The Sunbeam people have given some attention to the mudguarding question, and on this machine, in spite of its very considerable speed, it is possible to ride over the worst of roads and emerge unspotted. I have added a fourth attachment to the sidecar connections, and this addition I have found necessary with every featherweight I have ridden. The "Empire," however, in spite of its extreme lightness, is quite a rigid little affair, and the Sunbeam clutch is worth at least another 1 h.p., and on account of its weatherproofness.

The Question of Personal Attire.

We now come to the vitally important point of personal attire. One could, of course, write volumes on this subject, but I am attempting to consider the demands of the everyday rider of humble means who has no intention of attempting elaborate experiments.

During the last few winters I have experimented with many varieties of patent motor clothing, and though the majority have their distinct merits, I employ the simplest of clothing for business use. A seaman's tarpaulin, with leather belt amidship, costs but a few shillings, and is good for keeping out the wind and the weather for at least 4,000 miles. Rub it over with a clean oily cloth now and then, supplement the bottom button with a well sewn strap, and you have one of the strongest and most serviceable motor cycling mackintoshes it is possible to buy.



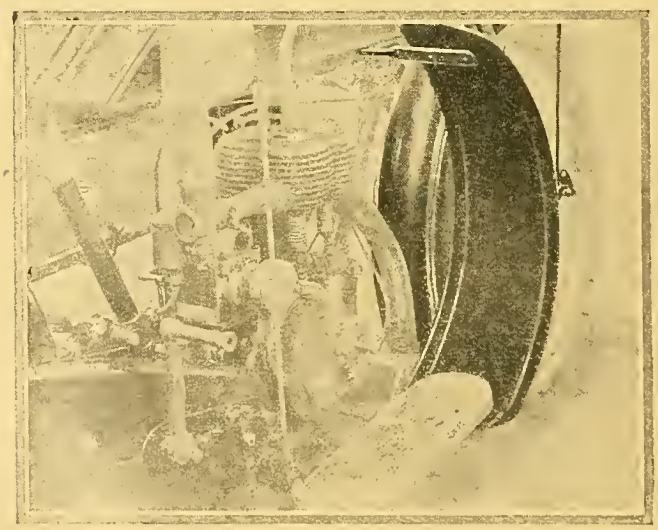
A serviceable cover-all cape made by Mr. J. Rogan, of Rippingham Road, Mottington, Manchester. It answers the double purpose of keeping both rider and machine dry and clean.

The loose, tarpaulin leggings, resembling very baggy trouser legs, made to match, make an excellent combination with the mackintosh, but two pairs should be bought, as they become ragged in half the time.

Something is, of course, required under this, as the wind and the weather work in through the joints on a long ride, and a short poncho, reaching down to the knees and made with only a short joint at the neck, answers admirably. A good woollen muffler is by far the best thing for preventing the water from running down the neck as it is absorbent and makes what fitters call a close fitting joint. A leather apron, such as blacksmiths use, is an excellent thing to wear round one's waist, and personally I would not be without one of these on a long winter ride.

A trouble which is most difficult to overcome is brought about by water collecting on the top of the tank and blowing back on to the rider's legs. Knee grips largely do away with this trouble by diverting the stream, but so long as the water is able to collect it is bound to drip somewhere.

It was this state of affairs which first drew my attention to the cover-all mackintosh made by Mr. J. Rogan, of Withington, and during the last few weeks I have put one of these capes to a thorough test. It has the distinctive merit of keeping the rain not only off the rider but also off the machine, and thus it gets to the root of half the trouble.

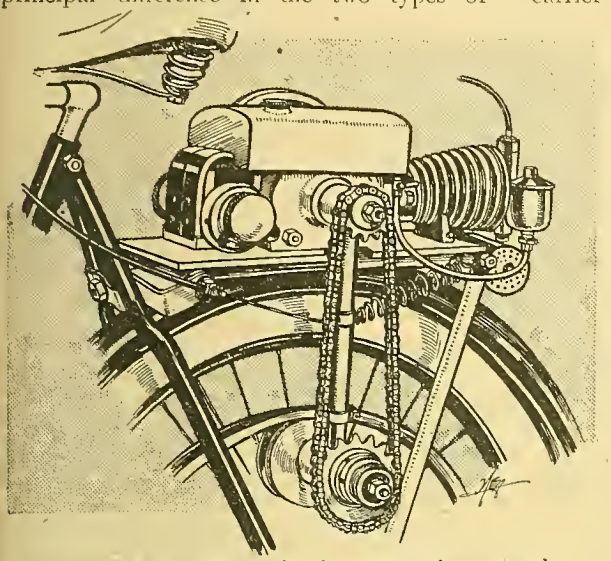


Back view of Sunbeam leg shield.

THE "CARRIER MOTOR."

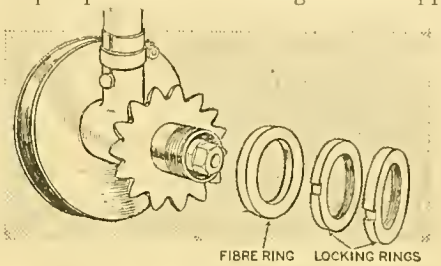
How Inventors are Turning Attention to the Motor-assisted Bicycle.

THE motor attachment for pedal cycles is at present receiving attention at the hands of designers, and, as distinct from the Auto-wheel type, latest designs consist of a small power plant carried on a platform above the rear mudguard. The principal difference in the two types of "carrier motor" described hereunder is that one is friction-driven and the other belt-driven. There should be a fair demand for an attachment of this type, provided that it is efficient and reliable. Both designs are certainly neat and compact. We describe first the attachment, which is at present in its experimental stage, and is being placed on the market by the London and Westminster Industrial Syndicate, 8, Victoria Street, S.W.



London and Westminster pedal cycle motor attachment complete.

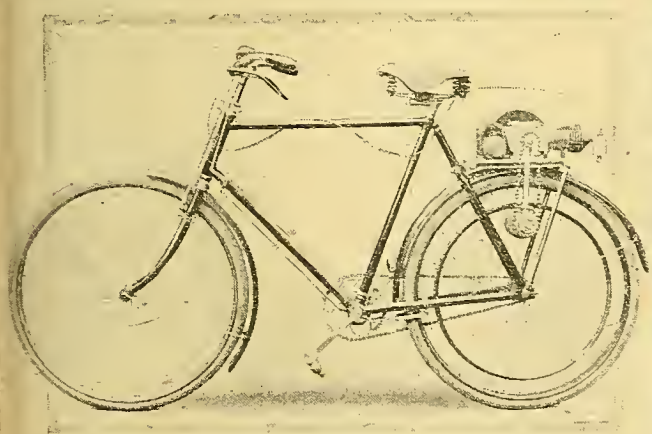
The sketch clearly shows the form the present model will assume when absolutely complete. It will be seen that the power plant is carried on an aluminium platform held by brackets and stays which are adaptable to any form of pedal cycle. The engine in this first model is a four-stroke, the dimensions of which are 52.5 mm. × 54 mm., 117 c.c., which is carried horizontally on the platform. The tank is carried saddle fashion over the crank case, and at the present time an external timing gear is fitted. The transmission is by chain to a sprocket on a rocking arm, this arm having a phosphor-bronze bearing at its uppermost end, moving on a steel sleeve fixed over the boss of the crank case. The lower end of the arm carries a spindle, on one end of which is fitted the driven sprocket, and on the other a fibre pulley wheel engaging with the underside of a belt rim spoked on to the wheel of the bicycle.



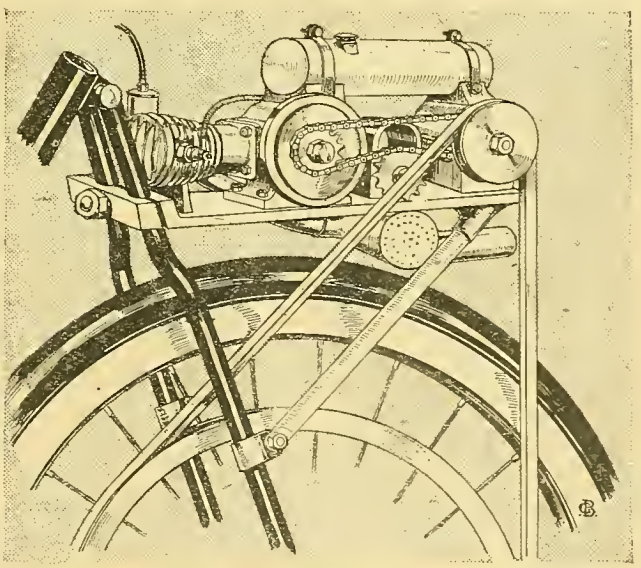
Details of the transmission shock absorber on the London and Westminster Industrial Syndicate's motor attachment.

The next sketch shows the form of transmission shock absorber employed, the sprocket being loose on the spindle, secured merely by friction, there being one fibre ring and two locking rings.

Now, when the engine has started there is a tendency for the fibre pulley to run towards the rear of the machine along the belt rim, and this has the effect of increasing the grip in proportion to the amount of pull. The spring shown in the illustration has not for its object the pulling up of the pulley against the



The pedal cycle motor attachment marketed by the London and Westminster Industrial Syndicate, in position on a pedal cycle. It is complete except for the petrol tank.



Another type of "carrier motor" attachment patented by H. H. Patrick and the Oxygen Welding Works, Ltd.

The "Carrier Motor."—

belt rim, but is merely a "take off" spring, so that when the lever on the handle-bar is applied the arm is pulled into the central position and free engine is obtained.

The future model will be provided with a two-stroke engine, lubricated on the petroil system, and supplied with gas from a floatless carburetter. The weight will be in all about 16 lb. Stays in two different sizes will be provided, so that the attachment can be fixed on cycles with 26in. or 28in. wheels. The attachment is certainly neat, and the method of transmission ingenious, and we shall be interested to see how it behaves when actually used upon the road.

Another Design on Similar Lines.

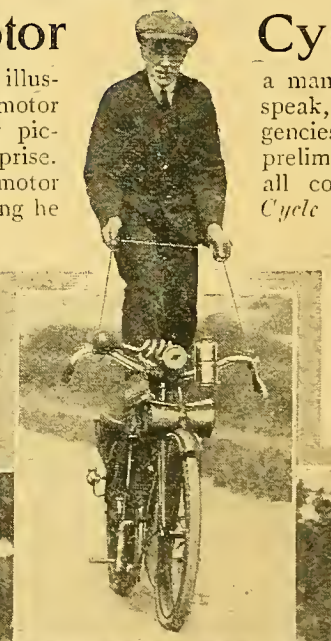
Curiously enough, an attachment somewhat similar to that described has just been brought to light by the publication of patent specification No. 3,514, 1915, in the names of H. H. Patrick and the Oxygen Welding Works, Ltd., of New Summer Street, Birmingham. In this construction also the power plant is located on a platform mounted over the rear wheel, but the cylinder head faces forwards, and power from the engine is conveyed by a chain to a gear box. From this the drive passes to the rear wheel by means of a V belt. The chain which transmits the power to the gear box is arranged also to effect rotation of the magneto driving sprocket. The tank is mounted on supports as shown, and the silencer is attached to the underside of the platform.

Colonel H. C. L. Holden, C.B., F.R.S., who on many occasions has acted as judge at various A.C.U. trials, has recently been elected one of the Wardens of the City Guild of Gunmakers, a company still exercising to the full the powers granted to it by charter, under which it was constituted the Proof authority for London. Colonel Holden is an old artillery officer, and he brought out, some thirteen years ago, what was the first four-cylinder motor bicycle, and although he has seen forty years' service he is still doing valuable work for his country.

Juggling with a Motor Cycle and Sidecar.

WE have on more than one occasion illustrated trick riding "stunts" on motor cycles, so that the accompanying pictures will not come altogether as a surprise. They show G. A. Roberts, a young Leeds motor cyclist, who appears to be able to do anything he likes with his mount, which, by the way, is not a modern one.

Whether motor cyclists do things of this sort merely for amusement or as a preliminary training to despatch riding, we are not in a position definitely to say. No doubt they assist in making a man part and parcel of his machine, so to speak, and so able to act quickly in emergencies, though if trick riding were a necessary preliminary to fit one for a motor cycle under all conditions, the circulation of *The Motor Cycle* would not be what it is. At any rate, the pictures go to prove that rational riding cannot be so difficult anyway. We should not advise readers to attempt to emulate the tricks illustrated unless it is done on a borrowed machine and on a deserted stretch of road.



A DARING MOTOR CYCLIST AND SIDECARIST.

(Top) Standing on the saddle and steering with string.

(Left) Standing on the sidecar chassis with wheel off ground.

(Right) Steering with the feet.

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not must be accompanied by a stamped addressed envelope for reply. Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Quality of Petrol.

You would greatly oblige if you would kindly give a hint as to the working value of petrol No. 1 and No. 2 compared with the price.—2¾ H.P.

For ordinary running you would probably not notice any difference between the two spirits, except that it is possible that you would obtain a greater mileage per gallon on No. 2, while starting from cold in winter would possibly be slightly more difficult. No. 1 would give greater speed, owing to its more rapid evaporation.

Smoke from the Pulley Release.

I should be obliged if you would kindly answer the following questions: (1.) My engine has lately started to issue smoke and oil from the hole in the pulley-shaft. Should it do this, and what is the cause, as it never used to do it before I had my engine taken down? (2.) Would it be harmful to close the hole?—G.D.T.

(1.) We do not think there is any harm in a little smoke issuing from the hole in the pulley-shaft. It might mean that you have been over-oiling, or there is a slight leakage past the rings; but if the engine is not giving trouble, or if there is no falling off in power, we do not think you need worry. (2.) If you close the hole, oil will be forced out through the bearings, and you will suffer from an oily crank case.

Misfiring.

I have a 2¾ h.p. Douglas, but in getting up speed it misfires a lot. It seems much better after I have attained a speed of about 20 m.p.h. I have tried retarding the spark, but it does not make any difference. The engine has had a complete overhaul just recently. I should be glad if you would tell me the remedy.—A.G.N.

Your trouble is possibly due to incorrect mixture. You should make sure there are no air leaks in the induction pipe unions, and see that the unions are screwed up tightly. The latter can also be bound up with insulating tape. You should also make sure the plugs are not faulty, and that the points are clean, and are adjusted between ½ and 1 mm. apart. The contact breaker should also be looked to, and you should see that the bell crank is not sticking, and that the points do not separate more than ½ mm. Retarding the ignition would certainly make matters worse. You might also make sure the valve springs are strong enough.

Size of Belt Rim.

(1.) What sized belt rim (1in. belt) would be necessary on the back wheel of an 8 h.p. machine which is to have a maximum gear of 3½ to 1, with a Philipson governor pulley? From what points is the diameter of a belt rim measured? (2.) I have a pair of handle-bars which are very wide, and although not very low (the grips are level with the top tube) give a low position. I have found them perfect for grease and traffic, but find that I get a slight "speedman's wobble" on even fairly good roads at 50 m.p.h. or so. They are like the Rover T.T. bars, but much wider, so if I took off two or three inches at each end, would I be steadier? If not, what shape and width would you recommend? I think the rake of the head and its distance from the saddle are both normal.—N.V.G.

(1.) With a standard Philipson pulley of 5½in. diameter you would require a belt rim of 18in. to give you the gear you mention. It would probably be more satisfactory to obtain a rather larger pulley, if possible, rather than fit a very small belt rim. For the purpose of measuring the gear it is usual to take the point in the pulley where the centre of the belt is when bedded down. In giving the measurement of a pulley or belt rim it is usual to quote the measurement from edge to edge. (2.) Excessively wide bars are certainly inclined to exaggerate a wobble at speed, though it is hardly likely that the bars are the cause of it. It is more likely that the wobble is caused through loose joints in the spring forks or a tight or excessively loose steering head. The best bars for preventing wobbling at speed are those that are perfectly comfortable for the individual rider; this can only be found by experiment. It is not wise to have the grips too wide apart. Any good cycle or motor repair man should be able to make you up a pair of bars to the shape which you think would be most comfortable for you, or you would probably be able to obtain some various patterns already made up from some of the accessory stores.

THURSDAY NEXT.
THE MOTOR CYCLE
Buyers' Guide Number.

Fitting a Magneto.

I have an old 2 h.p. Minerva-engined motor cycle. The engine is fitted in an inclined position, and is attached to the down tube of the frame. I have asked several cycle dealers about fitting a magneto to it, but they all say it would be better to buy a second-hand modern machine. I would like your opinion on the matter. (1.) Will the above machine run as well with a magneto? (2.) Could the magneto be driven from the shaft the contact breaker was on? (3.) How many teeth would be required for the sprocket on the shaft, and how many for the sprocket on the magneto?—J.S.

It would, of course, be better to have a modern machine. (1.) The machine would go better with a magneto. (2.) Yes, the magneto could be driven from this shaft. (3.) It does not matter much how many teeth, as long as you have the same number on each sprocket. The usual number is twelve. The shaft is already running at half engine speed.

Starting from Rest.

I have just purchased a two-stroke two-speed countershaft motor cycle, and up to the present I find it very difficult to start. I might say that I am a cripple, and do not like to run and jump on from footboards, being afraid I should overbalance. I have ridden a pedal cycle for years, and always mounted from rear step. Is it possible for me to have any other means of starting? The makers advertise a slipping clutch. Could this be fitted to answer my requirements? Could I place the change speed lever in neutral and paddle off?—J.W.S.

By all means have a clutch, two-speed gear, and kick starter, then you will be able to start away without any difficulty. If the makers of your machine advertise a clutch, we presume they can fit it, and we should recommend you to get into communication with them. If you put the change speed lever into the low gear, and raise the compression release, you will possibly be able to start off by paddling with your feet on the ground. It is no good putting the change speed lever into neutral, as you cannot start by this means on the run.

The Magneto Switch.

I have a 2½ h.p. lightweight motor cycle fitted with a U.H. magneto which has a screw on the side for a connection—I expect a cut-out. Will you please say if this is so, and if it is advisable to couple it up, and how to do this? On the engine there is no drain tap, so how can I drain the dirty oil out, and why is this omitted? —H.W.

The terminal in question is for a cut-out switch. To connect this up get an ordinary magneto switch, fix this to the handle-bar, and lead low tension wire from the terminal on the magneto to the terminal on the switch. In place of the drain tap there is probably a plug through which oil in the crank case may be drained. If not, we should advise you to have a plug or tap fitted.

Rattle in a Two-stroke.

My 2¼ h.p. two-stroke has developed a rattle, especially when descending hills, also immediately I open the throttle further at twenty miles an hour. I believe this is a sign of wear in the big end. Am I right? If so, how can I remedy it? I intend taking the engine down for the first time. Please inform me the best way to remake joints with brown paper.—J.W.H.

The causes of two-stroke rattle are not yet agreed upon. The rattle may be due to excessive carbonisation, and, if so, the cylinder should be removed, and the carbon deposit cleaned from the cylinder head, piston, and the ports. If the big end is worn, the only cure is to have this rebushed. If you are careful in dismounting the cylinder, there is no reason why you should disturb the joints, which are made of brown paper soaked in boiled linseed oil. If, however, you are unfortunate enough to break one of these, it is quite easy to make another, using the old joint as a pattern, or, if it is too far gone for this purpose, you may get a piece of brown paper about the size of the top of the crank case, smear oil on each of the holding down bolts, then press the paper on. This will give you the position of the holes, which can then be cut. Next smear the top of the crank case where the washer is to go liberally with oil, slip the paper over it, well over the part you have oiled, tapping the edges gently with a hammer. By this means you will get a perfect washer. Other washers in your machine are likely to be of the copper and asbestos variety.

READERS' REPLIES.

Misfiring.

I notice in the issue of *The Motor Cycle* for October 28th, page 433, a question from "J.H.M." I had exactly the same trouble with my machine, a 1914 5-6 h.p. Rudge-Multi, also fitted with Ruthardt magneto. In my case the trouble was traced to the sticking of the rocker arm in the contact breaker on which the fibre wheel is fitted. I first thought it was the fibre wheel which was, and is still, very loose, but now my machine fires perfectly at all speeds.—F. W. Algar.

If "J.H.M." bends the spring of his contact breaker, so that a stronger contact is made by the platinum points, I think his trouble will vanish. One pattern of C.A.V. magneto is so designed that the centrifugal force opens the points at speed, so that they do not meet till the speed lowers.—A.H.J.

"J.H.M.'s" case, given in *The Motor Cycle* of October 28th, reminds me of a similar case I heard of a short time ago. His trouble seems to be in the silencer chamber, and I would strongly advise him to remove the silencer and go into some out-of-the-way part and test the behaviour of the engine. I rather fancy the slowing down will disappear as it did in a case I heard of, thus giving him the clue as to where the trouble lies. I had a short spell of a similar trouble on my own motor cycle. Since I drove a flattened piece of steel into each of the opened ends of the silencer the trouble, which was due to sooting up, has entirely gone.—J. Scanes.

A Simple Test of Lubricating Oil.

I see in your issue of October 28th that a correspondent asks how he may test the quality of lubricating oil. There is one way which should be easy to any amateur. A poor lubricating oil always causes a big carbon deposit. Let your correspondent take a little of the oil he wishes to test, place it in an open tin, and heat over a flame, letting the oil boil for some time. If the oil is poor, there will be a burnt residue left on the tin, and similarly, of course, a large carbon deposit if this oil be used in the cylinder, the top of the piston corresponding to the tin. The better the oil, the less the burnt residue, and the less the carbon deposit. A good oil should give no residue at all, and hardly any deposit. I trust this tip may be of some use.—Eric R. Troward.

RECOMMENDED ROUTES.

Eastbourne to Bournemouth.—E.W.

Eastbourne, Lewes, Brighton, Shoreham, Broadwater, Arundel, Chichester, Emsworth, Havant, Fareham, Southampton, Totton, Lyndhurst, Christchurch, Bournemouth.

Portsmouth to Woolwich.—E.T.

Portsmouth, Havant, Emsworth, Chichester, Duncton, Wisborough Green, Five Oaks, Horsham, Crawley, Felbridge, Lingfield, Edenbridge, Westerham, Keston, Bromley Common, Bickley, Mottingham, Woolwich.

Southport to Lincoln.—J.J.

Southport, Ormskirk, St. Helens, Rainford, Prescot, Rainhill, Warrington, Knutsford, Macclesfield, Buxton, Bakewell, Chesterfield, Barlborough, Clowne, Cuckney, Markham Moor, Saxilby, Lincoln.

Bradford to Hereford.—H.S.

Bradford, Brighouse, Huddersfield, Holmfirth, Woodhead, Glossop, Hayfield, Chapel-en-le-Frith, Buxton, Leek, Stone, Eccleshall, Newport, Shifnal, Bridgnorth, Burwarton, Ludlow, Leominster, Hereford.

Mullion (Cornwall) to Cambridge.—J.S.L.

Mullion, Helston, Truro, Bodmin, Liskeard, Callington, Tavistock, Two Bridges, Moretonhampstead, Exeter, Cullompton, Wellington, Taunton, Durston, Glastonbury, Wells, Marksbury, Bath, Chippenham, Cirencester, Burford, Chipping Norton, Deddington, Aynho, Buckingham, Wolverton, Newport Pagnell, Bedford, St. Neots, Cambridge.

Lieut. Jack Woodhouse, of the Royal Flying Corps, who was recently home on leave. It will only be necessary to remind readers that Woodhouse is a well-known Midland competition rider of Quadrant and Precision machines. Seated in the Matchless sidecar is Mr. F. S. Whitworth, of the Colmore Depot.

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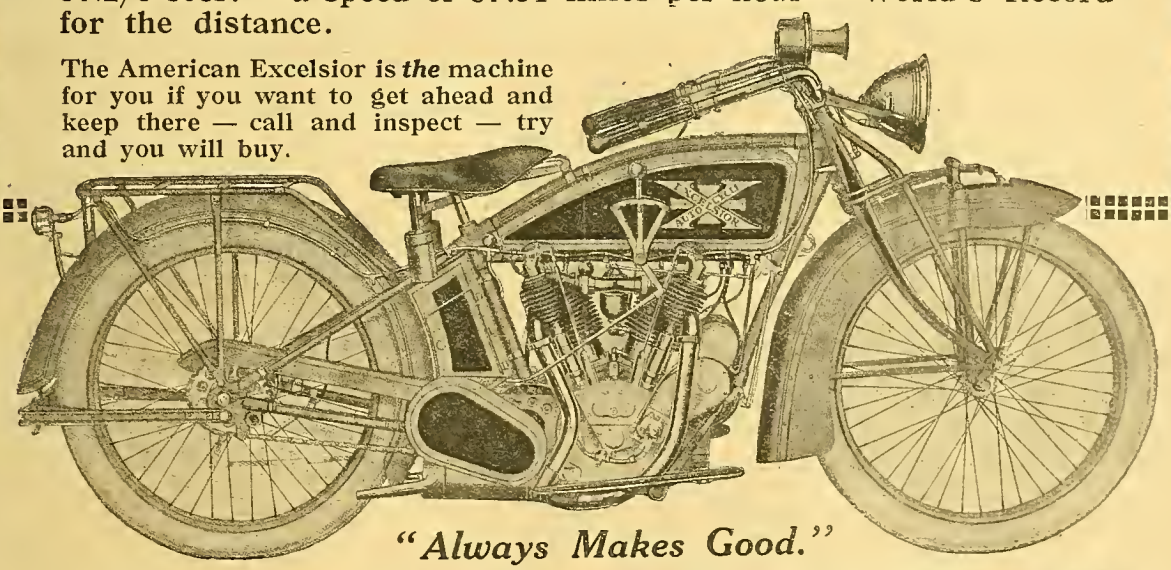
The American Excelsior is *the* machine for you if you want to get ahead and keep there — call and inspect — try and you will buy.



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Prices: STANDARD MODEL. 7 h.p., 3-speed countershaft gear, multiple disc clutch, chain drive, kick starter, mechanical lubrication **£80**

MODELE DE LUXE, as illustrated, complete with Dixie combination lighting and ignition, powerful head and tail lamps, electric horn, and speedometer **£90**

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Immediate Delivery of Both Models.

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AGENTS! Applicants for this valuable agency for districts where we are not represented should write at once. The proposition is attractive:— A splendid machine, a moderate price, and early delivery.

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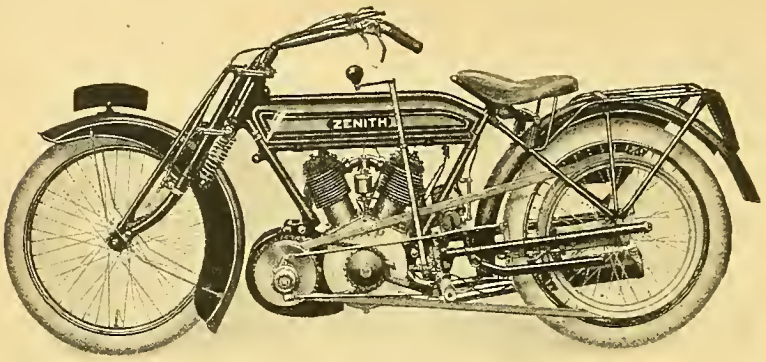

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FOR ALL classes of riding where *power* is required you cannot choose better than a ZENITH: its resources are under such complete control, by means of Clutch and Gradua Gear — it transmits the pull so smoothly to the rear wheel, by means of the Longest Belt Drive, that it is comfortable, economical, and safe to use under all conditions.

Models from 3½ to 8 h.p.
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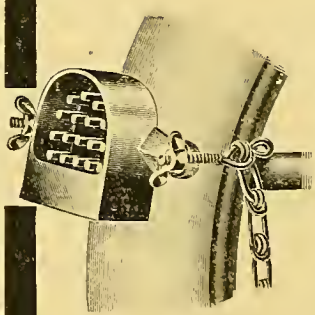

WE have been compelled to advance prices a little, but even then Simms Vulcaniser is a splendid investment. See what it saves you; not only in "repair" fees, but on tyre bills. Tyres and tubes last double as long when they are kept in repair —a simple matter for anyone to do with Simms Vulcaniser.

Price complete ready for repairing punctures or bursts on road or in garage .. .. 24s.
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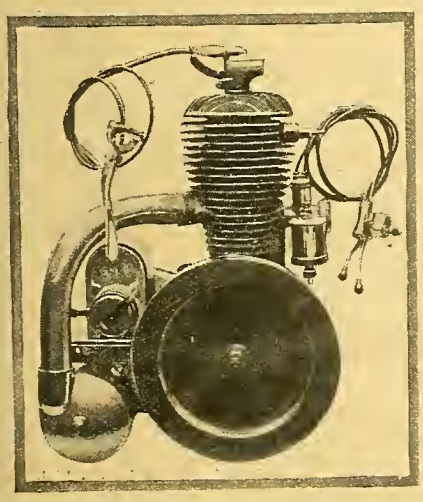
NEW MODELS

· MANUFACTURERS' PROGRAMMES FOR 1916 ·

A NEW HORIZONTAL HUMBER.

FOR once in a way the old-established name of Humber, Ltd., will not appear in our Annual Buyers' Guide. The position is a curious one. Prior to the outbreak of war the firm was busily engaged on its 3½ h.p. single-cylinder air-cooled and 6 h.p. horizontal water-cooled twin machines, but the whole of the stocks of these two models have now been exhausted, and the firm's energies are concentrated upon the very necessary munitions of war. Immediately after peace is declared, the company proposes to produce an entirely new model, which we have seen on the road on several occasions under test, and we are able to outline its specification. The machine in question will have a 4 h.p. horizontal twin-cylinder air-cooled engine, and in general appearance will follow the lines of the 6 h.p. water-cooled twin, a large number of which are now on the road and giving satisfaction to their owners. The cylinder dimensions of the new "after the war" model are 68 mm. bore × 68 mm. stroke (494 c.c.). The 4 h.p. mount will have a three-speed gear box and clutch, the design of which will be practically a replica of the 6 h.p. model, while the ever-popular chain and belt transmission is used. This new Humber is intended as a double-purpose mount, and will prove quite a departure for the firm, which, by the way, has now had several years' experience in the manufacture of horizontal engines. Had it not been for the war, the 4 h.p. horizontal air-cooled Humber would have been very much to the front at this period, as so satisfactory had it proved under test that it was proposed to embark upon its manufacture in large quantities. As it is, the 4 h.p. horizontal twin must remain an entirely new type, to be eagerly awaited after the war.



Power unit of the 1916 two-stroke Metro.

NEW MODELS ALREADY DESCRIBED.

Many 1916 models have been described in "The Motor Cycle" during the past few weeks, and for convenience of reference we give below an alphabetical list showing the dates on which these descriptions have appeared:

Ariel 3-speed gear	Sept. 30, p. 316
Auto-wheel	Oct. 28, p. 418
Bamford variable gear	Sept. 2, p. 227
Borgo (Italian)	Nov. 11, p. 461
Bradbury	Oct. 21, p. 402
Brough horizontal twin	Sept. 9, p. 264
" "	Oct. 28, p. 419
Calthorpe 2-str. & 4 h.p. twin	Oct. 7, p. 349
Campion 2 and 4-strokes	Nov. 4, p. 442
Connaught	Oct. 14, p. 369
Douglas 4 h.p.	Oct. 7, p. 348
Dunkley lightweight and sc.	Oct. 14, p. 369
Edmund spring frame	Oct. 14, p. 366
Excelsior (American) 7 h.p.	Oct. 7, p. 346
Indian 2-stroke lightweight	Oct. 14, p. 371
Indian 7 h.p. twin	Oct. 21, p. 394
Ivy 2 and 4-strokes	Oct. 14, p. 368
Jardine gears	Nov. 4, p. 444
J.E.S. 1 h.p. lightweight	Oct. 21, p. 393
Levis	Oct. 21, p. 395
New Imperial	Oct. 14, p. 372
New Ryder 2 and 4-strokes	Oct. 21, p. 393
" " "	Nov. 11, p. 465
Norton sidecars	Oct. 21, p. 396
N.U.T.	Nov. 11, p. 467
O.K.	Oct. 14, p. 373
Omega	Oct. 28, p. 418
P. and M.	Oct. 14, p. 370
Premier	Nov. 11, p. 468
Revere 2-stroke	Oct. 21, p. 393
Scott	Nov. 11, p. 466
Service 2¾h.p. 2-stroke and sc.	Sept. 2, p. 228
Sturmey-Archer l'weight gear	Oct. 28, p. 421
Vindec 6 h.p. and sidecar	Oct. 28, p. 421
Wooler 2-stroke	Nov. 4, p. 445
Wulfruna	Oct. 14, p. 373
Yale 7 h.p. twin	Oct. 7, p. 357
Zenith	Oct. 21, p. 402

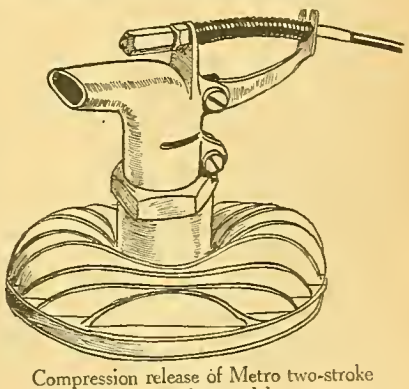
THE METRO TWO-STROKE
Open Frame and Sporting Models.

FOR 1916 the Metro Manufacturing and Engineering Co. are concentrating their energies on the 2½ h.p. two-stroke sporting model, which will not be altered radically from the 1915 design, and also an open frame model, which we illustrate.

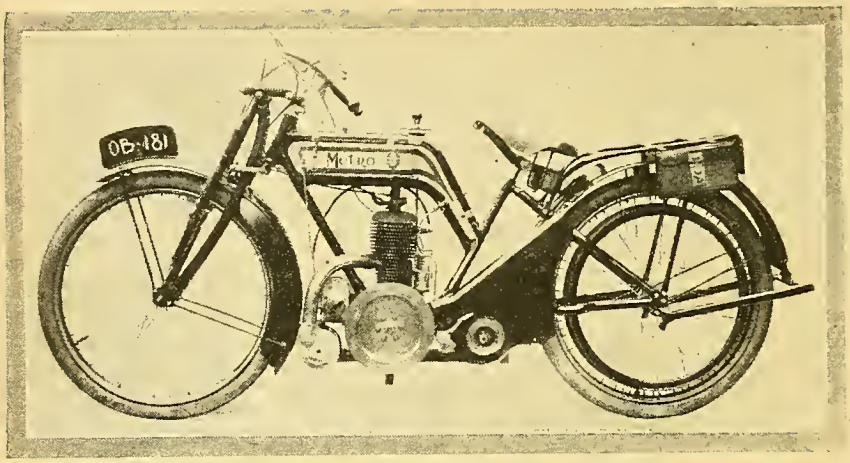
The engine has a bore and stroke of 70 mm. × 70 mm., giving a capacity of 269 c.c. Very large air cooling ribs are used, with further transverse ribs across the top of the cylinder, curving downwards in the centre to receive the pressure release valve and its separate small pipe. The fins taper towards the base, and give the cylinder the modern pear-shaped appearance first familiar with the Gnome aviation engine. Every care is taken, both in manufacture and erection, to prevent the escape of oil from any of the joints, a trouble rather frequently encountered even with modern two-stroke engines. The flywheel is external and of large diameter, with the weight massed at the outer edge. The crank pin is solid with the webs, and the big end of the connecting rod is, therefore, split to take the two gunmetal halves of the bearings. Hence, it is easy to remove the connecting rod and piston when it becomes necessary to adjust the bearings, and there is no necessity for fresh bushes when the ones originally placed in the engine may have become worn.

Two rings only are used for the piston, the gudgeon pin being secured in phosphor bronze bushes by a small set screw firmly locked in position when it has once been screwed home.

There is an external transfer passage cast as part of the cylinder and delivering mixture from the crank case to the combustion space when the piston falls below a port cut in the cylinder wall, there being the usual sharp-edged baffle plate on the top of the cast iron piston to direct the incoming mixture towards the head. A Senspray carburetter is bolted to a port behind the transfer passage, and feeds the crank case through a cast passage, divided from the transfer passage by a wall. The carburetter is at the rear of the cylinder, while the exhaust pipe, which is of large diameter, is taken in an easy curve from the front of the cylinder to a large circular silencer secured below the magneto platform. Oil is led from the tank through a large Best and Lloyd sight feed lubricator and adjustable drip feed to a pipe connected to the inlet passage from the carburetter, oil being sucked into the engine with the incoming gas, a method which tends to



Compression release of Metro two-stroke sporting model.



Specimen of the latest lady's model Metro, showing sloping handle-bars and dress-guard design.

keep the carburetter cleaner, and, in some measure, to prevent oil being blown from the air intake of the carburetter all over the machine and its rider.

An Attractive Petrol Tank.

In the sporting model the top tube of the frame is inclined from steering head to seat pillar, and the tank is therefore of wedge shape. In order to increase the capacity of the latter, however, it also widens gradually towards the forward end, being in shape somewhat like the Tourist Trophy tank fitted to the Douglas machines, and giving this sporting model a remarkably neat and workmanlike appearance. Brampton biflex front forks are fitted.

There is a heel-operated rear brake on the left-hand side of the machine, the pedal being on the footrest tube, while the brake acts on the belt rim below the chain stays. The Bowden operated hand brake acts as usual on the front rim. We understand that the special compression release shown in the sketch is manufactured and fitted under licence from the Triumph Company, although it is of slightly different form from that on the Junior Triumph. Every effort has been made to stop oil diffusing from the end of this tube and spreading about the engine and machine.

Both the oil and petrol fillers are large enough to enable the rider to do without a petrol funnel should this be necessary; 26in. wheels are fitted.

THE SCOTT SOCIABLE.

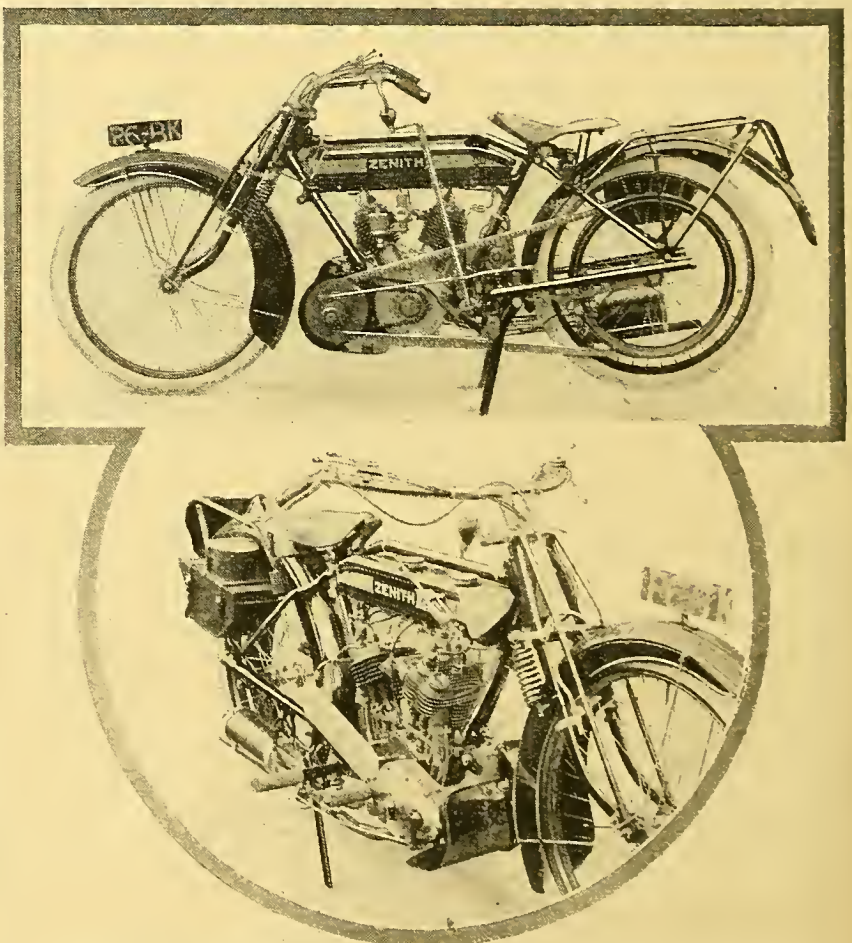
Possible Developments.

READERS may wonder why we do not describe and illustrate by photographs the Scott three wheeled sociable, a drawing and description of which appeared in our last issue, page 452. When we state that this entirely new design, the publication of details of which has created great interest in the motor cycle world, is under test by the military authorities, it will be seen that an illustrated description at the moment would be injudicious. Needless to say, our connection with the Motor Machine Gun Service renders Mr. Scott's latest creation of special interest to us. There are two examples on the road at present which have been before the military authorities, and these are being exhaustively tested under all conditions. It is remarkable that, though this vehicle has a shaft drive, a three-speed gear, and a two-stroke engine of approximately 4 h.p., measuring 3in. × 2½in. (570 c.c.), its weight, without extras, is not more than 5 cwt.

This double-seated sidecar is the result of Mr. Scott's labours for many months past—in fact, ever since he left the Scott Engineering Co.'s works to act as consulting engineer to the company. Mr. Alfred Scott has many admirers among the motor cycling fraternity, and a weatherproof touring vehicle on the lines of the machine we illustrated a fortnight ago will be eagerly awaited.

THE SINGLE-CYLINDER ALLON.

IT has been known for some time past that the Alldays and Onions Pneumatic Engineering Co., Ltd., were experimenting with an air-cooled twin-cylinder vertical-engined two-stroke. Some premature details of an engine of this type, purporting to be a new model Alldays, have already appeared in print, but the makers assure us that the model to be placed on the market eventually (not in 1916) will be very different from the experimental model, and a description of this engine would, therefore, be confusing. For 1916 the firm will



4-5 h.p. twin-cylinder Zenith in its latest form. The upper view shows the drive, which, of course, embodies the Gradua gear. The 1916 Zeniths were described in *The Motor Cycle* of October 21st, page 402.

New Models.—

devote its attention to the 2¾ h.p. Allon single-cylinder, which has a bore and stroke of 70×76 mm.=292 c.c. This little mount—one of the first incorporating the increasingly popular sloping top tube, with its coffin-shaped tank—has been wonderfully successful during the past year, and it is not surprising, therefore, that little or no alteration is being made to it for 1916. It may be obtained as a single-geared mount, or with a two-speed gear, clutch, and kick starter, or minus the two last-named fitments.

ROYAL RUBY IMPROVEMENTS.

THERE is no lack of enthusiasm and progress at the Royal Ruby works. Many improvements are under way, but the difficulty lies in carrying them into practice.

Royal Ruby Lightweight.

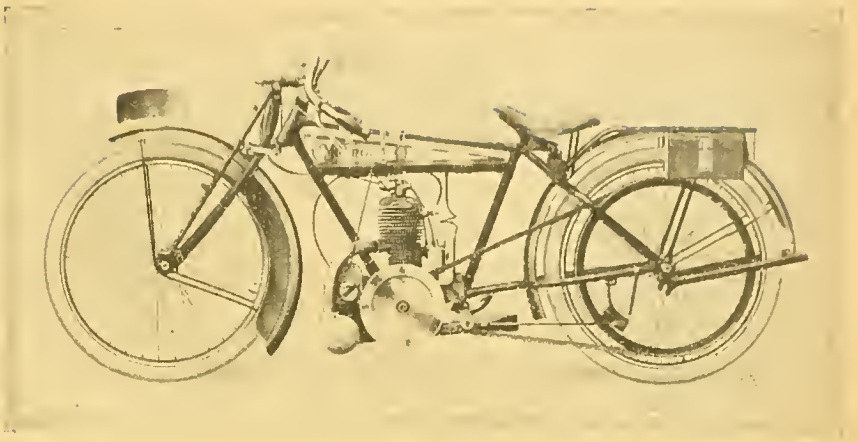
Dealing firstly with the Royal Ruby lightweight (269 c.c. Villiers engine), one or two minor alterations have been made which should add to the efficiency of this model. Side shields have been added to the mudguards, and a very much stronger and heavier carrier has been fitted. The tool bags fit snugly in at the sides of the carrier, and are strongly secured. Dunlop rubber-studded tyres are now fitted as standard, and a specially strengthened ball head has been adopted. The seat lug, supporting the two top bars, is strengthened and in one piece, but, excepting these alterations, the lightweight models for 1916 are unchanged.

Heavyweight Machines.

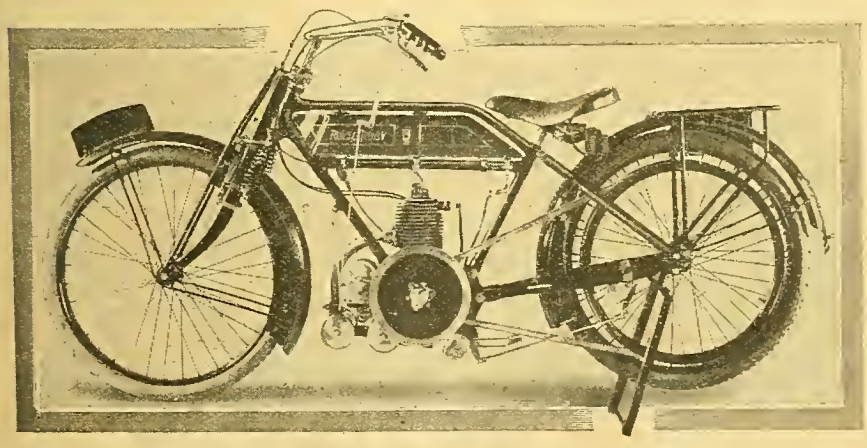
In the standard heavyweight models considerable alterations are to take place, though final arrangements are not yet completed. A Jardine four-speed gear is to be fitted, and very strong and businesslike rear forks have been designed for its adaptation. A hand lever on the tank is provided for controlling the clutch in addition to the foot lever, and its usefulness is beyond question. A special feature of the new model will be in the ingenious construction of the rear portion of the frame. The back stays, carrier, and mudguard can be removed as one unit by simply drawing two bolts. The rear mudguard has been very considerably widened, and the stand is automatic in action, rising and engaging with a strongly constructed clip when the machine is pushed forward. The rear wheel can be withdrawn in a few seconds by simply removing the spindle, the wheel falling clear when this is done.

Another excellent feature of the new model will be the ingenious provision made for adjusting the height and angle of the footboards. By simply loosening one nut the boards can be swung into a position to suit the rider, and securely locked there.

The makers are also experimenting with a new pattern fibre-to-metal internal expansion rear wheel brake, and though it must be clearly understood that some time will elapse ere these improvements can be carried into practice, it is pleasing to note that, in spite of the difficulties of manufacture, every effort is being made to improve the new models. Many minor points of convenience are to be incorporated, and the makers are paying special attention to the demands of their many Overseas riders.



The sporting model two-stroke Metro, described on page 493 of this issue.



The 1916 model two-stroke single-geared Royal Ruby lightweight.

Royal Ruby Rear Sprung Model.

Though far from completed, this model is well advanced in the experimental stage, and during our visit to the works we were privileged to examine and try a rear sprung machine. Probably the worst stretch of road in Manchester—a small back street paved with huge cobbles of considerable antiquity—was selected for these activities, the machine being fitted with an 8 h.p. J.A.P. engine and Jardine four-speed.

It may be mentioned that long leaf springs are used, and that all the working members concerned are of ample dimensions and very strong in construction. The wearing surfaces throughout are large, and it may further be mentioned that the unsprung weight is reduced to an absolute minimum.

The machine we tried during a Manchester drizzle over this abominable and greasy stretch of road was minus back stays, and it would seem that these usually important members are of value only in assisting to check any side roll, were the existence of such probable. Even without the stays we noticed no irregularity in the steering, though the road was unusually slippery, and the machine hardly of a type one usually rides solo.

The action of the springs was excellent. There was no rattle, and even when ridden at high speed over the pot-holes no suggestion of jar was conveyed to the rider, though the road was so bad that the front forks bumped continuously.

The Royal Ruby rear spring frame is unquestionably a mechanical proposition, and no effort is being spared by the makers to provide something really good in this line.

BAT MOTOR CYCLES IN 1916.

THE Bat motor cycle works have been almost entirely taken over by the Government, so the output of Bat motor cycles for 1916 is likely to be quite infinitesimal. There have been no alterations whatever since the particulars of the Bat 1915 models were published in *The Motor Cycle* eleven months ago.

THE 1916 J.H.

An M.A.G. Mechanical Oil Pump.

THE J. H. Motor Engineering Co., of Oldham, are making few alterations for 1916. The lightweight model remains unchanged, except that B. and L. drip feed lubrication is now preferred to the petroil system hitherto employed. Also side valances have been added to the rear mudguard.

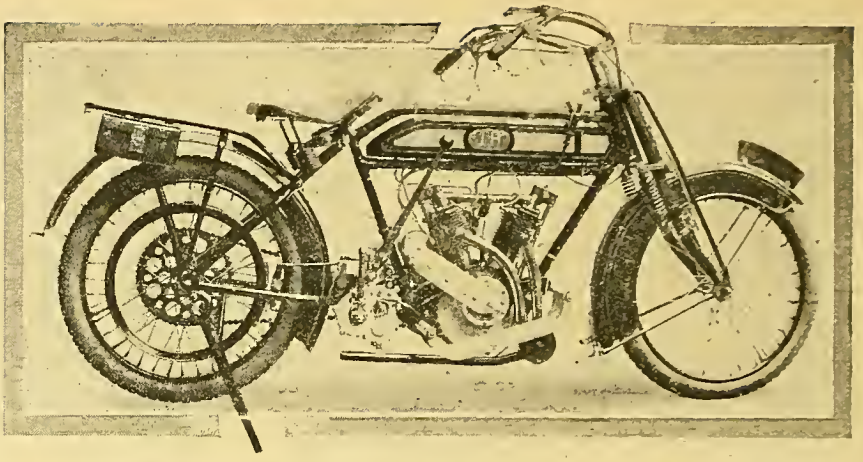
It will be recalled that a Villiers 70×70 mm. engine is used on these sporting little machines, and an Albion two-speed gear is usually fitted.

Touring Machines.

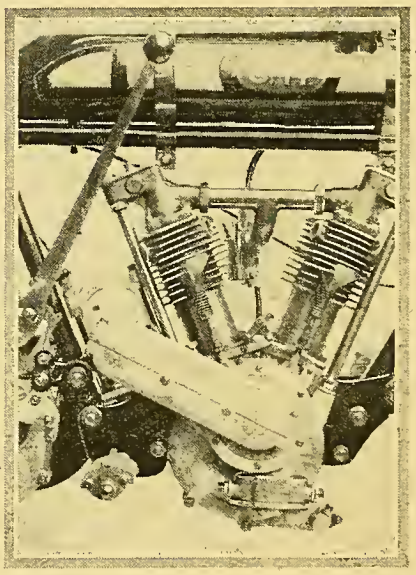
In the case of the heavy touring machines (M.A.G. or J.A.P.) a Sturmey-Archer gear has been adopted for the new models. It will be seen that the footboards are now designed with a double sweep. All heavyweight machines are built with reinforced tubing, and an improvement has been effected in the rear wheel mudguarding. The guard is now 6in. in width, and side valances from the back stays to the chain stays have been added. A Splitdorf magneto has taken the place of the Bosch, and a B. and B. pilot jet carburetter is used as standard.

A Positive Lubricating System.

While at the J.H. works we inspected a very interesting sporting model fitted with 4½ h.p. M.A.G. engine, overhead inlet valve type. This attractive solo mount differed from the standard model in that it was fitted with a neat oil pump of ingenious design. This pump is mounted just below the timing gear, and is instantly detachable. It is driven by worm gearing at a ratio of 24 to 1 from the main shaft, the two plungers of the pump being horizontally opposed, working from a small cam set between them. The bearing on the driving side is provided with a reservoir in which the oil can collect and overflow into the crank case. At the bottom of the crank case is a small sump, containing a gauze filter, which can instantly be withdrawn for cleaning purposes, and from the sump the oil is drawn and forced back to the tank for re-circulation. This neat and simple device provides an efficient and economical way of oiling. Unfortunately, difficulties at present stand in the way of its manufacture.



7 h.p. chain-driven J.H., which is designed mainly for sidecar work. A guard to the chain is fitted, but not shown.



Engine of the 4½ h.p. twin J.H. sporting model. The neat oil pump (connections not made) fitted under the timing case will be noted.

This attractive solo machine is fitted with a chain-cum-belt drive, Sturmey-Archer gear, round sporting tank, fastened with ornamental plated clips, and T.T. bars. The finish is of the same high order as that of other J.H. models.

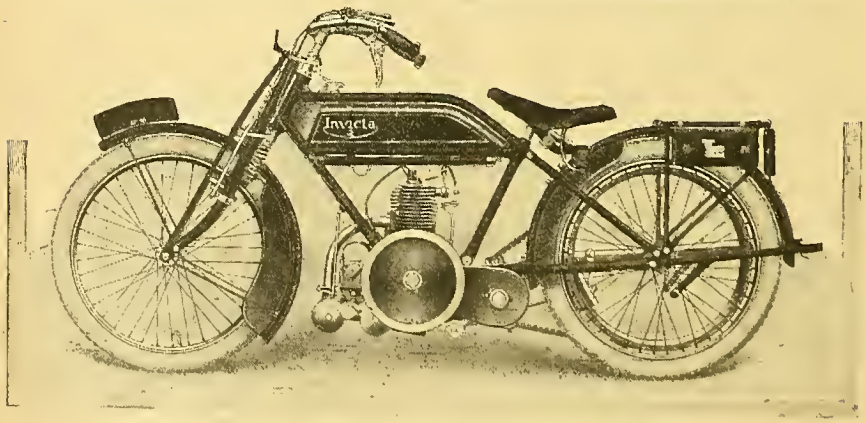
BRITISH MAGNETO FOR 1916 LEVIS.

WE outlined the Levis programme for 1916 on page 395 of our issue of October 21st, but it has now been decided to fit the E.I.C. magneto to the Popular model. This machine is the one upon which Messrs. Butterfields' efforts will be concentrated, and, owing to increased cost of materials and labour, the price of £28 has been increased by 10%.

The new 2½ h.p. with Enfield two-speed gear will be introduced as early as possible. This was fully described in our issue of August 5th, and it may be mentioned that with Roman rims, which will be a standard fitting, the price will be in the region of £46 10s.

A TWO-SPEED INVICTA.

THE single-speed model Invicta, manufactured by Messrs. A. Barnett and Co., Coventry, is well known to our readers, and it will be of interest to announce that a two-speed model is now obtainable. It is identical in every respect to the single-speed model, except that a Jardine two-speed gear is fitted. The chain from the engine to the gear box is entirely enclosed in a neat metal case, and final drive is by belt. The machine is fitted with a 2½ h.p. two-stroke Villiers engine, 70 mm. × 70 mm., Senspray carburetter, and drip-feed lubrication. The complete machine is neat and compact.



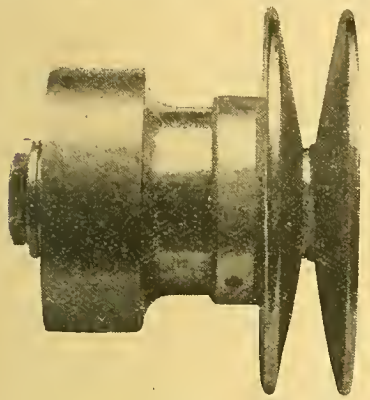
2½ h.p. two-stroke Invicta with two-speed countershaft drive.

Owing to the exceptional conditions prevailing, Messrs. Montgomery and Co. will not market their twin-cylinder horizontally-opposed motor bicycle in 1916, but will devote all their energies to the production of sidecars.

IMPROVEMENTS TO THE PHILIPSON PULLEY.

NO radical alterations are being made in this simple and effective variable speed device, though one or two improvements which will doubtless add to its wearing qualities and general effectiveness have recently been carried into practice. The most important of these is in the new provision made for excluding dirt and grit from the working parts, for, though there is no delicate mechanism about the Philipson pulley, its life naturally depends to some extent upon its weather and dust-proof properties.

During the latter portion of the year the makers have adopted the use of a large rubber buffer, which fits on to the floating portion of the pulley and overlaps the governor portion. Round the buffer a thin metal clip is drawn to prevent the rubber from expanding by



Latest model Philipson pulley. Note rubber buffer bound by thin metal clip.

centrifugal force, and the governor portion of the pulley overlapped by the buffer has been specially turned down so that the dust excluder cannot bind upon it and prevent the free action of the gear. We are specially requested to mention that during the tail end of the summer a few pulleys were sold before the makers discovered that the rubber is apt to expand by exposure to oil, and, while the buffer now used fits sufficiently closely to exclude dirt, its existence cannot hamper the independent working of the two members.

A Longer Screw.

Equally important, so far as the wearing qualities of the device are concerned, is the provision of a longer internal thread by which the floating flange is controlled. It will be recalled that the gear can be set to give any range of gear ratios required, the variation obtained automatically being proportionately the same whether the top gear be set at 3¾ to 1 or considerably lower. It was found, however, that when the pulley was set to give a very low range of speeds, uneven wear occurred owing to the internal thread being only partly engaged, so that a "step" was ultimately formed at the point in the thread at which the wear began. It is obvious, therefore, that with the longer thread this uneven wear cannot occur.

The keyway which carries the floating flange is now being made 1/8in. deeper than hitherto, thus giving greater strength and better wearing qualities.

Since erroneous impressions commonly exist regarding this device, we may mention that it is almost impossible for belt slip to occur even when the pulley is wide open and the belt at its slackest. The tension of the belt, indeed, is of little importance so far as "grip" is concerned, for the strong spring inside the governor of the pulley tends to keep the two flanges tightly pressed together, so that the belt, lying between them, is constantly subjected to the tension of this spring. In other words, the belt is tightly gripped and held between the two flanges, and thus, when running slack on a low gear, the belt simply rides on the top portion of the pulley, instead of being bent round its reduced circumference. Thus it is quite reasonable to think that this system entails less wear upon the belt than if it were run taut on a pulley of fixed circumference, since the belt is never subjected to bending strains at high speeds.

The very considerable success this device has attained in public competition is sufficient recommendation as to its efficiency. Being automatic in action, it is *constantly* in action, and consequently the degree of flexibility attained must effect a considerable saving.

A DOT DEVELOPMENT.

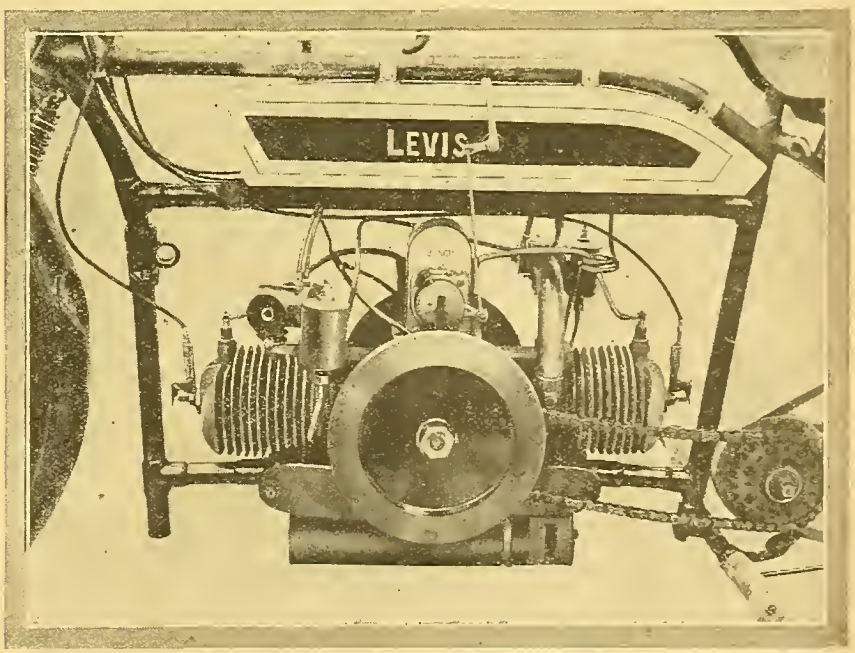
MR. HARRY REED, the well-known speed rider and maker of Dot motor cycles, is at present constructing a novel and interesting lightweight, which is quite a new departure as regards frame construction and seat suspension. The seat is of the hammock variety, and though we are not as yet at liberty to describe the principle of the framework, we may say that it promises well for rigidity and extreme lightness.

Mr. Reed is also busy with an attractive featherweight sidecar, which differs from others of its class, in that the body is sprung on heavyweight sidecar lines; it is, indeed, a heavyweight sidecar in miniature.

The manufacture of Dot standard models is almost at a standstill, though one or two twin-cylinder machines are under course of construction. No alterations are to be made in these mounts for 1916, except that the Overseas models are to be given slightly greater ground clearance than hitherto. The lightweight model is also to remain unchanged, this excellent machine having already reached the maker's ideals as regards simplicity and effectiveness.

MATCHLESS MOTOR CYCLES.

MESSRS. H. COLLIER AND SONS, LTD., though they are only turning out motor cycles in exceedingly small quantities, owing to their works being almost entirely taken over by the Government, have so far remembered the existence of their former business that they have been engaged in designing an interesting spring frame. It has, however, only reached the paper stage, and a trial model has not, up to the present time, been constructed. Still, this shows that when the war is over the new Matchless will be a thoroughly up-to-date mount.



The experimental 6 h.p. twin-cylinder two-stroke Levis engine. There is a separate carburetter for each horizontal cylinder, and there are two outside flywheels. The machine illustrated is an experimental one, which won a hill-climb on its first appearance; when placed on the market it will be water-cooled. The war has hindered its progress.

CURRENT CHAT

SPECIAL FEATURES

HINTS AND TIPS FOR WINTER RIDERS (Illustrated).
THE "CARRIER MOTOR" (Illustrated).
OPEN SOUTH AFRICAN TRIAL (Illustrated).

TIME TO LIGHT LAMPS

Nov. 18th	... ...	5.7 p.m.
,, 20th	... ...	5.4 ,,
,, 23rd	... ...	5.2 ,,
,, 24th	... ...	5.0 ,,

In London half an hour earlier.

Motor Cycles in the Lord Mayor's Show.

That the despatch rider is still a public ido. was demonstrated by the cheers which were accorded three military motor cyclists who formed part of the Lord Mayor's Show. They were all mounted on 1915 Triumphs, one of the riders being Sergeant Barker, the well-known competition rider.

A Wounded Despatch Rider.

News is sought by his parents of Corpl. A. Lindsay, R.E., No. 54,326. Corpl. Lindsay was attached to the 11th Signal Company, and his parents received formal notice on August 24th that he was suffering from wounds at a place not stated. Since that date no further information has been obtainable from the War Office, and his parents are naturally anxious concerning him. Any information will be gladly received.

Support from the Front.

Our spring frame campaign has attracted great interest with our numerous readers in the Services. An officer in one of the Motor Machine Gun Batteries, now on active service, says he hopes we shall induce the authorities to adopt a better method of springing for War Office motor cycles, and he thinks our readers are, if anything, too mild in their criticisms. The mudshield problem, to which we have devoted much space on several occasions, is another of those requiring attention, and which, like the springing, will probably be remedied, as our correspondent remarks, after the war!

The Lighting of Street Repairs.

A correspondent draws attention to the very real danger of lighting street repairs by means of red lights. In these days of reduced lights it is very easy, when seeing a red light ahead, to suppose that one is following another vehicle, and possibly to discover the mistake too late to avoid an accident. The whole regulation of lights seems to need much stricter police supervision. Within the last few weeks we have overtaken many cyclists and one or two carts showing a white light to the rear, a large number of both classes with no rear light at all, and innumerable unlighted handcarts, also one cyclist with a red light in front. Such disobedience to the regulations adds much to the dangers of our darkened streets.

The Reduced Lighting Order.

A London judge recently gave thirty yards as the limit distance for a beam of light from ordinary lamps on motor vehicles.

Police Activity.

Last week fines ranging from £10 to £20 were imposed at various London police courts for non-compliance with the lighting regulations, and for driving motor vehicles at an excessive speed. We noticed last week-end that the police were active on the Portsmouth Road between Thames Ditton and Esher.

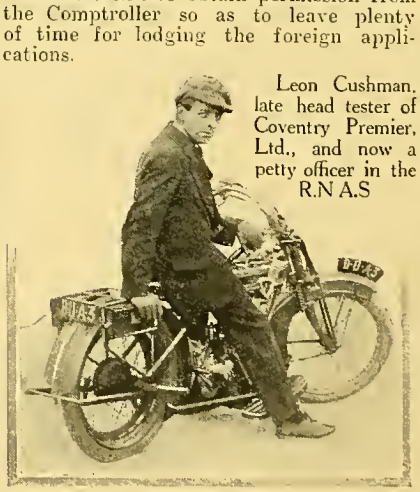
Disc Wheels Popular.

A surprising number of sidecar outfits on S.E. and Kent roads have wheel discs, mostly of sheet tin. One on a Scott combination, seen at Beckenham, had coloured circles on the discs matching the red finish. It suggests colour variations and kaleidoscopic effects like a spinning top.

Foreign Patent Applications. Official Consent to be Obtained before Filing.

Under a new Order in Council, no application may be made for any patent or design registration in foreign countries or the Colonies without the permission of the Comptroller-General of the British Patent Office being first obtained. The requirements are that the request for such permission be filed at the Patent Office with a copy of the British specification, and that the request lie before the Comptroller for one month.

The object of this Order is to prevent foreign patent applications being made on inventions which should be kept secret from the enemy. It renders it necessary for patentees to give instructions to their patent agents much earlier than hitherto, or, at any rate, steps must be taken to obtain permission from the Comptroller so as to leave plenty of time for lodging the foreign applications.



Leon Cushman, late head tester of Coventry Premier, Ltd., and now a petty officer in the R.N.A.S.

Horizontal Two-strokes.

Two more horizontal two-stroke twins, in addition to the several already described in our pages, have been brought to our notice. They differ only in detail from the designs already illustrated. It may be observed here that Messrs. Douglas Bros. some years ago gave their attention to the subject. Promising as the horizontal two-stroke design of engine appears to be on paper, there seems to be a "fly in the ointment."

Average Prices.

We give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model, the average for the past week is quoted. If there were not at least two advertisements, then the last occasion on which they were quoted is given.

Make.	Year.	H.P.	Average for last week.	Latest weekly average obtainable
A.J.S.	1915	6 3-sp. sidecar	£90	—
,,	1914	6 3-sp. sidecar	£66	—
,,	1913	6 3-sp. sidecar	£57	—
,,	1915	2¾ 3-speed	£47	—
Allon	1915	2¾ 2-speed	—	£30
Ariel	1914	3½ 3-sp. sidecar	—	£56
,,	1913	3½ 3-sp. sidecar	—	£41
Bat	1914	6 3-sp. sidecar	—	£55
Bradbury	1914	4 3-sp. sidecar	£47	—
,,	1913	4 3-sp. sidecar	—	£40
B.S.A.	1915	4½ 3-sp. sidecar	—	£60
,,	1914	4½ 3-sp. sidecar	—	£60
,,	1913	3½ 2-sp. sidecar	—	£42
Calthorpe	1914	2 2-speed	£18	—
Clyno	1914	6 3-sp. sidecar	£62	—
,,	1913	6 3-sp. sidecar	£44	—
,,	1914	2½ 2-speed	—	£30
Douglas	1914	2¾ 2-sp. T.T.	£42	—
,,	1914	2¾ 2-sp. kick start	—	£43
Enfield	1915	6 2-sp. sidecar	£70	—
,,	1914	6 2-sp. sidecar	£63	—
,,	1913	6 2-sp. sidecar	£53	—
,,	1915	3 2-speed	£46	—
,,	1914	3 2-speed	—	£41
H.-Davidson	1915	7 3-sp. sidecar	—	£74
Humber	1913	3½ 3-sp. sidecar	—	£32
Indian	1915	7 3-sp. sidecar	£76	—
,,	1914	7 2-sp. sidecar	£60	—
,,	1914	7 T.T., free eng.	—	£44
Ixion	1914	2½ 2-speed	—	£25
James	1915	4½ 3-sp. sidecar	—	£65
Lea-Francis	1913	3½ 2-speed	—	£42
Matchless	1913	8 2-sp. sidecar	—	£55
New Hudson	1914	6 3-sp. sidecar	—	£61
New Imperial	1915	2½ 2-speed	£20	—
,,	1914	2½ 2-speed	—	£27
O.K.	1915	2 2-speed	£25	—
P. & M.	1914	3½ 2-sp. sidecar	—	£52
,,	1913	3½ 2-sp. sidecar	—	£47
Premier	1914	3½ 3-sp. sidecar	£51	—
,,	1913	3½ 3-sp. sidecar	£40	—
Rover	1914	3½ 3-sp. sidecar	—	£51
,,	1913	3½ 3-sp. sidecar	£41	—
Rudge	1913	3½ multi sidecar	—	£51
Scott	1914	3¾ 2-sp. sidecar	—	£53
,,	1913	3¾ 2-speed	£44	—
,,	1913	3¾ 2-sp. sidecar	—	£41
,,	1913	3¾ 2-speed	—	£38
Sunbeam	1914	6 3-sp. sidecar	£80	—
,,	1914	3½ 3-sp. sidecar	—	£61
,,	1914	3½ 3-speed	—	£59
,,	1915	3½ 3-speed	£64	—
Triumph	1914	4 3-sp. sidecar	£53	—
,,	1914	4 3-speed	£45	—
,,	1913	3½ 3-sp. sidecar	£45	—
,,	1913	3½ 3-speed	—	£5
Williamson	1914	8 2-sp. sidecar	£65	—
Zenita	1914	8 Gradua sidecar	—	£68
,,	1914	6 Gradua sidecar	£51	—

Road Improvement in Devon.

The road between Bideford and Clovelly, which has for a very long time been in a notoriously bad condition, chiefly due to the heavy char-à-banc traffic, is now being remade with a substantial stone foundation. It should shortly be in excellent condition.

War Office Motor Cycles.

All motor cycles intended for use by the Royal Engineers Signal Section are now tested by a military officer before being finally accepted by the Government. This new rule is due to certain machines having been turned out in a faulty manner. We fear, however, that the War Office test of a couple of miles, and at the rate of over fifty a day, is not sufficient to detect anything more than superficial adjustments which may be at fault. It is said that this brief test "relieves manufacturers of responsibility."

Tail Lights for Policemen.

This is indeed an era of universal rear lighting. The city police now carry red bull's eyes at the back of their belts. The idea is an excellent one, and has undoubtedly saved many policemen's lives.

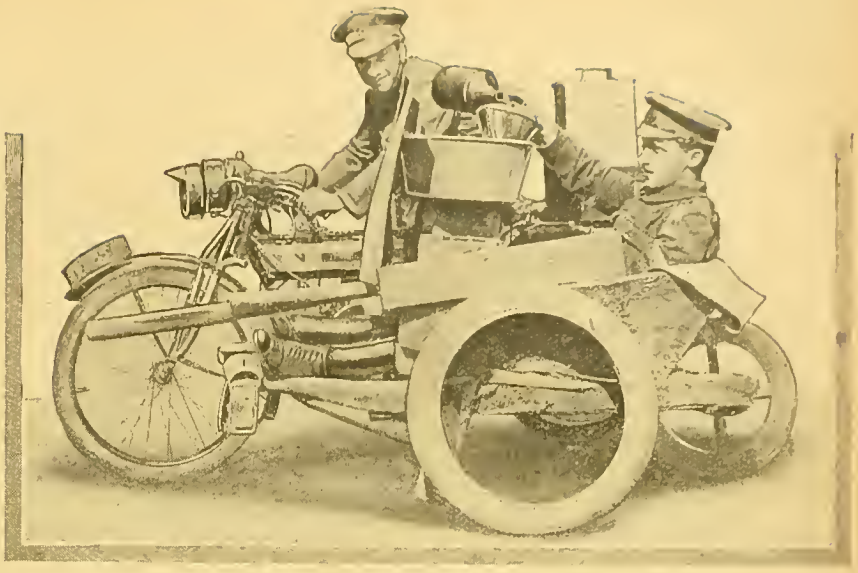
Another development is the marking of the constables on point duty with a broad white band about the left cuff, so that the drivers of vehicles may distinguish in the gloom the official arm when upraised to control the traffic.

Motor Cycling in Holland.

The war has affected motor cycle agencies and trade circles in Holland very considerably. The fact of there being no goods to handle has seriously jeopardised the state of the motor cycle trade in that country. The public, we are assured by our correspondent, is willing enough to buy, since, not being involved in the war, the Dutch are, financially, rather strong. Our correspondent mentions that he has on order a Rudge-Multi from the Dutch agent, and has already waited several months for it. The lot of existing motor cyclists is not altogether happy, for tyres also are now very difficult to obtain.

The Cycle and Motor Trades Benevolent Fund.

As last year, instead of the customary banquet, an appeal is being made by Mr. H. Smith, the President of the Council, for funds to carry on the good work. During the past year 140 applicants benefited to the extent of £2,700, and upwards of £100 was given to hospitals. The year's subscriptions amounted to £1,600 odd, so it is hoped that the donations will be large. The annual general meeting will be held at the Connaught Rooms, Great Queen Street, W.C., on Wednesday, the 15th December, at 5.30 p.m., and will be followed by a meeting of the council.



THE LIGHTER SPIRIT BEHIND THE FIRING LINE.

Latest pattern motor machine gun "sidecar," as designed and built by some R.E. despatch riders serving in France with the B.E.F.

Motor Cyclists and Lord Derby's Scheme.

We are officially informed that motor cyclists on the different waiting lists of the Royal Engineers are not exempt under Lord Derby's scheme, but must consider themselves free agents. Such men would, after November 30th, be in the same position as other single men who may not have presented themselves for enlistment

Light Cars n 1916.

Wednesday's issue of *The Light Car* contains the annual Buyers' Guide, which should be of interest to many of our readers in view of the number of light car recruits obtained from the ranks of sidecarists. The Guide is a complete list of the whole of the light cars at present on the British market, with prices and all essential dimensions and particulars. Three-wheelers are included, and an article of considerable interest in the same issue is "The Light Car of To-day," written by the editor of *The Autocar*.

"Imitation the Sincerest Form of Flattery."

Having copied practically all the features which have earned for *The Motor Cycle* its present popularity, a contemporary this week recapitulates our leaderette on "Double-seated Sidecars," which appeared in the last issue of *The Motor Cycle* (and which, by the way, was inspired by the new Scott Sociable which was dealt with exclusively in this journal). Not content with that, the same journal introduces a new (?) feature—"Average Prices of Second-hand Models." No wonder an excuse is deemed necessary!

Next Week's Buyers' Guide.

The annual Buyers' Guide of 1916 models, to appear in our next issue, will this year be set out in original form, and illustrated. *The Motor Cycle* Buyers' Guide is an invaluable work of reference; its utility in past years has been proved over and over again. It is an issue filed for reference throughout the year by manufacturers, agents, and users at home and abroad.

The National War Funds

At the week-end the principal war funds stood as follow:

The Times Fund for the Sick and Wounded	£1,876,775
The Queen's Work for Women Fund	166,926
The *Weekly Dispatch* Tobacco Fund	89,119
The Belgian Relief Fund (exceeds)	1,090,993
Daily Chronicle Christmas Gift Fund	9,780
Daily News Christmas Gift Fund	10,500

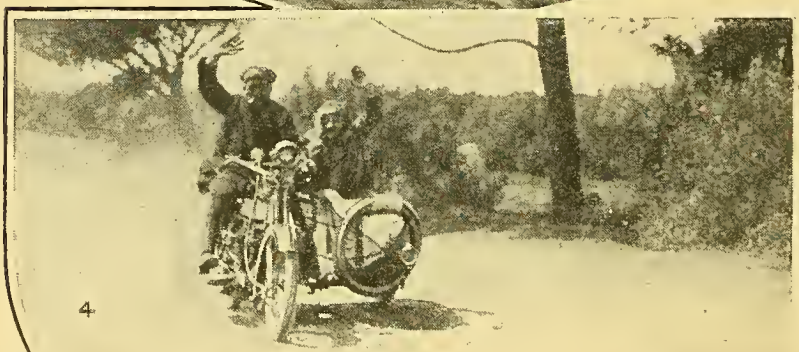
No Special Privileges to Wearers of the King's Uniform.

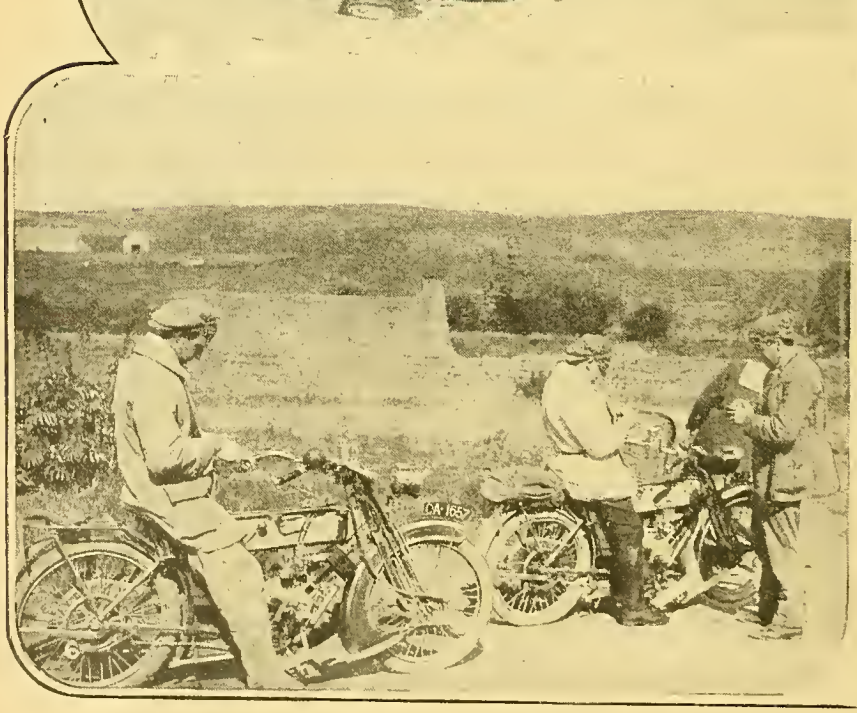
George Condy, a petty officer in the R.N.A.S., who was fined £4 for exceeding the speed limit, and 5s. for driving without a licence, stated at the West London Police Court the other day that he was taking an urgent message for the Admiralty. Mr. Fordham stated that he had received a letter from the Admiralty which said that there had been no necessity for the defendant to have exceeded the speed limit.

NEXT THURSDAY!

THE ANNUAL BUYERS' GUIDE OF THE MOTOR CYCLE

A SEVERE 200 MILES





1 and 2. River cross
3. A competitor carries his passenger
4 and 5. Enfield sidecar
6. A couple of P
7. The steep portion of Rooi H
8. Leaving the control at

THE most important one-day reliability trial ever held in South Africa was that organised last month by the Cape Peninsula M.C.C. It was held over a course of 210 miles, which included the climbing of mountains and the wading of flooded rivers. The prize was the Barling Cup, and the fact that it is the last trial of importance for some four or five months added interest to the proceedings.

There were a dozen starters—six solo and six sidecar mounts—and the start from Cape Town was made at 6 a.m. An early start was necessary in view of the distance to be accomplished, and the average speed set of twenty-four miles an hour was on the high side. Two hundred and ten miles in the day in England is a fair mileage, but over Colonial roads and in bad weather it is a severe test. Likewise the percentage of adventures was much higher than would

TRIAL AT THE CAPE.

3

ng was only one of the tests
on the carrier owing to trouble with sidecar.
utfits going well on good stretches.
and M. riders at a control.
oogte Hill (118 miles from Cape Town)
Worcester (96 miles from the finish).

occur on our roads. The ascent of the Bainskloof Pass over a road with six inches of mud called for more than ordinary skill, but the great test was crossing the flooded Breede river, the height of which at the time of the trial was abont three feet and the distance across at least thirty yards. Naturally, there were trying times on the other side when it came to restarting the engines. One competitor emptied a quantity of water out of the crank case of his machine, and two others spent two hours unravelling the mysteries of a waterlogged magneto of the waterproof pattern.

The luncheon halt was at Villiersdorp (125 miles out), and at 5.15 p.m. the first man arrived home. Results proved that three men tied for first place, their names being E. W. Watts (8 h.p. Enfield), J. B. Elliott, and J. F. Smuts (P. and M.). Fourth place was taken by J. Hunter.

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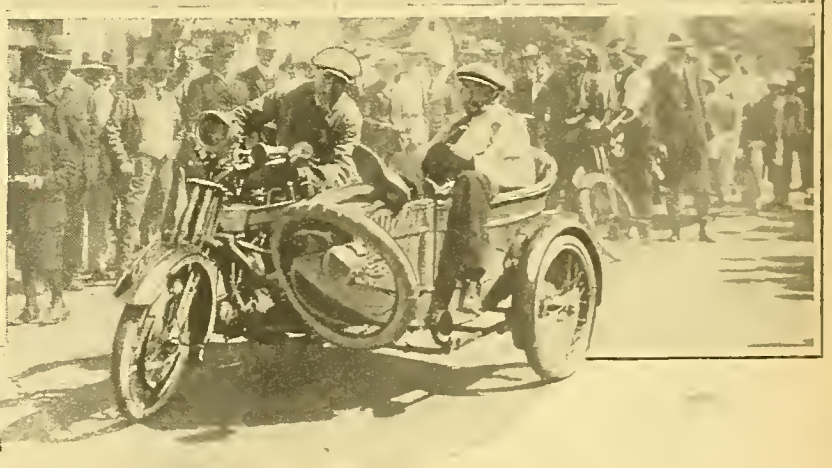

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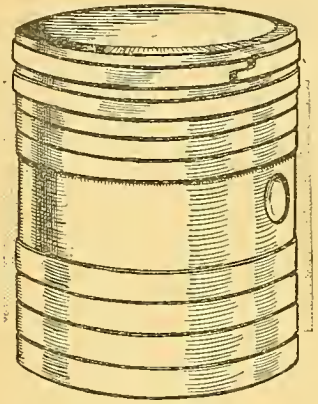
J.A.P. ENGINES IN 1916.

BETTER BALANCE AND IMPROVEMENTS TO GUIDES AND BEARINGS.

SOME interesting improvements in J.A.P. engines have been recently introduced. Some of these have been dealt with before, but in reviewing next year's models it is advisable to deal with all the principal points of interest. The chief engines to be manufactured during 1916 will be the 2½ h.p. single, 70 × 76 mm. (292 c.c.); the 3½ h.p. twin, 70× 64.5 mm. (496 c.c.); the 5h.p. twin, 70×85 mm. (654 c.c.); the 6 h.p. 76 × 85 mm. (770 c.c.); the



Piston of the 2½ h.p. single-cylinder J.A.P. Note the increased bearing surface and the oil retaining grooves.

3 h.p. Morgan engine, with special magneto fixing, the magneto being carried on a special bracket in front of the crank case, and bevel driven, 85 × 85 mm. (964 c.c.) air-cooled; the 8 h.p. water-cooled; and the cycle car engine with heavy crankcase 85 × 95mm. (1,078 c.c.) It is interesting to note that the manufacture of the short stroke engine, which had a bore of 90 mm. and a stroke of 77.5 mm., has been discontinued, and all J.A.P. engines are now of the long stroke type.

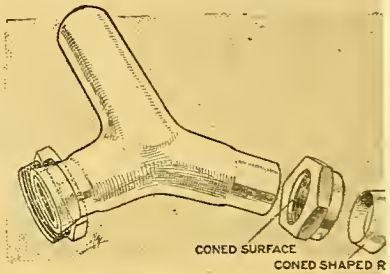
The chief improvements in all models are a decided bettering in balance, a new type piston, new big ends for the twins, and adjustable tappets. The first named point we have had opportunities of noting on recent road tests. One of the accompanying illustrations shows the latest piston of the 2½ h.p. model, which has been considerably improved in design, being light, and having a much larger bearing surface than formerly. The number of oil retaining grooves will also be noticed. The 2½ h.p. has been fitted with a new pattern cylinder, the cooling surface of which has been considerably increased, the radiating fins being of much larger dimensions. Both valves and valve ports are larger, and the latter are now of the streamline type.

To Exclude Air.

The inlet valve guide is of cast iron, with a series of internal grooves cut in its inner surface. It is afterwards reamered out to standard size, allowing a clearance of only .002 of an inch. The object of the design is to collect the oil in the grooves, which shall lubricate the stem, and, at the same time, exclude the air. Particular attention has been given to the prevention of air leaks at the carburetter and induction pipe unions.

It may be remembered that the usual practice is first of all to slip the nut over the inlet pipe and then braze a flange over the end of the pipe. Engines vary just a shade, and if there is not a good fit there is a danger of the rider, after taking down his engine, screwing up the union so tightly that the flange is broken off. Also, it is exceedingly difficult to keep such a joint airtight. Messrs. Prestwich and Co. have overcome the difficulty by making a cone practically driving fit over the end of the pipe, a by turning the inside of the union nut fit the cone exactly. The result is t the thin edge of the sliding cone is tightly pressed over the union that is excluded, and an exceedingly sec fitting is obtained. This method sho be most effective, and should overco the difficulty many motor cyclists exp ence, which can be only overcome the unsightly process of wrapping insul ing tape round the unions.

One of the most interesting innovati in the 1916 J.A.P. engine is the impro ment in design of the big end bearin which we illustrate herewith. A di culty which is experienced in designi the big end is to get sufficient bear surface with the small amount of a available to withstand the power thr



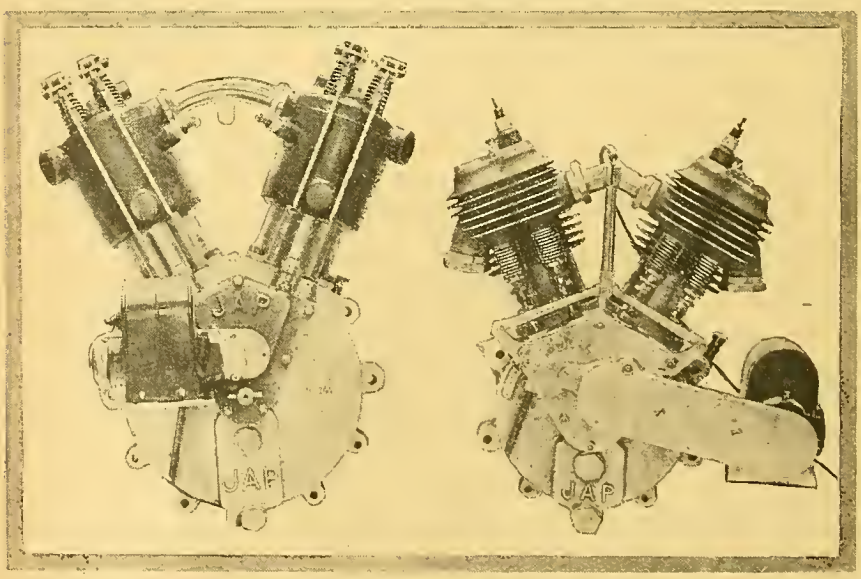
The J.A.P. air-tight induction pipe union.

of two powerful cylinders and the iner stresses which occur at speeds, and keep the bearings adequately lubricate

Messrs. Prestwich have adopted t forked and centre rod principle, wh is probably the best, as there is binding strain due to the connecting r being out of centre with the piston. will be noticed, on referring to t sketch, that a phosphor bronze bu passes through one side of the fork r to the other, while the centre rod wo directly in the centre portion of the bu This design allows a greatly increas bearing surface. The chief improveme is in the design of the bush, which composed of steel lined with phosp bronze. The centre rod in this case h also a phosphor bronze bush and wo on the outside of the steel bush.

In the case of a heavy twin engi one of the greatest troubles is that overheating. This is overcome to a great extent by fitting extra radiating fins, but the exhaust valve cap is not usually provided with any means of radiating the heat. The accompanying sketch shows the J.A.P. method of overcoming this defect, by the insertion of star-shaped fins which considerably assist the cooling of the exhaust val cap.

Radiating fins on th exhaust valve cap the 8 h.p. J.A.P. twi engine.



1916 J.A.P. ENGINES. (Left) The 8 h.p. water-cooled cycle car engine (as used on Morgans) and (right) The novel external exhaust valve lifter on the 4-5 h.p. twin.

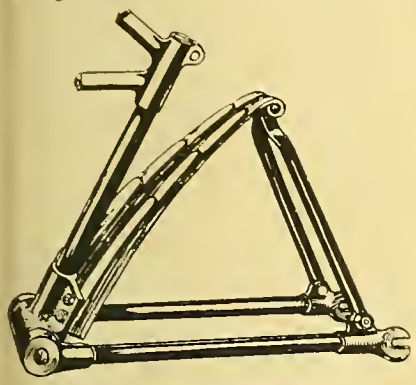
MORE SPRINGING SYSTEMS.

Progress of "The Motor Cycle" Campaign.

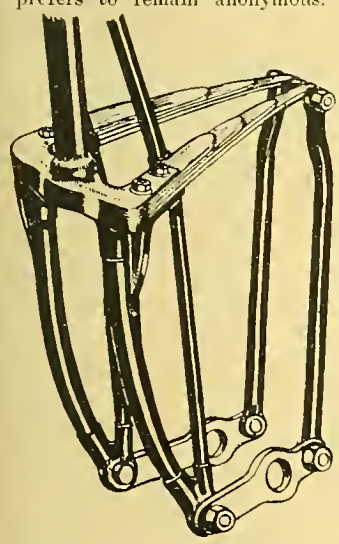
"The Motor Cycle" campaign in favour of spring frames continues to grow in volume—every week brings us new ideas from our readers, who, as well as manufacturers, are taking great interest in this subject. We shall continue to give publicity to all promising designs which may reach us.

The Double Leaf Spring Frame.

THE novelty in this design consists only in using two leaf springs where one is generally employed, the object being to produce the triangulation which will have the effect of causing great lateral rigidity. It is intended that the chain stays should be mounted on the bottom bracket in ball bearings; in other respects the drawings are self-explanatory. There are no slides, and the joints are not numerous. The designs were submitted by a keen reader who prefers to remain anonymous.



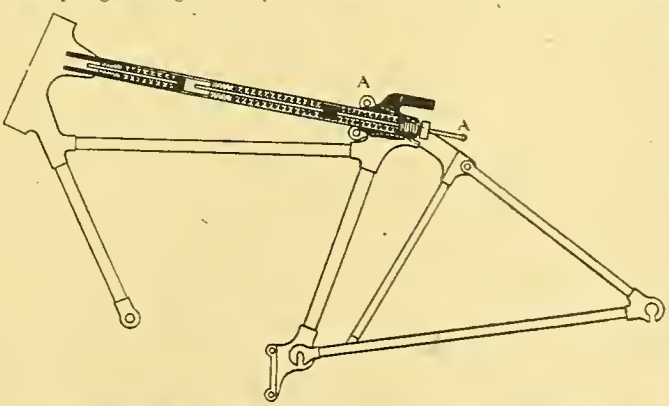
A form of triangulated rear springing.



Front forks of similar design.

Another Adaptation of the Palmer System.

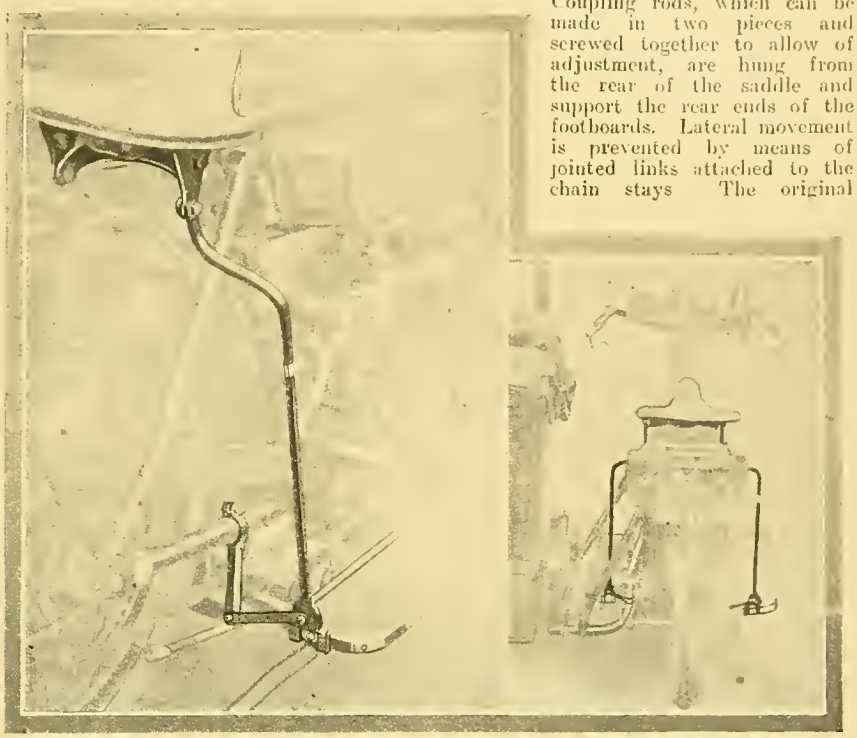
MR. PALMER has still another adaptation of the spring frame which we have already described and illustrated, in which the recoil and rebound springs are placed in the top tube of the motor cycle. Beneath the saddle are slides which are gripped by horn plates. The rod carried by the springs is attached to the horn plates by links, or springs in tension. The sketch, which is only diagrammatical, explains itself. It is, of course, obvious that the top tube must be a straight one when this system of springing is employed, but this is a method of construction which is gaining in favour. This construction has the advantage of neatness, the springs being entirely enclosed.



The Palmer springing system. The points A A are connected on each side of the frame by means of links which push the sliding rod.

Spring Support for the Rider.

THE accompanying illustrations show a method, designed and patented by Mr. G. Thomson, of Gilcomston, Aberdeen, of springing the saddle and footboards of a motor cycle. Coupling rods, which can be made in two pieces and screwed together to allow of adjustment, are hung from the rear of the saddle and support the rear ends of the footboards. Lateral movement is prevented by means of jointed links attached to the chain stays The original supports of the footboard are, of course, removed. In the illustrations the coupling rods are shown bent. This is to clear the sidecar attachments; on a solo machine they would probably be made straight. The front of the boards can be supported on the small springs at present used on the Enfield machines; but almost the whole weight of the rider appears to be supported on the saddle springs, and about two inches of springing movement is available. The same system can be applied to footrests. It is a well-known fact that the passenger is far more comfortable than the driver of a sidecar.



A system of interconnecting the springing of saddle and footrests patented by Mr. G. Thomson, and described on this page. The arrangement is shown fitted to a 6 h.p. Enfield sidecar outfit.

"THE MOTOR CYCLE" RECRUITING SECTION.

Latest Enlistments in the Motor Machine Gun Service. A.S.C. Closed.

A FURTHER inspection of recruits for this branch of the service was held last week, the following being among the men accepted :

G. W. Almond (Coventry).
J. Baldock (Coventry).
J. T. Birch (Birmingham).
P. Brewster (Hertford).
C. Capstick (Bolton).
R. Couzens (Sheffield).
H. Craddock (Birmingham).
A. H. Driver (High Ferrers).
H. Ellocott (Cardiff).
G. M. Hall (Ashford).
A. Higginbottom (Hyde).
A. J. Hunt (Johannesburg).
W. A. Hunt (Saltley).
F. Johns (London).
I. J. Linnett (Coventry).
H. Lord (Bacup).
F. Lomas (Rhodesia).
C. R. Mackenzie (London).
E. J. Riley (Hull).
F. H. Sneat (Elsdon).
J. Storey (Elsdon).
J. R. Strachan (Canonbridge, N.B.).
C. V. Toms (Nottingham).
C. H. Unbeham (Java).
G. Wallis-Bone (London).
C. A. Weatherill (Holton le Moor).

The enthusiasm which exists among motor cyclists anxious to serve their King and Country is remarkable. Of the above it is interesting to note that C. H. Unbeham (Java), A. J. Hunt (Johannesburg), and F. Lomas (Rhodesia) paid their own passages home specially to enlist in the M.M.G.S. Gunner Unbeham's passage cost £60, and he enlisted at 1s. 2½d. per day. He is an expert motor cyclist, having driven a sidecar in the Celebes (Straits Settlements) in parts where motor cycles have never previously been seen.

W. A. Davenport, formerly artificer-sergeant attached to the No. 5 Battery, M.M.G.S., who, as mentioned in *The Motor Cycle*, has had a very long illness, from which we are glad to say he has now practically recovered. In pre-war days Davenport was a well-known Lea-Francis rider.

As the Motor Machine Gun Service is now up to strength as regards car drivers and mechanics, no further applications for these positions can be dealt with until a further announcement appears in *The Motor Cycle*. Recruiting generally for the Army Service Corps (M.T.) closed last Thursday.

The total number of applications dealt with by the Editor of *The Motor Cycle* from motor cyclist recruits totalled 5,515 at the week-end.

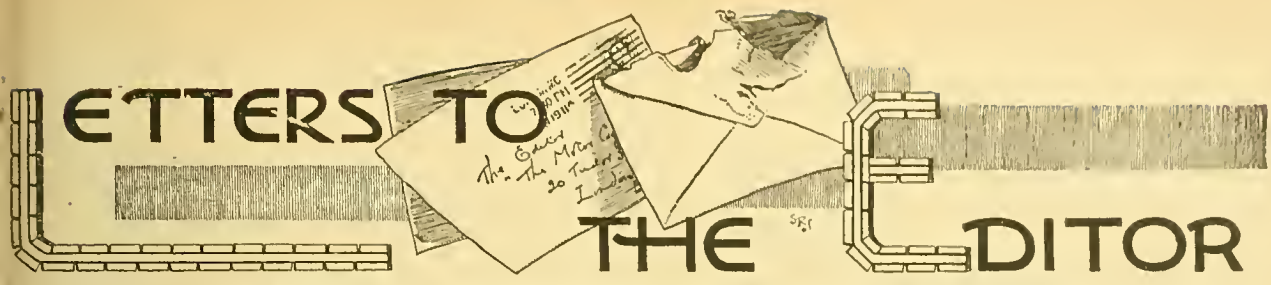
Yesterday (Wednesday) further recruits for the M.M.G.S. from all parts of the country were to be examined.

The next inspection is on Wednesday, the 24th inst., at the Coventry Recruiting Office, Masonic Hall, 2.30 to 4 p.m. Experienced motor cyclists who are medically fit should write to the inspecting officer, Mr. Geoffrey Smith, 19, Hertford Street, Coventry, mentioning age, height, and experience, *and when free*. A railway warrant will be issued to suitable applicants. Only a limited number of recruits may be accepted.

Recruits cannot be accepted under Lord Derby's Recruiting Scheme, *i.e.*, to join at once and be called up for service when required.

E. G. Firkin (late advertisement manager of the Triumph Cycle Co., Ltd.) and Arthur Gough, of Coventry, are among recent recruits in the A.S.C. (M.T.)

The sergeants' mess at the training centre of the Motor Machine Gun Section.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address

A Trial for Armlet Wearers.

Sir,—I most heartily agree with Mr. E. R. Troward's suggestion for a trial for armlet wearers. Might I suggest that the trial be for both Services, although it does not appear clear whether the discharged Naval men are to receive an armlet. As your correspondent points out, there must be a very large number of men eligible for a trial of this kind, and I, for, one hope his suggestions will be heeded. H. T. CHAMBERS (late P.O., R.N.A.S.).

Comforts for the Royal Flying Corps.

Sir,—With reference to your article in *The Motor Cycle* of November 4th, I would like to draw your attention to the Military Wing of the Royal Flying Corps, in which numerous motor cyclists have enlisted.

This corps is composed of men drawn from all parts of the Empire, and, consequently, there is no regimental fund or county association to provide the comforts, which are so much appreciated by the men at the Front.

Lady Henderson at the beginning of the war, acting on the suggestion of Major-General Sir David Henderson, Director-General of Military Aeronautics, started to collect sufficient funds to send out to each man such comforts which, in the ordinary way, would have been supplied from their own regiment or county.

In view of the large number of motor cyclists who have enlisted in this corps, I feel sure from among your readers there are many who would be glad to send something towards helping the splendid work that Lady Henderson is doing.

Subscriptions would be most gratefully accepted, and should be sent to

Lady Henderson, honorary treasurer,
Surrey House, Marble Arch,
London, W.

The Royal Flying Corps has increased enormously during the last year, and in consequence the demand on the resources of the fund is much greater. At this time of the year the work is particularly trying, and the mechanics are busy day and night with the care and repair of the machines, on which the lives of the fliers depend. B. MARIANS.

The Lady Motor Cyclist—A Protest.

Sir,—If you will allow me space in your valuable paper, I should like to answer the protest against rational dress for motor cycling.

Your correspondent, Mary Reid, must forget that perhaps nearly 50% of the ladies who ride use high-powered sidecar machines, which, with the exception of the Scott, have diamond frames. Also many riders of lightweights prefer, as I myself do, a diamond frame for various reasons. Then why should women be called "bold and mannish" and other pleasant things! for wearing what is after all only a neat and serviceable costume? Our brave nurses in Serbia and also our women transport drivers at the Front wear breeches, and also in the hunting field the larger proportion of women are dressed very like the men and ride astride.

As Mary Reid looks so graceful on her machine she is certainly to be envied, but many women ride for the joy of the sport alone, and so are satisfied if they look neat and serviceable. FRANKETTE.

Sir,—A correspondent in your issue of November 4th, signing himself "Dreadnought," makes a protest against ladies riding motor cycles other than those specially constructed for their use. Probably the majority of lady motor cyclists drive sidecar outfits. In my own case, my wife is pleased to give me a rest occasionally by driving herself, and by doing so I cannot agree that she provides an exhibition or loses her self-respect. As a matter of fact, the average man's machine can be ridden with ease and decorum by any woman, provided her dress is not unduly restricted.

Although always interested in lady motor cyclists, I have never yet noticed, either on the road or in the press, the exhibitions your correspondent mentions, and I consider his complaints are exaggerated.

It seems doubtful whether the specially constructed ladies' machine will ever become popular, except in lightweight sizes, owing to constructional difficulties.

Generally speaking, in machines of 3½ h.p. and over, there is not too much room for the removal of cylinders, and in an open frame machine the accessibility is reduced.

Again, an open frame cannot be made as strong as a closed pattern frame of the same weight, as the strength of a frame is proportional to its depth. In a motor cycle all the strength available is required.

It is interesting to learn that your correspondent has been associated with clubs, which attempted to dictate to ladies the type of machine they were to ride, but one would imagine that any club which indulged in such interference would be left severely alone by the fair sex. LK 2994.

[Has our correspondent ever seen a Scott?—ED.]

Petroil Lubrication.

Sir,—As I am the writer of the letter criticising petroil, referred to by your correspondent Dr. T. S. Logan, perhaps you will allow me a few words in reply.

I am prepared to admit, for the sake of argument, that the use of petroil mixture as a method of lubrication is probably as efficient for that purpose as any other system, if one can call petroil a system. What I complained of was that it involved certain disadvantages in riding which were successfully overcome by fitting a Knight lubricator. I will enumerate them in order:

(1.) The messiness of petroil. The splashing of minute quantities of pure petrol through the hole in the filler cap when the tank is full is hardly noticeable. With petroil, however, the oil is left behind on evaporation, and manages to absorb dust and dirt and penetrate everywhere. I want to lubricate my engine; I object strongly to the lubrication of my overalls and exterior person.

(2.) Inefficient carburation. A carburetter is not designed for passing lubricating oil, and cannot be expected to behave as well as with pure petrol. I find with a Knight lubricator I can use a smaller jet and get nearly twenty more miles to the gallon than I could with petroil.

(3.) Difficulties in starting, owing to the fact that on the evaporation of the petrol part of the mixture in the carburetter the oil would remain and frequently gum up the jet, so that I have had to take it down and clean it before I could get the machine to take any air. These troubles are now absolutely over.

(4.) Time and trouble. The mixing process takes time, and is far from agreeable. All I do now is to see that there is sufficient oil in the tank, turn on a tap, and turn it off when I stop. The hotter the engine gets, the more oil it uses. My Connaught, good before, has, in my opinion, been greatly improved.

No! the petroil method is one of those unscientific short cuts so popular in England, but it will not survive.

H. L. LEWIS.

Tubing for Acetylene Gas.

Sir,—I notice a letter in the issue of October 28th from Mr. A. B. Cousins commenting on my remarks on tubing for carrying acetylene gas to the rear lamp. May I say that copper tubing was recommended in an article which appeared in a paper (not *The Motor Cycle*)? The Bowden casing is excellent for this purpose, its greatest points being that it does not perish, is flexible, lends itself to clipping better than rubber, and is not liable to get pinched. I have used the casing some considerable time and have found it most satisfactory. Of course it must be fitted with short rubber connections.

MAY WALKER.

Water on the Knee.

Sir,—I have been in the habit of using my motor cycle in all weathers and at all seasons for long week-end runs during the last three years. For some time past I have been troubled with occasional swelling of one knee joint, and now I am suffering from water in both knees. My doctor advises me to give up motor cycling, which I am very loth to do, and I can scarcely afford a two-seater car with petrol costing about a penny a mile. I wonder if any of your readers have had a similar trouble to mine, and, if so, do they blame motor cycling for it? I have had no accident that would account for the trouble, but I have travelled fast whatever the temperature, and the proofing of my overalls has been decayed for a long time now, so that it is possible that my knees have been getting warmed by the 7 h.p. twin underneath, and chilled by the blast of air in front, thus setting up rheumatic inflammation. I shall be very pleased to hear any of your readers' views on this point.

MEDICALLY UNFIT.

Two-stroke Lubrication.

Sir,—I am now riding my fourth two-stroke machine. This is the first one on which petroil has been the system of lubrication used. I find that owing to blow-back from the carburetter the lower half of the cylinder and the whole of the crank case gradually become covered with oil. The oil then collects dust and the engine invariably looks dirty.

Another reason for my dislike of the petroil system lies in the fact that when ascending long gradients, or even riding against a strong breeze, I am unable to give just that small extra drop of oil which cools the engine and inspires confidence in likelihood of the bearings receiving their share.

Have any of your readers tried a separate oiler which does not enter the engine by way of the carburetter? Would it be advisable to drill and tap the cylinder wall and take a pipe with "drip feed" from the tank to this place?

I shall be glad of the opinions of any two-stroke riders who have made alterations similar to that suggested above.

E.M.

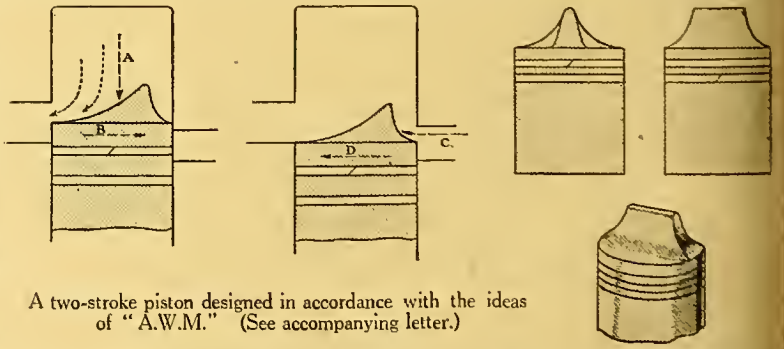
Engine Rattle in Two-strokes.

Sir,—I have read with interest the comments on above in *The Motor Cycle*, but up to now nothing definite has been proved to be the cause of this mysterious complaint. I have an idea which, if carried out, might solve the problem.

In the first place, referring to sketch on left, the burnt gas, in passing into the exhaust pipe, exerts a pressure as indicated, the chief direction concerned being that indicated by arrow marked A, which tends to force piston in the direction B. Then in the next sketch the pressure of exhaust gas has sunk to practically nothing, while the inlet gas is at full pressure and charges against the top of piston, as indicated by arrow marked C, forcing the piston in the direction D. Thus we have a back and forward motion set up in the piston owing to its contour, which at high speeds might reasonably be expected to indicate itself by the rattle in question.

My idea is that contour of piston top be made as sketch on right, allowing for two exhaust ports opposite each other and two inlet ports opposite each other, and thus getting rid of uneven pressures on the piston.

A.W.M.



A two-stroke piston designed in accordance with the ideas of "A.W.M." (See accompanying letter.)

Air Leaks.

Sir,—Although I have not put this idea into practice, I think a small packing gland placed at the bottom of the valve guide would effectually prevent all air leaks through the guide and improve the slow running qualities of an engine.

T.T.

Broken Spokes.

Sir,—I owned a 7-9 h.p. twin of 1914 make which occasionally broke a rear spoke or two at the bend. My 1915 model of the same make was a still great sinner. Rebuilding the wheel did not cure the trouble, nor did a new wheel from the makers. Other owners of similar machines in this locality are bothered by this spoke-snapping pest, but not to the same extent as I am. I am a thoroughly experienced driver, but the roads about here are of the Six Days Trial order. I would be glad to hear if readers have found any cure for this most aggravating trouble. I suppose a new hub with bent spoke flanges and straight spokes would effect a cure. Why on earth will makers not make their hubs so that spokes can be replaced with the wheels *in situ*?

WILD.

Dangers of the Darkened Streets.

Sir,—Now that our streets are so exceedingly dark at night, may I be permitted, through your columns, to beg pedestrians, for their own safety, not to walk along in the roadway, so long as there is a reasonably good path alongside which they can use?

I am a motor cyclist, engaged on Government work at Woolwich, and every night in the course of my six-mile journey home I pass a considerable number of people walking along in the roadway, quite regardless of the fact that they cannot be seen by approaching traffic. It would appear to be a prevalent idea among pedestrians, who probably have not seriously considered the matter, that a motorist's lamps still enable him to see objects some way ahead of him; but I would point out that this is not the case at the present time, no matter how slowly he may be travelling. Khaki is especially difficult to see at night.

Driving home every night through almost unlighted streets, after long hours at work, is already quite enough strain for one's nerves, without the added danger of unlighted pedestrians walking along in the road. If a man specially desires to walk in the road, I should suggest that he carry in his hand something white, such as a paper or a handkerchief; though even this would be almost invisible, it would be better than nothing at all.

May I also appeal to drivers of vehicles of all kinds, horsed ones especially, to have lamps on *both* sides in front, with a *separate* red lamp at the rear? The usual offside lamp with a red glass at the back is quite invisible from behind, if the road curve slightly to the left; in many cases, too, such a light is obscured by the rim of the wheel or by an overhanging load, though technically a red light is there. At a cross-road, if only the one front lamp is carried, a vehicle is quite invisible to anyone approaching from the driver's left. Further, lamps on vehicles should be placed at a reasonable height only, as on a car or taxicab. One frequently meets vans or lorries with their lamps placed very high up—motor 'buses also being great offenders in this respect—with the

TAN LEATHER M.C. COSTUME.

Best Quality Tan Chrome Skins, lined camel fleece.

A magnificent costume for Winter Riding.

The coat is double-breasted and cut on smart lines. The Trouser Overalls are also lined camel fleece and have a strap at the ankle.

Price of Coat,	£2 12 6
Price of Overalls,	£2 2 0
Coat (lined tweed)	£2 2 0
Overalls ,, ,,	£1 12 6

Dunhills Ltd.,

359-361, Euston Road, LONDON, N.W.
2, Conduit St., W. 42, Lombard St., E.C.
Manchester: 90-92, Cross St. Glasgow: 72, St. Vincent St.

Beauty
If there is one thing more than another that has called forth universal admiration in respect to the HERCULES SIDECAR it is the unusual grace and beauty of outline. But it is beauty more than skin deep. The pleasing outward appearance is only indicative of the exact and precise workmanship within. Send for the free Art Catalogue to The Hercules Cycle & Motor Co Ltd: Cengbere St: Birmingham
H

HOBSON PLUGS

stand for RELIABILITY, DURABILITY, EFFICIENCY.

Single or Twin Points.

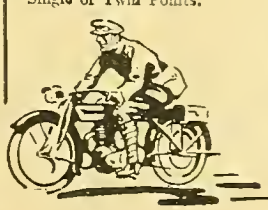
NO ADVANCE.

Thousands are in daily use by British and Allied Governments.

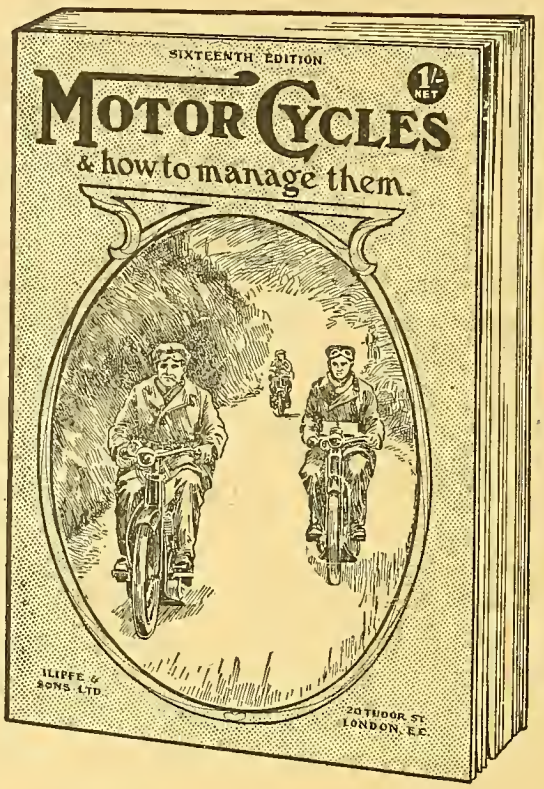
FULLY GUARANTEED

Small pattern No. 13, **3/6.**
Standard size No. 14, **4/-.**

NO SHORTAGE.



The Hobson Manfg. Co., Ltd.,
29, Vauxhall Bridge Rd., London, S.W.



The Cheapest Way to BUY EXPERIENCE

Every purchaser of this book gets the benefit of the accumulated experience of many hundreds of thousands of motor cyclists during the past fifteen years.

It is a storehouse of useful information, compiled with care and discrimination for the benefit of all users of motor cycles.

¶ In the present Edition the chapters dealing with the Carburetter, Transmission, and Gearing have been carefully revised and enlarged, and are a most important feature of the edition.

¶ The Chapter on the Two-stroke Engine has also been enlarged, and practically every Two-stroke Engine on the market is now described.

¶ Gas and Electric Lighting, including Rear Lighting, are dealt with very fully.

¶ A useful feature is a table of comparative running costs.

"MOTOR CYCLES AND HOW TO MANAGE THEM" is unquestionably the best and most complete handbook on motor cycles, their care and management. The first edition was issued as far back as 1900, since when it has always been regarded as the standard handbook, and no fewer than sixteen editions have appeared.

Every new edition has been carefully and thoroughly revised to keep pace with the mechanical and other changes that have taken place, until, at the present time, the book is a complete and reliable compendium of motor cycle knowledge, invaluable alike to beginner and experienced rider.

The sixteenth edition, revised (now on sale), is a great improvement on its predecessors, and deals with a multitude of subjects relating to all types of motor cycles.

The buyer of a second-hand machine will find the book equally useful, as it describes old type carburetters, ignition systems, etc., in a special chapter on second-hand motor cycles

LADY RIDERS

who wish to acquire the knowledge that will enable them to manage their own mounts, and thus become independent of outside help or advice, will be well repaid by a careful study of this book.

Sixteenth Edition (Revised), Now on Sale.

Price 1/- Net. By Post, 1/4.

Obtainable from ILIFFE & SONS LTD., 20, Tudor Street, London, E.C.

And all booksellers.

B22

result that unless one be on a very familiar road, it is very easy at a distance to mistake their lights for those of street lamps.

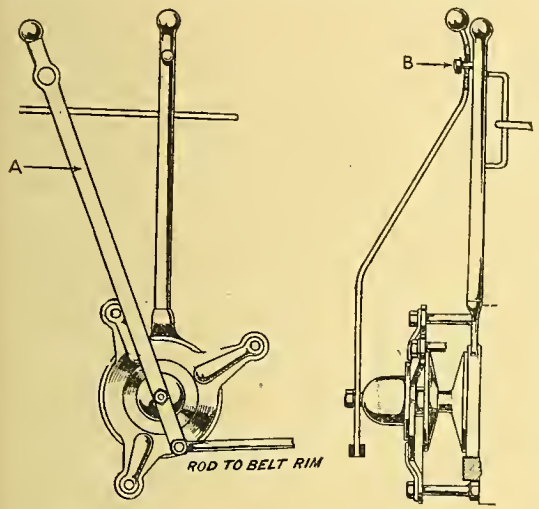
I feel sure that this state of things is simply the result of thoughtlessness, and therefore, in the interests of public safety, I venture to call the attention of your readers to these points.

A MEMBER OF THE ILLUMINATING ENGINEERING SOCIETY.

A Home-made Clutch.

Sir,—A small alteration which I have effected to my 3½ h.p. Rudge-Multi and sidecar may be of interest to your readers. It is a T.T. clutchless model, and I found it somewhat annoying to have to dismount if compelled by traffic, cattle, etc., to reduce my speed to a crawl, as, of course, the lowest gear of the Multi is only about 7½ to 1.

I disconnected the flat rod connecting the engine and back wheel belt pulleys, and fitted the arrangement shown in



Home-made clutch fitted to T.T. model clutchless Rudge-Multi by a correspondent, Mr. J. Douglas.

sketch. The lever A is of flat strip, pivoted on the engine pulley cover as shown, the centres of this pivot and the usual Multi gear lever being coincident. From the bottom of the lever A a rod is connected to the usual bell crank and plunger rod operating the back belt rim. The top of the lever A is slipped over a stud B, screwed into the usual gear lever, as shown.

Now on moving the Multi gear lever along its quadrant in the usual way, lever A also moves with it, and operates the front and back belt pulleys just as though the usual arrangement were fitted. But at will, lever A can be slipped from its stud and moved forward or backward independently of gear lever, this movement tightening or slackening the belt by opening or closing the back belt rim.

If the gear lever is in the lowest gear notch of quadrant and the lever A is moved forward independently the belt becomes slack; this allows it to slip considerably, thus acting as a clutch. On gradually drawing the lever back the belt is tightened, and the drive is again taken up until, with the lever again on its stud, the belt is at its normal tension, and no slip occurs. I find that this arrangement acts as a perfect clutch, and enables me to proceed at a crawl, turn round, etc., just as though an ordinary clutch were fitted. I do not claim that it entirely takes the place of a clutch, of course, but it does all that a clutch is usually used for, except starting from a standstill.

Further, I can, by its use, tighten the belt temporarily on a bad hill, should the belt slip, by simply disengaging the lever A and pulling it backwards, the gear lever, of course, remaining in place in the quadrant. I do not find the belt suffers to any extent, though, no doubt, it would shorten the life of the belt if used excessively.

J. DOUGLAS.

Red Lights on Street Repairs.

Sir,—May I draw your attention to the menace to night riding caused by the use of red lamps for indicating street repairs? When riding I have had several narrow escapes by mistaking these lights for the rear lights of cycles. If lights of another colour, say purple or green, could be instituted universally to indicate street repairs, I think this danger would be obviated.

W. IVEY.

Reversing a Scott.

Sir,—*Apropos* of Scotts firing backward, I owned one of the first Scotts built—a 1909 machine, with water-cooled heads only. On one occasion this machine was baulked on the White Hill, Henley-on-Thames, and started to run backwards. I engaged the low gear, when the machine started violently, ran backwards with considerable impetus, and turned over, sidecar and all; fortunately, no damage was done. Curiously enough, this was the only occasion on which this happened, and although I tried I could not repeat the performance. At the time of the accident ignition was fully advanced and the throttle well open. This Scott would pull a heavy coachbuilt sidecar with three up at about 40 m.p.h., and climb a 1 in 8 hill with ease when I sold it last year.

E. RIDER TROWARD.

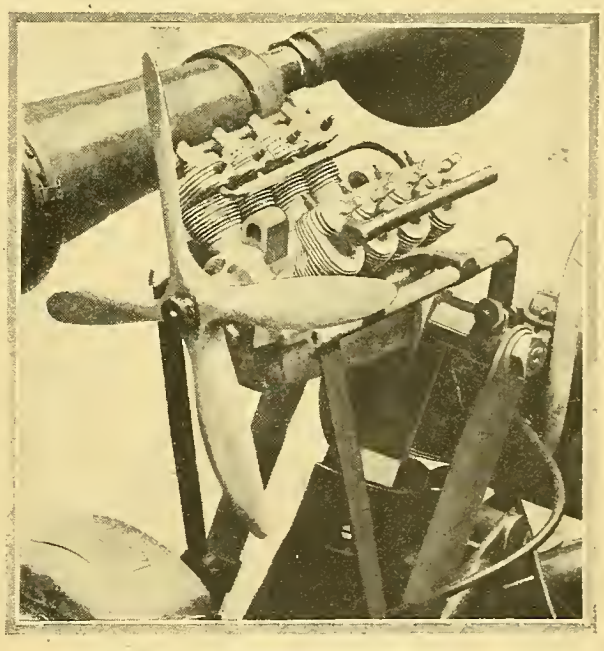
An Open Exhaust.

Sir,—Some few weeks ago "Ixion"—to whose delightful weekly talks I am sure *The Motor Cycle* owes no small degree of its world-wide popularity—remarked that a good racing car can tick over at low engine speeds quite silently in spite of an absolutely open exhaust. The exhaust of my 1912 T.T. racer Triumph, without being in any way impeded by any of the usual silencing devices, is more silent than it used to be with the standard silencer and the cut-out closed.

I will explain how this has been achieved. The left-hand end plate of the silencer box has been cut away and a 5in. extension of the same bore has been fitted to the expansion chamber. To the extension a 1⅞in. copper pipe is welded and carried to the extreme rear end of the machine. The exhaust gases have thus ample opportunity to expand and reduce their pressure, and are in consequence almost silenced.

Can any Triumph rider beat this for flexibility? I can paddle off on a 3⅔ to 1 gear, and walk beside the machine, which fires regularly at about 3 m.p.h. There are few main road hills I cannot take at 45 m.p.h., and my best speed on the level without any tuning is 58 m.p.h., all with exactly the same adjustments.

TRIUMPHALIS.



A CLEVER AND APPROPRIATE MASCOT. An exact scale model of a 75 h.p. eight-cylinder Renault airplane engine fitted to the front fork of a motor cycle owned by an Admiralty inspector.

Change of Title.

The makers of the A.B.C. motor cycle have changed the title of the company to A.B.C. Motors, Ltd.

New London Showrooms.

On and after Monday, November 22nd, Triumph motor cycles in London will be found at 218, Great Portland Street, W., instead of Holborn Viaduct.

Motor Cycle Handbooks.

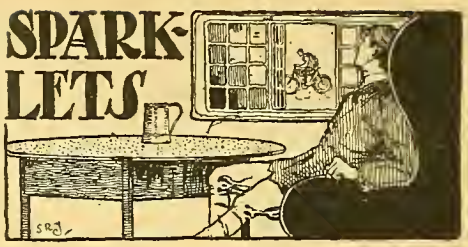
Owing to the increased postal rates the post free prices of our publishers' car and motor cycle handbooks have been slightly increased. For example "Motor Cycles and How to Manage Them" is now 1s. 4d. post free instead of 1s. 3d.

Oil for Hardening Bayonets.

Messrs. the Coro Oil and Rubber Co., of Birmingham, who manufacture oils for motor cycle engines, inform us that their products are giving great satisfaction in other directions, their hardening oil being used with great success for the hardening of bayonets.

Longuemare-Hardy Carburetters.

Messrs. Ed. J. Hardy and Co., Ltd., Queen Victoria Road, Coventry, after having been in business for thirteen years as general factors of motor accessories, have now decided to devote the whole of their time and attention to pushing the sale of the Longuemare-Hardy carburetters, Scott combined starting and lighting sets, Efandem lighting sets, Hardy patent universal joint discs, Thermoid brake lining, and copper and asbestos washers. They have, therefore, disposed of their factoring department to Messrs. Page and Kaye, who will trade under that title in premises adjoining the present ones.



A Business Change.

Mr. Sidney George, the well-known Indian racing rider and holder of the fastest speed ever done in England on a motor cycle, has severed his connection with the Hendee Manufacturing Co., Ltd.

New Beldam Tyre Works.

The Beldam Tyre Co., Ltd., of Brentford, Middlesex, have found it necessary to make considerable additions to their factory. The work was started some three months ago, and it is hoped that it will be completed very shortly.

Review.

"The Petrol Motor." F. J. Kean, B.Sc. E. and F. Spon, Ltd. 4s. The book is one which does not appeal directly to motor cyclists, but, inasmuch as it deals with the principles and working of the petrol engine, it will be of undoubted general interest. The chapter on two-stroke engines will certainly be of value to all those interested in this increasingly popular type of engine.

Catalogues Received.

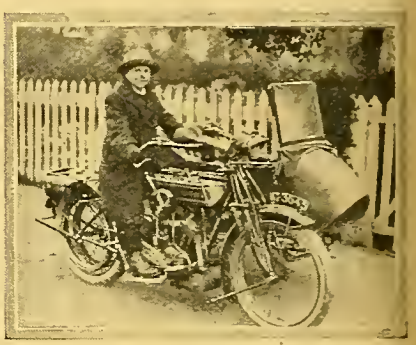
We are in receipt of a catalogue from Messrs. the Watsonian Folding Sidecar Co., Ltd., Conybere Street, Birmingham, listing all the well-known folding Watsonian sidecars suitable for machines of 2½ h.p. and upwards.

We have received a striking pamphlet from the Vacuum Oil Co., entitled "Lubrication of the Automobile: (1) The Engine." Though this does not appeal directly to motor cyclists, as the motor car engine is dealt with, the publication is of general interest. The colour drawing is particularly clear, and the whole subject is gone into very thoroughly.

We have received the latest price list of Skew motor cycle tyres from Oylers, Ltd., 35, New Cavendish Street, W. It is interesting to be able to record that Messrs. Oylers' works have been so far extended that, although they have been working night and day on Government orders, they are now able to make prompt deliveries to private motorists.

We are in receipt of a useful list of magneto parts and accessories, which has been sent us by the Runbaken Magneto Co., Ltd., Camp Street Works, Deansgate, Manchester. It lists spare parts for all types of Bosch, Eisemann, Mea, and U.H. magnetos, types for which spare parts cannot be obtained from their sources of manufacture. Spare parts are also listed of other well-known magnetos. In addition to the above, magneto spanners, magneto knives, special magneto oils, sprockets, driving chains, and platinum points are included.

The Hendee Manufacturing Co. have sent us a copy of the advance Indian catalogue. Although a more complete and fully illustrated catalogue is to be issued later, the present list contains illustrations and complete specifications of all the 1916 model Indians. In connection with the new 33⅓% import tariff, the following extract from Mr. W. H. Wells's introduction is of interest: "The burden of the import duty on such parts as we have to import we bear ourselves. We are not believers in the common expression, 'let the public pay.'"



WHEN FATHER'S OUT!

The nine-year old son of Mr. A. E. Ferris, of Green Street, near Sittingbourne, photographed at the helm of his father's 6 h.p. New Hudson sidecar outfit.

John Bull Motor Cycle Tyres.

The John Bull tyres, both Cross-Groove and Rib-stud, remain unaltered for 1916. The former is made in two qualities, the Tourist Trophy type being built upon four-ply fabric in the larger sizes, and the Standard on three-ply. The latter is made in the T.T. quality only, but is supplied in 2¾in. section (we have one of these tyres in use at present with 6,800 miles to its credit) and also in the 30in. × 3in. size.

Quite a novelty is the latest idea in patches. John Bull patches are now provided with a protective covering on the prepared surface, which is easily removable, preserves the surface, and at the same time prevents it from becoming soiled. Other articles manufactured by the Leicester Rubber Co., Ltd., are the deep-drive belts, "Unkinkable" gas tubing, overalls, and many other things useful to a motor cyclist, among which the "Oversize" horn bulb must not be forgotten.

TEN-YEAR OLD TRICAR NOW USED IN A BAKER'S DELIVERY SERVICE.

The present owner, a Toddington baker, bought the tricar—a Humber Olympia tandem—about a year ago, and substituted for the front seat the box body shown. It gives excellent service in its present form, and when one remembers that it is at least ten years old one can form a good idea of the lasting qualities of Humber material.

The Evidence Accumulates

¶ Here is further proof that "The Motor Cycle" is far and away the best medium for Miscellaneous Advertisements relating to second-hand machines, spares, fittings, etc.

So many letters are received from satisfied advertisers that it is impossible to publish them all, but a typical selection is given below.

Reasons why

THE MOTOR CYCLE

brings such

GOOD RESULTS

First.

"THE MOTOR CYCLE" has by far

The Largest Circulation

of any paper published in the interests of motor cyclists—the present figures being very considerably in excess of

80,000

copies a week.

This means that it reaches by far the greatest number of BUYERS.

Second.

The influence exerted by "THE MOTOR CYCLE" throughout the movement is far greater than that of any similar journal. It is recognised everywhere as the paper of authority.

Third.

"THE MOTOR CYCLE" contains, week by week, nearly twice as many advertisements of second-hand machines, etc., as any other paper, and buyers turn to it naturally to look for bargains.

"Delighted with the Result."

"With reference to the two motors advertised in your valuable paper a fortnight ago, I am delighted with the result. The machines were sold the next day, and I had over 20 replies, and it was impossible for me to reply to all. This is proof that 'The Motor Cycle' cannot be beaten for a sales medium."

—T. E. Dosser, Slingsby, Malton, Yorks.

"Had many offers."

"The Enfield Twin for which I put two advts. in 'The Motor Cycle' was exchanged with cash for a Zenith the next day after first advert. appeared, and I have had many offers since."

—A. V. Sandoe, 18, North Parade, Penzance.

"A splendid Advertising Paper."

"I am delighted to say that in reply to my advert. in 'The Motor Cycle' of a Lady's 1914 Douglas I received over 30 enquiries, including wires and telephone calls, in fact I did not know who to save the machine for. No doubt you will be glad to hear that 'The Motor Cycle' is such a splendid advertising paper, and personally I am delighted to give you the credit which you deserve."

—W. Brandish, Foleshill Road, Coventry.

"Quite Satisfied with the Result."

"I have pleasure in informing you that the P. & M. and Sidecar I advertised in your issue of the 16th was sold within four days. I am quite satisfied with the result of the advert."

—A. Thorpe, 55, Market Place, Leicester.

"18 Replies to date."

"You will be interested to hear that we have received to date about 18 replies to our advertisement in 'The Motor Cycle' last week of a Lightweight machine."

—The Adelaide Motor Company, 84, Chalk Farm Road, London, N.W.

"What a splendid medium."

"I thank you for forwarding on letter in reply to my ad. in 'The Motor Cycle.' This makes the 16th letter I have received, which shows what a splendid advertising medium your paper is."

—P. E. Cross, Winsham, Chard.

Send your next advertisement to "The Motor Cycle"

20, Tudor Street, London, E.C., or Coventry.

The rates for prepaid paragraph announcements are given on the first page of Miscellaneous Advertisements.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to ILIFFE & SONS Ltd., and crossed & Co.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. Replies should be addressed, "No. 000, c/o 'The Motor Cycle,' Coventry"; or if "London" is added to the address, then to the number given, c/o "The Motor Cycle," 20, Tudor Street, E.C.

☞DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S., latest 2¾h.p. 3-speed model, in stock.—Marston, 26 and 31, Bridge St., Chester. [X4011

A.J.S., 1915, 3-speed model, nearly new, done 1,500 only; bargain at £45.—Nelson, Agent, Rhyl. [X3870

A.J.S., 1914, 2¾h.p., 3-speed, spares; £42.—Davies, 2, Darley Rd., Whalley Range, Manchester. [X3917

A.J.S., 1915, 2¾h.p., 3-speed, Lucas lamp set horn, accessories; £48.—43, High St., Alfreton. [X3918

A.J.S., 6h.p., complete with sidecar, just delivered; £95.—Turpins, 22 and 29, Preston Rd., Brighton. [0716

A.J.S. 6h.p. Combination, with screen, £90; 2¾h.p. 3-speed, £55/2/6; just delivered.—Dan Guy, Weymouth. [6104

A.J.S., 2¾h.p., 3-speed model, new Dunlops, lamp and horn; £35.—Marston, 26 and 31, Bridge St., Chester. [X4010

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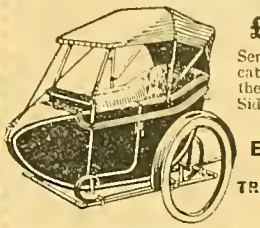

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B.S.A., 1916, model K, in stock for immediate delivery.—B.S.A. Agents, The Morris Garages, Oxford. [X3897

B.S.A., 1915, model K, new condition, speedometer, spares, lamp; £52.—Freeman, 50, Brighton Rd., Redhill. [6171

B.S.A., 1914, T.T. model, Mabon clutch, perfect, fast; £34, complete.—Webster, Cornwall House, West St., Newbury. [X3761

1912 B.S.A., 3½h.p., clutch, lamp, etc., good tyres and belt; £27.—Abram, 5, Gloucester St., Middlesbrough. [X4051

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CALTHORPE-J.A.P., 1915, 2¾h.p., 2-speed, not ridden 500 miles, as new; £29.—J. Curtis, jun., Clothier, Chepstow. (D) [X3710

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CALTHORPE, latest 2-speed lightweight models in stock; cash or exchange; no waiting.—Eagles and Co., High St., Acton, W. [X3931

CALTHORPES, 2-stroke and J.A.P. models all in stock here. Scottish trade supplied.—Alexander's, 115, Lothian Rd., Edinburgh. [5140

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CALTHORPE-J.A.P., 2¾h.p., 2 speed models, delivered from stock; £36/15.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0480

CALTHORPE-J.A.P., 1915, 2¾h.p., 2-speed Enfield gear, all accessories, fine order; only £26.—Norfolk Villa, Joseph's Rd., Guildford. [6086

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CALTHORPE Junior, 1914½, Precision 2½h.p., 2 speeds, lamps, horn, tools, splendid condition, little used; £20.—Clark, 9, Claremont Terrace, Normanton, Yorks. [6046

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ENFIELD, 1915, 3 h.p., T.T., 2 speeds	£48
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Campion.

MANCHESTER Agent for Campion Motors, W. H. Jones, 415, Bury New Rd., Higher Broughton. Inspection invited. [X3902

4h.p. Campion-Jap, 1912½, clutch model, lamps, horn, tools, just overhauled; trial willingly; bargain, £23.—Kew, 108, Ilex Rd., Willesden. [X3847

CAMPION-J.A.P. Combination, 1913, 6h.p., 2-speed countershaft, handle starting, chain drive, speedometer, head and tail lamps, coachbuilt sidecar, extra strong 4-point; £47/10.—Harris, 8, Aynscomb End, Orpington, Kent. [6010

Centaur.

CENTAUR, 3½h.p., mag., lamps, spring forks, good tyres, just been overhauled; £22; after 6.—Philo, 764, Holloway Rd., N. [5956

1913 2¾h.p. Centaur, fast, and in good condition, £22, or exchange push bike and cash.—Gadd, 119, Gladstone Rd., Wimbledon. [6255

Chater-Lea.

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CHATER-LEA No. 7 8h.p. Coachbuilt Combination, complete, speedometer, lamps, horn, spares, splendid condition; £47.—Seen Dodds, 2, Hogarth Rd., Earl's Court. [X4037

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CHATER-LEA, 1915 model, 2-stroke, 2-speed, Villiers engine, Senspray carburetter, ridden less than 400 miles; £25.—Southern Motor Garage, Bromley Rd., Catford. [6153

Chater-Lea-Jap.

3-SPEED Chater-Lea-Jap, nearly new basket sidecar, speedometer, tools, spare tyres, perfect, recently overhauled, £50; 1910 Motosacoche, £7; seen by appointment only.—Old Ferry House, Weybury, Bucks. [X3135

Chater-Precision.

1914 6h.p. Chater-Lea-Precision, 4-speed countershaft Jardine gear, Klaxon, Bramble de Luxe sidecar, all accessories; £65, cash or easy terms.—R. E. Jones Garages), Ltd., Swansea, London, Cardiff. [0723

Chater-Rex.

CHATER-LEA-REX, 7-9h.p. twin, in new condition, extremely powerful, Philipson pulley gear, clutch and kick starter, with light wicker sidecar, lamps, horn, etc.; £30, bargain.—Johnson, 2, Hazel St., Warrington. [X4089

Clyno.

CLYNO 1914 Combination, 6h.p., 3-speed, hood, screen, interchangeable wheels; £65.—Universal, 52, Gray's Inn Rd. [6220

CLYNO Combination, 1912¾, 6h.p., 2-speed, in perfect condition; £35, or nearest.—14, Devonshire Mews West, Marylebone. [6284

CLYNO, 1912½, and Gloria spring wheel sidecar, perfect, accessories; £40; good lightweight part.—G. G. Williams, Crowland, Peterborough. [X4023

CLYNO, 6h.p., 1913¾, with 1914 sidecar, 3-speed countershaft, spare wheel, lamps, speedometer, all fine order; £61.—Chatwin's, King St., Richmond. [6163

CLYNO 1914½ Combination, luggage carrier, screen, radiators, Terry springs, perfect condition, £65; with electric head, tail lamps, and horn, 6 volt accumulator, Stewart speedometer, £68.—Pedley, Nantwich. [X3914

CLYNO Combination, 1913, 5-6h.p., 3 speeds, hood, glass wind screen, spare wheel and tyre, 5 lamps, 2 generators, speed indicator, watch, foot pump, tool bag and tools; £40; in splendid order.—Seen at 248, Bishopsgate, London. [6299

CLYNO 1914 Combination, 6-8h.p., 3 speeds, clutch, chain drive, detachable wheels, Palmer cords, spare wheel and tyre, luggage, petrol carriers, lamps, horn, speedometer, set tools, many spares, coach sidecar, hood, screen, gauge pump, etc.; cost £120, for quick sale £60; owner going Front; seen Huckle's Garage, Howes Park, Palmer's Green, N.—Capt. Griffin, South Camp, Seaford. [6124

Connaught.

CONNAUGHT, 1914½, 2¾h.p., 3-speed, kick, as new; £32.—Fairburn, Killamarsh, Sheffield. [X3757

CONNAUGHTS in Stock for immediate delivery at the Birmingham and district agent's depot, P. J. Evans, John Bright St. [6189

CONNAUGHT, 2¾h.p., 2-stroke, 1914, Sturmey-Archer 3-speed gear, lamp, horn, T.T. bars; £25.—Bond, 245-247, Euston Rd., London. [X3853

Dayton.

DAYTON 1914 2h.p. 2-stroke Lightweight, T.H. mag., Amac carburetter, Druids, Avon, in splendid condition; first cheque £15 secures.—Chauffeur, Bittiscombe Manor, Wiveliscombe, Somerset. [X3877

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ENFIELD 1913 6h.p. Combination, 2 lamps and generator, mirror, speedometer, watch, horn, spare tyre, tools, and sundry spares; a bargain, £46.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [6020

ENFIELD 6h.p. Combination, 1915, complete with lamp, generator, and horn, absolutely unscratched, having only been used 200 miles, perfect in every way; £73/10.—Alexander's, 115, Lothian Rd., Edinburgh. [5975

6h.p. Royal Enfield Motor Bicycle and sidecar, 1914, 2-speed combination, property of an officer going to the Front, includes all accessories and speedometer; £67/10; opportunity.—Secu at Wauchope's, 9, Shoe Lane, London. [6313

ENFIELDS, 1916 models actually in stock.—6h.p. combinations, 3h.p. 2-speed twins, T.T. and touring models, also 2¼h.p. 2-speed 2-stroke.—P. J. Evans, 87-91, John Bright St., Birmingham, controlling district agent. [6190

ENFIELD, 1914, standard model, with Lucas accessories, 65 gns.; also 1915 6h.p. de luxe, hood and screen, electric equipment, 90 gns.; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [6341

ENFIELD Combination, 1915, complete with Lucas horn, head, sidecar and rear lamp sets, sidecar complete with screen, apron, and luggage grid, spare cover and tube, been ridden few hundred miles, and is like new; 70 gns.—Pitts, Redditch. [X4112

ENFIELD Motor Cycles and Sidecar Combinations, latest models, fitted with 6h.p. J.A.P. twin-cyl. engine, chain drive, just delivered fresh from works; 85 gns.; tuition free; delivery free; extended payments arranged, or exchange.—Wauchope's, 9, Shoe Lane, London. [6314

1914 Enfield Combination, complete with lamps, horn, speedometer, mirror, watch, sidecar complete with hood and screen, machine in splendid condition; this belonged to an officer, and has not been used since the commencement of the war, except for 7 days; £65.—Julian, Broad St., Reading. 'Phone: 1024. [X2347

Excelsior.

EXCELSIOR, 3½h.p., free engine (Mahon), B. and B. carburetter, tools, etc.; £18.—S. Crawford, 18, Hammond's Lane, Brentwood. [6063

EXCELSIOR (American), 1915; delivery from stock of standard 3-speed models; special quotations.—Layton's Garage, Bicester, Oxon. [X3986

EXCELSIOR (American), 7-9h.p., 1915, electrically equipped, not run 2,000; £60.—Nesma, 7, Exhibition Rd., South Kensington. [6141

EXCELSIOR, 7h.p., 1914, and sidecar, to be sold by auction on Wednesday, 24th November, by Messrs. Aldridge, St. Martin's Lane, London, W.C. [6074

EXCELSIOR Combination, 1915, in exceptional order and condition, 3 speeds, electric equipment; sacrifice, 50 gns.—Percy and Co., 337, Euston Rd., London. [6158

4½h.p. Coventry Excelsior, 1913, Binks carburetter, Sturmey-Archer 3-speed gear, with lamp and horn and cane sidecar, overhauled; £39.—Hall's, Engineers, Matlock. [X3943

EXCELSIOR (American), standard 7h.p. model, £80; De Luxe, £90; very liberal exchanges quoted; we can surprise you.—Sole Yorkshire Distributers, Halifax Motor Exchange, Horton St., Halifax. [0380

EXCELSIOR (American), 1915, 7h.p., 3-speed, twin combination, complete with electric lighting set, used for demonstration purposes; offers wanted.—Apply, Harris, 10, Gt. Chapel St., Oxford St., W. [6249

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FORWARD 2¾h.p. Twin, 1914 model, 3-speed gear, complete with all accessories, exceedingly fast; price £28.—Wauchope's, 9, Shoe Lane, London. [6315

F.N.

2-SPEED F.N., and sidecar; £20, no offers.—Carr, Dalton Brook, Rotherham. [X3357

F.N., 5-6h.p., 2-speed, perfect condition; must sell, £26, or near offer.—Ovenden, Church St., Esher. [6128

F.N., 2½h.p., 2-speed, and clutch, lamp and horn, mag.; £16.—Marston, 26 and 31, Bridge St., Chester. [X4017

1912 4-cyl. F.N. and sidecar, 2 speeds, and clutch, good machine; £27.—Earl, 5, Heath St., Hampstead. [X4078

2¾h.p. F.N., coil ignition, fast, and reliable machine, good condition; £7.—Screse, 381, Battersea Park Rd., S.W. [5981

F.N., 1912 model, 5-6h.p., 4-cyl., footboards; £19/19.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [6139

F.N., 2¾h.p., just overhauled, new tyres, belt, and piston rings, mag., perfect; £12/10.—Underdoun, 2, Little Queen St., Dartford. [6168

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1915 2¾ h.p. **A.J.S.**, 3-speed, cancelled order	—	55 2 6
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5-6h.p. 4-cyl. F.N., fitted with 2-speed gear and hand some coachbuilt sidecar, the combination complete with all accessories; 40 gns.; any severe trial given tuition free; guaranteed.—Wauchope's, 9, Shoe Lane, London. [0310

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LATE 1912 5-6h.p. 4-cyl. F.N., 2 speeds and free, new heavy tyres, Lycett's pan saddle, Lucas lamp set, whole in perfect condition, £23; with reed cane canoe Mills-Fulford spring wheel sidecar, £28; any trial or expert examination.—English, Asylum Farm, Bexley, Kent. [X6252

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2¾h.p. Grandex, fitted with 3-speed gear and free engine, superior lightweight; £20; guaranteed.—Wauchope's, 9, Shoe Lane, London. [6330

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HARLEY-DAVIDSONS in stock.—Premier Motor Co., Birmingham. [4734

1915½ Harley-Davidson, 7-9h.p., model 11J, and sidecar, new; must sell, £70.—W. Coombs, St. Catherine's, Guildford. [6045

7-9h.p. Harley-Davidson, 1914, speedometer, Lness accessories, very fast; £55.—Hastie, Glenside, Brookwood, Surrey. [6060

NEW Harley-Davidson, model F, Big James 3-speed, lightweight James, in stock; exchanges.—Triumph Agent, King's Lynn. [X4104

HARLEY-DAVIDSON, one only, model 11J, electrically equipped; offered at 73 gns.; absolutely new.—Nelson, Agent, Rhyl. [X3868

1915 Harley-Davidson, electric equipped, Coronet sidecar, bought August; any trial; bargain, £78.—Hughes, Brynsion, Rhymney. [X3756

1915 Model 11C Harley-Davidson, 4½h.p., 2-speed, fast, absolutely as new, not done 500 miles; 45 gns.—Railway Garage, Staines. [5916

1915 Electrically-equipped Harley-Davidson, Millford sidecar, tyres unscratched; £76; exchange car.—Willson, 22a, Prince's Sq., Bayswater. [6092

1915 Harley-Davidson, 7-9h.p., electrically equipped, mileage 250; £70 cash; lightweight considered part.—Collins, 133, Shaftesbury St., Newport. Mon. [X4060

HARLEY-DAVIDSON, second-hand, and sidecar, model F11, new August, 1915, mileage 280, speedometer, lamp, horn, all enamelled grey; £95.—Bond, 245-247, Euston Rd., N.W. [X3855

HARLEY-DAVIDSON, model 11F, 7-9h.p., 3-speed, £68/5; model 11J, 7-9h.p., 3-speed, with dynamo electric lighting equipment and electric horn, £76/13 for immediate delivery; free of duty.—The Premier Motor Co., Aston Rd., Birmingham. [5512

HARLEY-DAVIDSONS.—We can give immediate delivery from stock of models 11C, 11F, and 11J; Harley-Davidson sidecar, 20 gns., in stock; also special Gloria and Canoelet sidecars from 15 gns. to 27 gns.; trial run, delivery, and tuition free.—The Premier Motor Co., Aston Rd., Birmingham. [5513

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Hazlewood.

1914 5-6h.p. Hazlewood, coachbuilt Canoelet sidecar, speedometer, lamps, etc.; £65.—Monnfield, Brook House, Walton, Warrington. [X3923

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HENDERSON 4-cyl., the smooth and flexible motor cycle; model E, £85, now in stock at Alexander's, 115, Lothian Rd., Edinburgh. [5145

1914 Henderson Coachbuilt Combination, fully equipped, and thoroughly overhauled; £68.—Watson, 14, Gleneldon Mews, Streatham. [6151

HENDERSON Empress Sidecar, new combination, only tuned, magnificent turnout; cost £111, will accept first offer £95.—Box 9,620, *The Motor Cycle* Offices, Coventry. [X3707

Hobart.

HOBART, 1915, 2-stroke, 2-speed, 2½h.p., excellent condition; £30; complete, lamps and horn; seen by appointment, Croydon.—Box 9,619, *The Motor Cycle* Offices, Coventry. [X3706

HOBART, 2-stroke models delivered from stock, 2-speed, handle-bar controlled countershaft gear, Villiers 2½h.p. engine; £36/15.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0431

Humber.

1913 2¾hap. Twin Humber, T.T. model; £19; exchange.—53, Brownhill Rd., Catford. [6214

MOTOR CYCLES FOR SALE.

Humber.

HUMBER, 3½h.p., 1910, excellent condition, 2-speed, free engine; £16.—R. Chadwick, 17, Westbourne Rd., Urmston. [X4039

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HUMBER, 1912½, 3½h.p., 2-speed, free engine, handle starter, tyres new condition, enamel and plating excellent; £22.—106, Riverdale Rd., Erith. [6061

HUMBER, 1913, 2¾h.p. twin lightweight, 3-speed, free engine, excellent condition throughout, engine just overhauled; £25.—The Morris Garages, Oxford. [X3898

HUMBER, 1912, 2h.p. lightweight, tank controlled magneto, B. and B. carburetter, excellent condition; £15.—P. J. Evans, John Bright St., Birmingham. [6197

HUMBER, new June, 1915, and 20 gns. Bramble sidecar; cost £92, will accept nearest £70; perfect condition, only done 650 miles, 4h.p., water-cooled. —27, Waterloo Bridge, London. [X3358

3½h.p. Humber and sidecar, 2 speeds, free engine, handle start, front and rear lamps, generator, good order; £20; take gent's cycle or typewriter in part payment.—119, St. Alban's Rd., Watford. [X4034

Indian.

INDIAN 3½h.p. Twin, new, but shop-soiled; £55.—Dan Guy, Weymouth. [6109

1915 7h.p. Indian, little used, all spares; £50.—A. J. Young, Newmarket. [5596

1913 Red Indian Combination, spring frame; what offers?—230, Archway Rd., N. [6126

INDIAN, 1915, 5h.p., 3-speed, all accessories, as new; £60.—Marston, 26 and 31, Bridge St., Chester. [X4014

INDIAN, 1915, 7h.p., 2-speed, lamps, horn, etc., done only 600 miles; £58 cash.—Hayward, New St., Ashford, Kent. [6031

1915 Indian, 5h.p. twin, clutch, 3-speed, kick starter, not done 400 miles; £60.—2, Manor Park Crescent, Edgware. [5951

1913 Indian, 7-9h.p., and sidecar, perfect condition; bargain, £37, or nearest.—Pooley, 1, Westdale Rd., Forest Hill. [6287

INDIAN, Hendee Special, with splendid coachbuilt sidecar, electric lights, horn, starter; £54.—224, Belgrave Gate, Leicester. [X3891

1913 2-speed Indian and sidecar, with all accessories; £40, a bargain, or easy payments. —Jones, The Broadway, Muswell Hill. [5523

INDIAN Combination, 1913-14, 7-9h.p., beautiful turnout, fully equipped; £48; exchanges entertained.—Speechley, 45, Church Rd., Acton. [6292

INDIAN, 1914, 7-9h.p., standard, sidecar, mileage 2,000 only, running perfectly, insured till March; £65.—Indian, H.M.S. Yarmouth, c/o G.P.O. [5582

INDIANS!—Now in stock for immediate delivery the 1915-1916 models B and C, 3-speed.—Alexander's, 115, Lothian Rd., Edinburgh. Easy payments. [5146

INDIAN Combination, 1915, 7h.p., racing model, free engine, tyres as new, electric lights, spares; £65.—97, Gartmoor Gardens, Southfields Station. [6263

INDIAN, 1915, 7h.p., and coachbuilt sidecar, full electrical equipment, 3 speeds, clutch, and kick starter; £75.—P. J. Evans, John Bright St., Birmingham. [6194

INDIANS, models B and C delivered from stock; exchanges, deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [6334

1915 7h.p. Indian, T.T., electric front and rear lamps, Stewart trip speedometer, Lucas horn, done 1,600; £50.—E. Wilga, 15, Adam St., Portman Square. [5968

1914 7-9h.p. Indian, 3 speeds, coachbuilt sidecar, electric lamps throughout, speedometer, accessories, perfect condition; £65.—R. E. Jones (Garages), Ltd., Swansea. [0735

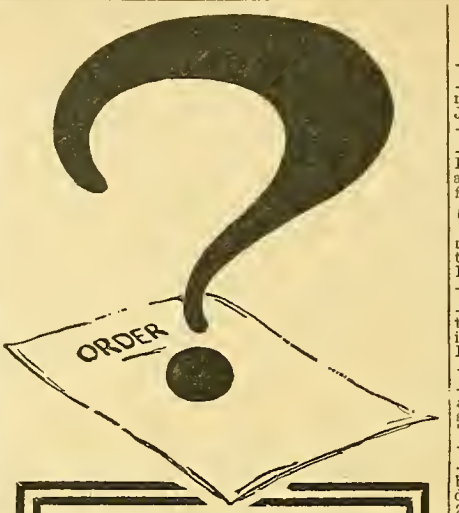
7h.p. Indian 1915 Millford Sidecar Standard Combination, electric lighting set, kick starting, complete, as new; £80.—Box L5, *The Motor Cycle* Offices, 20, Tudor St., E.C. [5911

INDIAN 1914 7h.p. Coachbuilt Combination, 2-speed, clutch and starter, electric lamps, horn, also speedometer, thoroughly sound; £58.—P. J. Evans, John Bright St., Birmingham. [6195

1915 Indian, 7-9h.p., T.T., clutch, done only 1,500, electric front and rear lamps, Stewart trip speedometer, Lucas horn, spares; £50.—Wilga, 15, Adam St., Portman Sq., London. [X4071

1914 Hendee Special Indian, 7-9h.p., 2-speed, electric lighting and starter, Millford 22 gn. sidecar, speedometer, accessories; absolute bargain, £55.—34, Ashvale Rd., Tooting. [5947

INDIAN, 1914, 7h.p., clutch, T.T. model, B160 saddle, good lamp, rear lamp, horn, tyres, nearly new condition, engine guaranteed; £42/10.—Robinson's Garage, Green St., Cambridge. [6867



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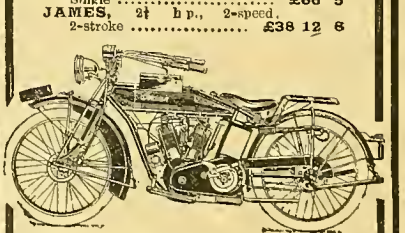

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Indian.

INDIANS B, Indians C, and Indians D, all in stock ready to drive away, red sidecars to match.—Birmingham and Midland distributing agent, P. J. Evans, John Bright St., Birmingham. [6191

BEST Bargain Ever Offered.—7-9h.p. Indian, 1914, kick starter, electric light and horn, new tyres, De Luxe coachbuilt sidecar, 3 lockers, all tools, etc.; any trial; £54 for quick sale.—H. Millard, Esq., Chesterfield. [X3864

7h.p. Indian 1915 New Combination, complete with de luxe sidecar, electric lighting set; £94/10; immediate delivery from stock; cash, exchange, or extended payments arranged.—Wauchope's, 9, Shoe Lane, London. [6317

INDIAN, 1915, 7-9h.p. model C, coachbuilt combination, 3-speed gear, clutch, and kick starter, electric head, rear, and horn, Corbin-Brown, under 3,000, in excellent condition; 70 gns.—J. H. Dorrington, Scot's Hall, Westleton. [X3850

1916 7h.p. Indian, spring frame, 3-speed, electric lighting, speedometer, etc., absolutely in stock, £78; 1916 5h.p. 3-speed model in stock, the solo or sidecar machine, £70.—Julian, Broad St., Reading. 'Phone: 1024. [X3145

1914 7h.p. 2-speed Indian, electric self-starter, lamps fitted with electric light, splendid Indian coachbuilt sidecar, with electric light attached, machine only done 600 miles; £65.—Box L33, *The Motor Cycle* Offices, 20, Tudor St., E.C. [6012

1914 Indian, 7-9h.p., twin-cyl., 2-speed, attachments for sidecar, just overhauled throughout, splendid condition, speedometer, and accessories; price £60, or near offer.—Lieut. E. C. F. Lowthorpe-Lutwidge, 3rd Border Regiment, Shoeburyness. [X3016

5h.p. 1915 Indian, model B, 3-speed, absolutely unscratched, new in October, and not covered 100 miles; owner joined forces; for quick sale will accept £60; money returned if not as stated.—Seen at Alexander's, 115, Lothian Rd., Edinburgh. [5974

1914 7-9h.p. Indian, 2-speed, clutch, kick start, electric lighting set, Corbin-Brown speedometer, new anti-skid Kempshall tyre on back wheel, in excellent condition; £50.—Apply, 2nd-Lieut. W. C. Farnsworth, 26th Manchester Regt., Prees Heath, Whitchurch. [6286

5h.p. Indian, £50; 2-stroke Calthorpe, £32; 2-stroke Hockley, £28. These machines are the latest, and in spotless condition, having been only used for test runs; they are fitted with Binks carburetters, and are better than brand new, and worth from £5 to £10 more in a shop. Good opportunity of securing specially good machines.—Charles Binks, Phœnix Works, Eccles. [6049

INDIAN, model C, 1915½, 7h.p., 3-speed, spring frame, very latest model, new in September, and only used 76 miles in a few demonstration runs, specially tuned engine, all as new, complete electric equipment and speedometer; £66, no offers; a very special chance of securing a special and practically new machine at a bargain price.—Alexander's, 115, Lothian Rd., Edinburgh. [5973

Ivy.

1915 Ivy, 2-stroke, splendid order; £24, or nearest offer.—Davies, Alma Cottage, Maesgwyn Rd., Wrexham. [X3953

IVY 1915 2½h.p. 2-stroke Lightweight, complete with lamp and horn, used one month, and as new; £25; going on service.—Rev. Rees, c/o Layton's Garage, Bicester, Oxon. [X3987

Ixion.

IXION, 2¾h.p., Hellesen ignition, new back tyre, lamp, horn, etc., good running order; £8.—C. Marks, Shrawley, Worcester. [X4026

1914 Ixion, 2½h.p., 2-stroke, Lucas lighting set, new Palmer cord tyre, horn, spare belt, tools; £20.—Albinson, Cowhill, Werneth, Oldham. [X4116

IXION 2-stroke, 2½h.p., 2-speed, done 150 miles only, unscratched, and absolutely as new; any trial; accept £29/10; wonderful climber, and fast; good reason sale.—Norman Hunt, Tenbury, Worcs. [X3802

James.

1915 4¼h.p. James, 3-speed countershaft; 63 gns.—Parker and Son, St. Ives, Hunts. [6266

1915 James Canoelet Sidecar, slightly shop-soiled, 10 gns.; wicker sidecar, £3.—Cross, Agent, Rotherham. [X3992

JAMES, 1915, 4¼h.p., 3-speed, with all accessories, Gloria sidecar, engine faultless, guaranteed; £65. —Dan Guy, Weymouth. [6103

JAMES, 4¼h.p., 3-speed countershaft, sidecar and apron, £81/6/6; 2-stroke 2-speed model, £38/11/9; just delivered.—Dan Guy, Weymouth. [6105

JAMES FRYER, Ltd., Leominster, have in stock for immediate delivery new B.S.A. model K motor cycle, 4¼h.p., just delivered from works; price £62 each. [6009

JAMES, 2¼h.p., 2-stroke, 2-speed; £38/12/6; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [6336

JAMES, 1915, 4½h.p., 3-speed countershaft gear, clutch and kick starter, chain drive, Canoelet sidecar, with Lucas electric lighting outfit, Lucas electric horn; £90/15.—Colmore Depot, 261, Deansgate, Manchester. [0674

MOTOR CYCLES FOR SALE.

Rex.

3½h.p. 2-speed Rex, Bosch, B. and B., new Dunlops; will take sidecar; £18.—69, Old Church Hill, Chingford. [6000

REX, 2¼h.p., Simms-Bosch mag., B. and B. carburetter, splendid condition; £7/10.—Bonner, Corporation St., Nuneaton. [X3768

3½h.p. Rex, 2-speed, handle-starter, Bosch, Amac, Whittle, lamp, perfect order; £16; enamelled grey.—Railway Garage, Staines. [5917

REX 5h.p. Twin, 1911-12, with sidecar, recently overhauled, tyres, belt, etc., new; £27, bargain.—Sense, 381, Battersea Park Rd., S.W. [5980

REX 6h.p. 2-speed Coachbuilt Combination, delivered August, 1915, only done 150 miles; cost £77/10, accept £58/10.—Collier, Deal St., Halifax. [0706

REX, 6h.p., 1911, cane sidecar, perfect, £23; Clincher de Luxe cover, 26×2½×2¼, 25/-; tube, 5/- (both new); auxiliary arm, 4/-.—7, Hawarden Av., Whalley Range, Manchester. [X4115

1913 6h.p. Twin Rex Combination, new July, 1915, complete with lamps, horn, speedometer; cost £69/10; owner enlisted; accept £48, lowest.—C.C.R. Motor Works, 2, St. Ann's Well Rd., Nottingham. [X3887

1913 6h.p. Rex Combination, 2-speed gear, wind screen, new Dunlop belt, and Sunstone rear tyre, in excellent condition, also well made shed for same; £36 the lot.—Ornbum, Regent Rd., Horsforth, Leeds. [6217

1914 Rex, 6-8h.p., countershaft 3-speed, chain drive (new August, 1915), extra large cane sidecar, hood, side curtains, screen, perfect; £75 cash, cost £110, all accessories.—Box 9,623, *The Motor Cycle* Offices, Coventry. [X3809

Rex-Jap.

6h.p. Rex-Jap and sidecar for sale, late 1914, climb anything; any trial given; owner bought car; £60, or offers.—Dennis, Royal Standard Hotel, West Bar Green, Sheffield. [X4053

A BARGAIN.—Rex-Jap, 6h.p., 3-speed gear, complete with coachbuilt sidecar, glass screen, in splendid condition, not been run above 200 miles; £65.—Arthur Dyas, 81, Grimsby Rd., Grimsby. [5565

REX-J.A.P., latest 1915 model in stock for immediate delivery, countershaft 3-speed gear, chain drive, kick-starter, £75/12; sidecar, 16 gns.—The Premier Motor Co., Aston Rd., Birmingham. [X4124

Rover.

ROVER, 3½h.p., clutch model, perfect; £38.—Marston, 26 and 31, Bridge St., Chester. [X4016

1915 T.T. Rover, accessories, grand condition, very fast; accept £45.—Lieut. Tait, Durham L.I., Fovant. [6036

ROVER, 1914, 3½h.p., 3-speed, head and tail, and horn, with canoelet sidecar; £45.—Dan Guy, Weymouth. [6100

1913 Rover, 3½h.p., 3-speed, clutch, and sidecar, excellent condition, lamps, etc.; £38.—27, Kirkstall Rd., Hunters Bar, Sheffield. [X4054

ROVER, 1913½, 3 speeds, with Rover coachbuilt sidecar, 3 lamps, Cowey trip, mirror, lot of spares, etc.; £42; would separate.—7, Vale Terrace, King's Rd., Chelsea. [X3895

1914 Rover and sporting sidecar, bought in 1915, 3-speed and free engine, complete with lamp, horn, and full complement of spares: £45.—Strong, Acton, London. [6250

ROVER, 1913, 3-speed and free engine model, fitted with a Rover coachbuilt sidecar; the combination complete, including accessories; 40 gns.—Wauchope's, 9, Shoe Lane, London. [6321

ROVER, 1915, new, 3½h.p. T.T. models, in stock, with hand-controlled Philipson pulley; £56; exchanges or extended terms.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0491

1915 Rover, fitted with variable gear pulley, T.T. roadster model, in condition good as new, Palmer tyres, and all accessories, etc., complete, 40 gns.; guaranteed; opportunity.—Wauchope's, 9, Shoe Lane, London. [6329

ROVER, 1914, 3½h.p., 3-speed, free engine model, perfect condition, just overhauled, heavy Dunlop tyres, complete with horn, spare belt, tyre, valve, plugs, and all accessories, grand machine; £38.—Drake, 29, Railway St., Beverley. [X3910

ROVERS.—Immediate delivery all models, 3½h.p. sporting models, with Philipson pulley, de luxe coachbuilt combination, and 3-speed countershaft models.—P. J. Evans, controlling Birmingham and district agent, 87-91, John Bright St. [6196

Royal Ruby.

ROYAL Ruby, with Millers lamp set, new 6 weeks ago; £25.—Chilton, High St., Wetford. [X4046

ROYAL Ruby 2-strokes, 2½h.p. Villiers engine; £29.—Immediate delivery at Alexander's, 115, Lothian Rd., Edinburgh. [5151

ROYAL Ruby, 1914 model, 2-stroke, 2-speed, Villiers engine, Amac carburetter, done less than 500 miles, new tyres; £20.—Southern Motor Garage, Bromley Rd., Catford. [6154

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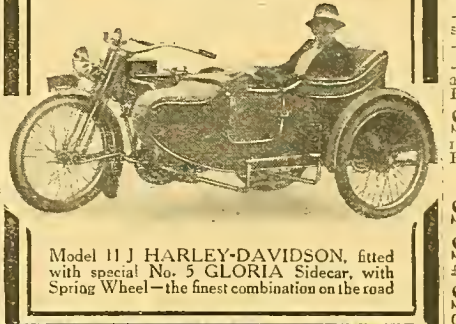

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MOTOR CYCLES FOR SALE.

Rudge.

1912½ Rudge, free engine, mag., 1915 piston; £2—Young, Hazeldene, Lancing, Sussex. [X4074

RUDGE, special T.T. model, lamp and horn; £36—Marston, 26 and 31, Bridge St., Chester. [X4007

1913 3½h.p. Rudge, N.S.U. 2-speed, cane sidecar, owner at Front; £32.—Langan, 292, Kingsland Rd., London. [X4058

1912 3½h.p. Rudge, free engine; £27; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0724

1912-13 Rudge Multi, splendid condition, tyres as new, spares, lamp, horns; £32.—Talbot, 43, Westville Rd., Cardiff. (D) [X3957

RUDGE Multi, 1913, excellent condition, speedometer, spare tube and belt, all accessories; £33, or nearest.—Young, 10, Apsley St., Glasgow. [5941

RUDGE, free engine, new cyl., piston, roller connecting rod, etc., just fitted by makers, tyres and belt as new; £26.—Savage, Hykeham Rd., Lincoln. [X4091

RUDGE, 1913, 3½h.p., free engine, excellent condition, new Dunlop belt, lin.; £32; will ride 50 miles to purchaser.—E. Berry, 137, Adnitt Rd., Northampton. [X3858

T.T. Rudge Multi and Henderson sidecar, 1915, Isle of Man model, complete with speedometer, lamp, and horn, very fast; any trial; as new; £55.—C. L. Naylor, The Bungalow, Millhouses Lane, Sheffield. [5998

RUDGE Multi, 1915, Isle of Man T.T. model, in splendid condition, large Lucas lamp set, speedometer, horn, rear light, spares; bargain, £50. Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0552

RUDGE Multi (1914), 3½h.p., and coachbuilt sidecar to match, all tools and accessories, horn, lamps head and tail, separate generators, and speedometer, practically new, only used 3 months; owner with forces; complete, £55 cash (cost £84).—Clayton, Redclyffe, Eccles, near Manchester. [X3912

Scott.

1913 Scott Combination, 2 speeds, canoelet, powerful; £38.—53, Brownhill Rd., Catford. [6212

SCOTT, latest semi T.T. model, in stock; £71/10.—Marston, 26 and 31, Bridge St., Chester. [X4005

SCOTT, 1912, variable B. and B., T.T. bars (no lamps); £24.—1, Heath Gardens, Twickenham, Middlesex. [6276

SCOTT Motor Cycle, 1913, good running order, new tyres; £30.—Lister-Kaye, Stoborough, Wareham. [6054

SCOTT, semi T.T., 1914, lamp, generator, horn, tools, spare inner tube; £44.—Lieut. Butler, Bristol Huts, Luton. [6079

SCOTT and Canoelet, in good order, lamps, horn, speedometer, and spares; £35.—Watson, Hasling-field, Cambs. [X2503

SCOTT, 3¾h.p., 2-speed, kick starter, perfect throughout; would exchange for lightweight and cash.—Gorton, Evelith Mill, Shifnal, Salop. [X4048

SCOTT, 1910, later improvements, little used, sound condition, tyres as new; £22, or consider exchange.—51, Gilpin Av., East Sheen, S.W. [X4056

SCOTT 3¾h.p. 1913-14 Coachbuilt Combination, countershaft 2-speed, water-cooled, kick-starter, Binks, Lucas lamps, mirror, speedometer, new tyres, condition perfect; any trial; 48 gns., or exchange for high-powered 1914-15 Indian, A.J.S., or Sunbeam combinations, cash adjustment.—Harding, Church St., High Wycombe. [6089

Sheffield Minor.

SHEFFIELD Minors.—Immediate delivery of this exceptionally fine 2½h.p. 2-stroke single-speed, 28 gns.; 2-speed, 33 gns., including 1916 improvements.—Colmore Depot, 31, Colmore Row, Birmingham. [X2340

Singer.

SINGER Lightweight, just overhauled, perfect order; bargain, 12 gns.—Fox, Naughton, Lattice Barn, Ipswich. [X3764

1912 2¼h.p. Singer Lightweight, in perfect order; cheap, £10; first cheque.—H. Bellwood, Victoria Rd., Scarborough. [5950

1913 Singer, 2¾h.p., 2-speed, clutch, kick-start, lamp, etc., in excellent condition; £28.—Watson, 14, Gleneldon Mews, Streatham. [6150

1912 Singer, 4h.p., 2 speeds, head lamp and tail light, horn, new Palmer cords, new Dunlop belt, and full kit of spares; £22.—Gordon Warr, Hindhead, Haslemere, Surrey. [5987

SINGER, 2¼h.p., late 1913, Stoneheage and Palmer cord tyres, almost new, exceptionally lively and reliable mount, splendid condition; £25.—Corfe, 169, High Rd., Tottenham. [5942

Sparkbrook.

SPARKBROOK, 2-stroke, 2-speed gear, new, in stock; £40.—Dan Guy, Weymouth. [6108

SPARKBROOK, 1915, 2¾h.p., 2-speed, 2-stroke, run 70, unscratched, absolutely perfect in every way; £32.—Webb, Belmont, Surrey. [6024

SPARKBROOK, 2¼h.p., 2-speed, 2-stroke; £40; actually in stock.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0563

MOTOR CYCLES FOR SALE.

Sun.

2½h.p. Sun-Villiers, 1914, 2-stroke, like new; £22.—Wallis, Motors, Hereford. [6116

SUN-VILLIERS, 2½h.p., 1915, go anywhere, accessories; £22.—Evins, 34, Abbey Rd., Torquay. [X4083

SUN-VILLIERS, 2-speed, T.T., nearly new; snip; £25.—Bartter, St. James' Rd., Kingston-on-Thames. 'Phone: 1701. [6261

SUN, V.T.S., 2-stroke, 1915, complete, new condition; £24.—Seen at Crofts Bros., 499, West Derby Rd., Tue Brook, Liverpool, any time. [X3797

1914 Sun Villiers 2-stroke, 2-speed model, thoroughly overhauled, and new tyres; £26.—Watson, 14, Gleneldon Mews, Streatham. [6152

Sunbeam.

NEW 1915 3½h.p. Sunbeam; immediate delivery, as list.—Rice Bros., Horsham. [5979

SUNBEAM, 70 gn. model; immediate delivery; exchanges invited.—Bunting, Harrow. [X4057

3½h.p. 1916 T.T. Roadster Sunbeam in stock.—A. J. Young and Co., Ltd., Newmarket. [5595

SUNBEAM, 1916, 3½h.p., just delivered; £73/10.—Coldham, Sunbeam Agent, Northampton. [X3995

JUST Delivered, 1916 3½h.p. Sunbeam, 70 gns.—Arthur Dyas, 81, Grimsby Rd., Grimsby. [5567

SUNBEAM, 6h.p., 1914, Millford sidecar, in exceptionally good condition; £75.—Newton, Cromford, Matlock. [X3020

A BARGAIN.—3½h.p. Sunbeam, in perfect condition, like new; £55.—Arthur Dyas, 81, Grimsby Rd., Grimsby. [5566

SUNBEAM, 1914, 3½h.p., 3 speeds, clutch, kick starter, excellent condition; £48.—P. J. Evans, John Bright St., Birmingham. [6198

SUNBEAM, September, 1914, 3½h.p., 3-speed, with cane sidecar, perfect condition; £55.—Particulars from Webb, Glasbury, Redditch. [X4038

1914 6h.p. Sunbeam Combination, Lucas lamps, horn, speedometer, new Kempshall, many spares; £85.—Manager, Theatre, Hawick. [6053

SUNBEAM, 1915½, 3½h.p., 3-speed, handle-bar clutch, kick-starter, lamp, horn, speedometer; £60.—Naylor, Leahaven, Kidderminster. [6148

SUNBEAM Sidecar Combination, 3½h.p., 3-speed, speedometer, lamps and horn, suit of overalls; £68.—Marston, 26 and 31, Bridge St., Chester. [X4015

SUNBEAM, 1914½, 3½h.p., fine condition, lamps, horn, speedometer, all complete, mileage only 2,700; £49.—100, or 162, Queen's Rd., Dalston, N.E. [6207

SUNBEAM, 1915, 3½h.p., 3-speed, Lucas £3/10 head light, Lucas 21/- horn, and tail lamp, very little used, guaranteed; £62.—Dan Guy, Weymouth. [6099

SUNBEAM, August, 1914, 3½h.p., 3-speed, Cowey, Lucas lamps, excellent condition, guaranteed perfect; 50 gns.—Rich, Victoria Rd., Horley, Surrey. [6200

3½h.p. Sunbeam, 3-speed, 1914½, lamp, horn, spare touring bars, footboards, links, valve, tools, new Binks, new covers, excellent condition; 55 gns.—Lewis, Garth, Llanelly. [X4033

SUNBEAM, 1916, 3½h.p., in stock, 3-speed, chain drive, brand new; £73/10; trade not entertained.—Cambridge and district agents, Robinson's Garage, Green St., Cambridge. [6866

1915 3½h.p. Sunbeam, 3 speeds, free engine clutch, fitted Stewart speedometer, Millar lamps, long horn, all in black finish, done 2,500 miles, no trouble, no punctures; view Continental Garage, High St., Bloomsbury; owner going foreign service; price £60.—J. Murray, Shaftesbury Hotel, St. Andrew St., W.C. [6014

SUNBEAM, 1915 model, 3½h.p., countershaft 3-speed gear, and free engine model, been used but little and carefully, includes speedometer, Lucas lighting set, Lucas horn, complete set of tools, and some spares, condition as good as new; £68; unprecedented opportunity; first cheque secures.—Wanchope's, 9, Shoe Lane, London. [6322

T.D.C.

3½h.p. T.D.C., 3 speeds, conchbuilt sidecar; cost £66, very little used; bargain, £44.—Parker, St. Giles, Oxford. [X3758

Triumph.

1915 Triumph Junior, 2-speed, perfect; £34.—53, Brownhill Rd., Catford. [6209

1915 4h.p. Triumph, all accessories; offers over £60.—53, Brownhill Rd., Catford. [6210

2½h.p. Triumph, new mag., B. and B., low; £10; photo.—114, Cowper St., Luton. [X3352

TRIUMPH, 1914, 4h.p., 3 speeds, clutch, Philipson pulley; first cheque £41.—Rumbold, Swanage. [5984

1909 3½h.p. Triumph, good order; £20; exchange entertained.—53, Brownhill Rd., Catford. [6215

1913 Triumph, 3 speeds, all accessories, splendid condition; £37.—Earl, 5, Heath St., Hampstead. [X4077

TRIUMPH, clutch model, 1911-12; £28; photo, particulars.—142, Lowe St., Wolverhampton. [6166

TRIUMPH, 1907, 2-speed gear, with sidecar; £22/10; running well.—Wanchope's, 9, Shoe Lane, London. [6323

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TRIUMPH, 3½h.p., 2-speed, free engine, in very good condition; owner enlisting; £30.—Green, Shefford, Beds. [5955

1912 Triumph and sidecar, good condition, complete; £25, offers.—Hedley L. Cole, Witney, Oxon. [X3804

3½h.p. 1912 T.T. Triumph, excellent condition, will do 60; trial; £26.—Davis, 4, Mountjoy Rd., Newport. [X4055

1915 Triumph Junior, little used, and in lovely condition; £36.—Crow Bros., 190, High St., Guildford. [6130

TRIUMPH, 1908, single gear, engine excellent, had very little use; £16/10.—Coombes, Builder, St Helens, Ryde. [X4111

TRIUMPH, 1911, perfect condition guaranteed, tyres nearly new, spare cover and tools; £20.—6, Norfolk Rd., Dorking. [X3838

TRIUMPH, 1912¾, free engine, very good condition, very fast, new tyres; £33.—Lt. Wanklyn, Polo Ground, Canterbury. [X4027

TRIUMPHS.—1912 free engine model, good condition, £28; 1913 3-speed model, overhauled, £36.—Nelson, Agent, Rhyl. [X3869

TRIUMPH, 3½h.p., engine sound, countershaft variable gear, and F.E., exhaust extension; £28.—Clark, Thames Haven. [6005

TRIUMPH, 1911, free engine, new tyres, engine rebushed, F.R.S. lamp, numerous spares; price £23.—Monteith, Dalkeith. [X4136

TRIUMPH, 3½h.p., 1913, clutch model, new Dunlop back, spares and tools; £30.—2nd Lieut. Jacobs, The Castle, Monmouth. [X3905

TRIUMPH, 1914, 3-speed, Bramble coachbuilt sidecar, perfect condition; £50.—Seen, Stag Motor Works, East Finchley. [6248

1914 4h.p. T.T. Triumph, 3-speed, F.E., nearly new tyres, in splendid condition; £40.—Barker, Starling's Bridge, Hitchin. [6204

TRIUMPH Junior, 1914½, absolutely perfect condition, has run 800 miles; £30 cash.—Wilfrid Robinson, Stainley, Rochdale. [6188

1912 Triumph, 2-speed gear and clutch, with lamp set and hooter, very fast and powerful; £28/10.—Chilton, High St., Watford. [X4045

1913 3½h.p. Triumph, clutch, nearly new Palmer cord tyre and Dunlop belt; £30.—Cleaver, Ballard Coombe, Kingston Hill. [6077

1912 Triumph 2-speed and F.E., good condition, accessories and spares; £25.—Box No. 9,630, *The Motor Cycle* Offices, Coventry. [X4029

4h.p. Triumph, 1914, 3-speed, Gloria sidecar, perfect condition; any trial; £52/10.—Ireland, Sankey, Warrington. 'Phone: 8 Penketh. [X3799

TRIUMPH, 1914, 4h.p., 3-speed, tip-top condition, and thoroughly recommended, lamps, horn, and sidecar; £50.—Dan Guy, Weymouth. [6101

TRIUMPH, 4h.p., 3-speed, late 1914, not done 1,000 miles, all accessories; £50; exchange Zenith.—Bargrave Gray, Halgate, Doucaster. [5959

TRIUMPH, 1914¾, 4h.p., 3 speeds, Gloria sidecar, all accessories, 900 miles, condition as new; £65.—Rogers, 42, Church Rd., Hendon. [6075

TRIUMPH, 1914¾, 4h.p., run 700, top hole condition, exceedingly fast, perfect condition throughout; £40.—5, Parade, Belmont, Surrey. [6023

1914 4h.p. 3-speed Triumph, only run 1,500 miles, speedometer, lamp, horn, condition as new; £48.—Apply, Brook, Motors, Burnham, Somerset. [5965

1914¾ Triumph, 4h.p., 3-speed, tyres, plating, etc., as new, all accessories, spares, powerful, reliable; 42 gns.—Bandmaster, Seaforths, Cromarty, N.B. [X3765

TRIUMPH Junior, 1915, completely equipped, as new; £40, cost £49.—Arthur Mylam and Co., 197, London Rd., W. Croydon. 'Phone: 2379. [6270

TRIUMPH, 1913¾, clutch, P. and H. lamp, rear lamp, perfect condition, well cared for, run 2,000, equal new; nearest £35.—Webb, Belmont, Surrey. [6022

TRIUMPH, 1914, 4h.p., 3-speed, Canoelet coachbuilt sidecar, Lucas lamps and horn; £52.—The Premier Motor Co., Aston Rd., Birmingham. [X4125

TRIUMPH, late 1914, semi T.T., 4h.p., 3-speed, clutch, engine just overhauled, excellent condition, very fast; £46.—Tolley, Naval Air Station, Hendon. [X3700

1915 3-speed Countershaft Triumph, model H, torpedo sidecar, accessories, ridden a few miles only; offers wanted.—Willson, 22a, Prince's Sq., Bayswater. [6091

12½ Triumph, 3½h.p., clutch model, and N.S.U. 2-speed, 1915 C.B. sidecar, lamps, accessories, tools, spares, perfect; bargain, £38.—Pinn, 764, Fulham Rd., London. [6136

1913 Triumph, 3-speed, in really magnificent condition, large tyres, Lucas head light, horn, all perfect, unscratched; 36 gns.—Julian, Broad St., Reading 'Phone: 1024. [X4119

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1913 3½h.p. 3-speed Triumph, with Canoelet coach-built sidecar; £50, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0734

1913 3-speed Triumph, with brand new 17 gn. Gloria sidecar, luggage rail, all accessories, perfect; £50, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0720

TRIUMPH, 1914, 4h.p., 3-speed and clutch, pedal start, model C, Lucas lamp set, horn and tools, splendid order; £42/10.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0597

TRIUMPH, 3½h.p., 3-speed, new 1914, 2¼in. Dunlops this season, touring and semi-T.T. bars, Lucas lamps, and all accessories; £42.—Box 9,631, *The Motor Cycle* Offices, Coventry. [X3991

1913 Triumph, 3½h.p., Sturmey-Archer 3-speed, fitted with Mills-Fulford coachwork sidecar, £48; 1914 Douglas T.T. motor cycle, good condition, £42.—The Alsager Garage, Crewe Rd., Alsager. [X3807

1911 Triumph, N.S.U. 2-speed, new piston and Binks 3-jet carburetter, in fine condition, just overhauled, with lamps and horn; £27, or exchange lightweight.—Harbley, Rylstone St., Keighley. [X3894

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1913 Triumph, 3½h.p., Sturmey-Archer 3-speed, fitted with Mills-Fulford coachwork sidecar, £48; 1914 Douglas T.T. motor cycle, good condition, £42.—The Alsager Garage, Crewe Rd., Alsager. [X3807

1914 Triumph, 4h.p., 3-speed, all accessories, Watsonian coach sidecar, done under 250 miles, new condition; trial by appointment; £50.—L. Fletcher, Parklands, Sydenham. 'Phone: Battersea 2276. [X3849

TRIUMPH, 1914, Sturmey-Archer 3-speed, new heavy Dunlop back, Palmer front, Dunlop belt, B170 saddle, general condition excellent, engine guaranteed; £42/10.—Robinson's Garage, Green St., Cambridge. [0612

1915 Triumph, countershaft gear, mileage about 3,500, lamp, horn, speedometer, excellent condition, with light sidecar; £60; owner going on active service.—Box 9,621, *The Motor Cycle* Offices, Coventry. [X3771

TRIUMPH, 3½h.p., 1911, belt and tyres as new, Bosch mag., overhauled, new piston June last, receipts shown, adjustable pulley, lamps, and tools; joining up; £22/10.—Webb, 75, Tubbs Rd., Willesden, N.W. [6120

1911 Triumph, free engine, thoroughly overhauled by makers last month, speedometer, F.R.S. lamps, Dunlop extra heavy tyres unscratched, only used weekends, perfect condition; £30.—Wright, 108, Plymouth Place, Leamington. [X4093

1913½ 3½h.p. Triumph, 3-speed, Senspray carburetter, Badcock by-pass, Canoelet sidecar, wind screen, luggage grid, 3 electric lamps, battery, perfect condition; £46.—Schofield, 123, Northumberland Rd., Old Trafford, Manchester. [X3860

TRIUMPH, 4h.p., 3-speed, complete with excellent coachbuilt sidecar, lamps, horn, speedometer, whole combination new April, 1915, and as new, thoroughly genuine, and guaranteed throughout; £60, or near offer.—Tollady, Hemingford, Bicester. [X3949

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TYLER 2-strokes, 2½h.p., 2-speed; £33/1/6.—In stock at Alexander's, 115, Lothian Rd., Edinburgh. [5156

2½h.p. Tyler, 2-stroke, 2-speed, 1915 model, complete, with all accessories; £27/10.—Wauchope's, 9, Shoe Lane, London. [6324

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VELOCETTE.—All models in stock, from £28.—Marston, 26 and 31, Bridge St., Chester. [X4003

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V.S., 5-6h.p., 2-speed, F.E., and sidecar, first-class order and condition; £27/10, or exchange for lightweight and cash.—Scovell, Yateley, Hants. [6039

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WILLIAMSON, 1914, 8-10h.p., 2-speed, water-cooled, 2-seat, sidecar, perfect; £75.—Nesma, 7, Exhibition Rd., South Kensington. [6142

Win-Precision.

WIN-PRECISION, 1914, and sidecar, coachbuilt, 3¾ h.p., 3-speed, Dunlops, excellent condition; £33.—Welch's, 48, Evering Rd., Stoke Newington. [6068

WIN-PRECISION, 1913, 4¼h.p., 2-speed, clutch, free engine, handle-start, good condition, fast, lamp, horn; £25; after 7 o'clock.—Amos, 84, Hayter Rd., Brixton. [X3927

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WOLF-J.A.P., 2½h.p., 2 speeds, accessories, practically new; 24 gns.—13b, Elgin Crescent, W. [6096

1914 Wolf 2½h.p. Lightweight, 2-speed, good condition; accept £22.—Bennett, Holly Bank, Longstone, Bakewell. [X3851

WOLF-J.A.P., 1914, 4h.p., 3 speeds, free engine, clutch, Dunlops, perfect order; £44.—James, Grocer, Treforest. [5996

WOLF, 2¾h.p., 1916 model, just delivered, 2-speed, 2-stroke, kick-starter, hand controlled clutch; £36/19/6; exchanges or deferred payments.—Eagles and Co., High St., Acton, W. [X3933

2½h.p. Wolf Models, 1915, delivery from stock of 2½h.p. J.A.P. engine, 2-speed gear, £37/4; 2-stroke 2-speed models, £32/11/9; single speed models, £25/6/3; cash or extended payments.—Wauchope's, 9, Shoe Lane, London. [6325

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YALE Motor Cycle, 8h.p., with coachbuilt sidecar, also 6 gn. insurance policy transferable, quite new, cancelled by customer through unforeseen circumstances, original price £90, to clear 70 gns.—Jones, Broadway, Muswell Hill, London. [X3062

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3¼h.p. Zedel, 1914, U.H. mag., B. and B., and Chater frame, semi T.T. bars, thoroughly re-bushed; £19; after 8.—13, Arklow Rd., New Cross, S.E. [6078

2¾h.p. Zedel, Bosch, B. and B., adjustable pulley, low, fast, mechanically sound; photo, particulars; must sell; £12, or offers.—7, Millar St., Crieff [X3983

Zenith.

ZENITH 3½h.p. Twin, new, in stock; £60.—Dan Guy, Weymouth. [6107

1911 6h.p. Zenith, excellent condition, engineer owned; £32.—Bent, Electricity Works, Canterbury. [X3367

ZENITH, 8h.p., and underslung cigar sidecar, November, 1913; £50.—Bolton, 32, Bowes Rd., Palmer's Green. [5962

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ZENITH-GRADUA, 3½h.p., 1913, and Gloria sidecar; £29, a bargain.—P. Corby, 88a, High St., Merton. [5994

ZENITH-GRADUA, 1912, 6h.p., lamp, horn, perfect condition; £35.—Nesma, 7, Exhibition Rd., South Kensington. [6140

T.T. Zenith, 4h.p., accessories, perfect; £35; or exchange 2-stroke and cash; appointment.—7, Percival Parade, Worcester Park. [6112

ZENITH, 1913, 3½h.p., Gradua gear, wicker sidecar, useful spares; £36, bargain, no offers.—P. A. Duckett, Post Office, Sulham, Berks. [X3993

1913¾ 3½h.p. Zenith, clutch, kick starter, Gradua, Whittle, new Watsonian sidecar, etc., perfect; £55.—Falkus, Melton, Cornwall Rd., Cheam. [5988

1914 Zenith-Gradua, wicker sidecar, lamp, horn, accessories, guaranteed in splendid running order; £20, bargain.—45, Bow Common Lane, Bow, E. [6221

ZENITH, 8h.p. twin, Gradua combination, late 1914 model, run only 2,000 miles, complete with accessories; a bargain, £60.—92, Gloucester Rd., S.W. [5990

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EAGLES.—Chater-Lea, 8h.p., 1912-13, twin, 3 speeds, chain drive, Phœnix £14/14 sidecar, all accessories; £46.

EAGLES.—Calthorpe, 1915, 2¼h.p., 2-stroke model, 2-speed gear, variable mag. control, only used 250 miles, as new; £28/10.

EAGLES.—Douglas, 2¾h.p., late 1914, 2 speeds, fully equipped, new condition; £41/10.

EAGLES.—Any of the above can be had on approval, *The Motor Cycle* deposit system.—Eagles and Co., High St., Acton, W. Tel.: 556 Chiswick. [X3934

MOTOR CYCLES. LIGHT CARS.

LARGEST STOCK IN LONDON.

REY'S

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FOR

NEW IMPERIAL and LINCOLN-ELK MOTOR CYCLES.

SWAN, MIDDLETON, and SCOTT-WESTALL SIDECARS.

New Machines in Stock.

DOUGLAS, Model V, T.T., 3-speed	£52 10
ENFIELD Combination, 5-6 h.p., 2-speed.	£84 0
DOUGLAS, Model W, 2¾ h.p., 3-sp., clutch	£56 14
NEW IMPERIAL-J.A.P., 2½ h.p., 2-speed.	£36 16
NEW IMPERIAL-J.A.P., 2¾ h.p., 2-speed, clutch	£43 1
DOUGLAS, War Office Model	£54 12
SPARKBROOK, 2½ h.p., 2-speed, 2-stroke	£39 12
ZENITH, 4-5 h.p., twin, clutch	£71 12
ALLDAYS Allon, 2-speed, 2-stroke	£38 17

Second-hand Bargains.

1915 **DOUGLAS,** T.T., 2¾ h.p., 2-speed, War Office Model	£47
HENDERSON, 4-cylinder, and Swan Sidecar.	£84
1914 **DOUGLAS,** T.T., 2¾ h.p., 2-speed	£44
SCOTT Combination, 3½ h.p., twin, 2-stroke.	£40
BRADBURY, 6 h.p., twin, 3-speed, shop-soiled	£70
RUDGE, 5-6 h.p., shop-soiled	£45
LITTLE GIANT, 2 h.p., 2-speed, lady's	£25
INDIAN, 7-9 h.p., clutch, T.T.	£43
INDIAN, 7-9 h.p., 2-speed, and coach Sidecar	£60
INDIAN, 7-9 h.p., 2-speed, and torpedo coach Sidecar	£58
LINCOLN-ELK, 2¾ h.p., shop-soiled	£25
LINCOLN-ELK, 3½ h.p., shop-soiled	£30
CLYNO, 3-speed, and coach Sidecar	£58
TRIUMPH, 4 h.p., 3-speed	£44
1913 **ZENITH,** 5-6 h.p., clutch, and Sidecar.	£48
JAMES, 4½ h.p., clutch	£32
RUDGE, 3½ h.p., Philipson pulley	£32
ROVER, 3½ h.p., 3-speed, T.T.	£34
1912 **ENFIELD** 5-6 h.p. 2-speed Combination	£45
TRIUMPH, 3½ h.p., clutch	£30
MOTOSACOCHE, 2½ h.p.	£15
REX, 5-6 h.p., twin, 2-speed, Sidecar	£22

Second-hand Cars.

1915 **A.C.,** Sporting Model	£165
1915 **WHITING-GRANT**	£140
1914 **SINGER,** dynamo lighting	£190
1914 **MORRIS-OXFORD**	£170
1914 **STANDARD**	£185
1913 **MORRIS-OXFORD**	£140
1913 **HUPMOBILE,** touring 4-seater	£160
1913 **FORD,** 4-seater	£75
1913 **SINGER**	£145
BELSIZE, 10-12 h.p.	£75
1915 **HILLMAN** Delivery Van	£172

New Cars.

1915 **SCRIPPS-BOOTH.** Immediate delivery.	
1915 Baby **GRANT,** self-starter and dynamo.	£160
1915 Baby **GRANT,** self-starter and dynamo, shop-soiled	£145
1915 **SINGER,** dynamo.	
1915 Baby **PEUGEOT**	£147
MACKENZIE, 4-cylinder	£185

REY'S

CAR DEPOT:
378, 380, 382, 384, EUSTON ROAD.
'Phone: 4219 Regent.
MOTOR CYCLE DEPOT:
173, Great Portland St.
'Phone: 1970 Regent.

MOTOR CYCLES FOR SALE.

Miscellaneous.

HEBDEN'S have in stock now, and no waiting, first come first served, clearance prices:

1915 Enfields, 6h.p. combination, 3h.p. and 2¼h.p lightweights.

1915 Indian, 7-9h.p., 3-speed, electric head and tail lights and horn, and sidecar fit with hood, screen, luggage grid; old price to clear, offers or exchange.

1915 Imperial-Jap, 2½h.p., 2-speed, brand new, slightly shop-soiled; offers.

1916 Advance Model Imperial Jap, 2½h.p., 2-speed and kick starter, h.b.c. to clutch, variable ignition; 41 gns.

1915 Wolf, Peco engine, 2-speed; £30 to clear.

1915 Wolf, 2½-3h.p., 2-stroke, 2-speed, £28 to clear; Douglas, 2¾h.p., War Office model, in stock, £54/12.

1915 8h.p. Williamson, water-cooled, and sidecar, screen, petrol and oil tin holder, Lucas lamps, 2 horns, guaranteed as new; cost £110, accept £80.

1914 Enfield 6h.p. Combination, lamps, horn, screen, guaranteed; a gift, £59/10.

1914 Enfield 6h.p. Combination, complete; a bargain, £50.

1915 Enfield, 2¼h.p., 2-stroke, 2-speed, complete, lamps, horn, scarcely soiled; £30, a gift.

1914 James, 3½h.p. twin, 3-speed, kick starter, lamp, horn, speedometer, new tyres, as new; £42.

1914 T.T. B.S.A., Lucas lamp, horn, unscratched, very fast, tyres, belt as new; a gift, £40.

1913½ 3½-4h.p. Zenith-Jap, Gradua gear, new back tyre and belt, lamp, horn, speedometer, very fast; a gift, £30.

1912 Humber, 3½h.p., 1914 engine, as good as new; £28, or nearest.

1915 Williamson-Douglas Cycle Car, brand new from works, 3-speed, water-cooled, lamps, horn, complete; any trial; £120, or exchange good sidecar machine, or offers. A few new and second-hand sidecars to clear.

HEBDEN'S Motor Mart, St. James' St., Burnley. Tel.: 488. [5867

WANDSWORTH Motor Exchange.—Easy payment system, quarter down, 12 monthly instalments; exchanges.

WANDSWORTH.—Rudge, 1915, new, 3½h.p., mag., 3 speeds, magnificent machine; £52/10; exchanges.

WANDSWORTH.—American Excelsior 1914 coach combination, 7h.p. twin, mag., speedometer; 49 gns.; exchanges.

WANDSWORTH.—Hobart, brand new, 2-stroke, mag., just delivered from works; 28 gns.; exchanges.

WANDSWORTH.—Clyno, 1915, 2-stroke, 2½h.p., mag., practically new, unscratched; £32/10; exchanges.

WANDSWORTH.—Calthorpe, 1915, 2-stroke, 2½h.p., mag., 2 speeds; bargain, £29/10; exchanges.

WANDSWORTH.—Williamson 1914 coach combination, 8h.p., water-cooled, Bosch, speedometer; gift, £58/10; exchanges.

WANDSWORTH.—Ivy, 1914, 2-stroke, 2½h.p., mag., nice little machine; £23/10; exchanges.

WANDSWORTH.—Bradbury, late, 4h.p., coach combination, mag., 2 speeds; cheap, £32/10; exchanges.

WANDSWORTH.—Hobart, lady's, 1913, 2½h.p., Bosch, 3 speeds, clutch, perfect; £23/10; exchanges.

WANDSWORTH.—Levis, 1914, 2½h.p., 2-stroke, mag., splendid order; only £22/10; exchanges.

WANDSWORTH.—F.N., late, 5-6h.p., T.T., mag., nearly new machine; opportunity, £28/10; exchanges.

WANDSWORTH.—Triumph, with sidecar, 3½-4h.p., mag., 2 speeds, F.E.; clearance, £23/10; exchanges.

WANDSWORTH.—Rex 1913 combination, 6h.p., Bosch, 2 speeds, like new; £38/10; exchanges.

WANDSWORTH.—Kerry-Abingdon, 1911-12, 3½ h.p., mag., 2 speeds, good machine; £23/10; exchanges.

WANDSWORTH.—Rex, 1911, 3½-4h.p., mag., low frame, ready ride away; £15/10; exchanges.

WANDSWORTH.—Wolf lightweight, 1¾h.p., mag., new tyres, runs well; £10/15; exchanges.

WANDSWORTH.—Easy terms.—Wandsworth Motor Exchange, Ebner St., Wandsworth Town Station. 'Phone: Battersea 327. [X3967

IF You Want Bargains in second-hand motor cycles you can get them at Wauchope's, 9, Shoe Lane, Fleet St., London. [5624

MOTOR Cycle, 1915, 6h.p., single speed, brand new; can show receipt for £56, will take £38.—Barnes, 65a, Roseudale Rd., West Dulwich. [X4072

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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Telegrams: "Motorcycle, Coventry."
Telephone: 10 Coventry (five lines).

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Telegrams: "Iliffe, Manchester."
Telephone: 620 City.

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Colonial and Foreign Agents.

United States.—The International News Agency, New York. Canada.—Toronto News Co., Ltd., Toronto; Montreal News Co., Ltd., Montreal; Winnipeg News Co., Winnipeg; British Columbia News Co., Vancouver; Gordon and Gotch, Ltd., 132, Bay St., Toronto.
Australia.—Gordon and Gotch, Ltd., Melbourne (Victoria), Sydney (N.S.W.), Brisbane (Queensland), Adelaide (S.A.), Perth (W.A.), and Launceston (Tasmania).
New Zealand.—Gordon and Gotch, Ltd., Wellington, Auckland, Christchurch, and Dunedin. India.—A. H. Wheeler & Co., Bombay, Allahabad, and Calcutta.
South Africa.—Central News Agency, Ltd. Paris.—Smith's English Library, 248, Rue Rivoli.

Motor Cycles in 1916.

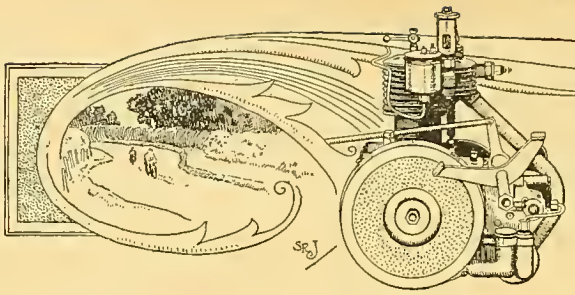
FROM the descriptions and illustrations which have appeared in these pages during the last few weeks, motor cyclists will have been able to gather the trend of design of motor cycles in 1916. Our forecast of a few weeks ago, that there would be little alteration to existing models, has proved not far short of the mark. Makers have been content this year to concentrate their attention upon improvements to detail work and the elimination of any weaknesses in design. As a result, changing for changing sake has, for once in a way, been automatically cancelled by the war, and instead the public is offered machines which have withstood at least a year's constant road usage, and upon which improvements have been effected as experience dictated. Despite the high standard to which modern designing has been brought, it may not generally be known that it is still regarded as almost a miracle if a design acts up to the expectations of the designer in every detail. Usually some modification, more or less important, is required, for when a design appears very promising on paper road experience alone can discover a weakness.

In the matter of trend of design, it is impossible to draw a definite line, for whilst the whims and idiosyncrasies of the motor cycling public differ as they do, there is bound to be a big range of machines, widely divergent in design, offered to tempt its fancies. Thus in the 1916 Buyers' Guide we have machines ranging from 1 h.p. to 9 h.p., and prices varying from £19 19s. to £94 10s. Of the 85 makes of machines described and illustrated, no fewer than 53 are of the single-cylinder variety—33 of these two-strokes—and chain and belt transmission in conjunction with the countershaft gears is adopted on 47 machines, chain drive claiming 26 adherents, and belt drive the remaining 12. Three-speed gears are standardised on no less than 38 makes of machines. Two-stroke engines are still confined to the lighter mounts, with one notable exception, and there are now unmistakable signs (as we hinted that there might be a few weeks ago) that certain troubles which seem to be inseparable from the present type of two-stroke engine are bringing the miniature four-stroke engine into the limelight again. These troubles have been ventilated in *The Motor Cycle* with a view to concentrating thought upon their eradication, so far with little success, and it is significant that quite a number of firms which have in the past confined their attention to two-stroke mounts now offer a four-stroke lightweight as an alternative. The indications at the moment are that the simple two-stroke lightweight is to be the low-priced motor bicycle of the future, whilst the four-stroke lightweight will form a class of its own and continue to gain in popularity.

Combined chain and belt transmission is still extremely popular, and many makers who adopt this form of drive are now fitting the very necessary cover for the chain. We should like to see the driving pulleys a little more equalised, in order to obtain a large gripping surface for the belt on the front pulley, so necessary with a short drive; this should be done by enlarging the front pulley rather than by diminishing the belt rim. Unfortunately, the introduction of a number of spring frame designs has been retarded by the war.

This year's Guide does not pretend to be complete, the obvious reason being that many firms are engaged in the production of munitions of war, and cannot devote any attention to motor cycles for the public. This fact is emphasised in the introduction to the Guide, and a further point for buyers to note is the fact that the prices cannot be regarded as definite for any lengthy period, in view of the state of the raw materials market. As a matter of fact, quite apart from the inflated prices, raw materials are very difficult to obtain at all, and that being so long delivery dates are quoted by manufacturers, consequently riders should order early.

An index to the advertisements in this issue will be found on the page facing the back cover.



Autumn Trips in the South.

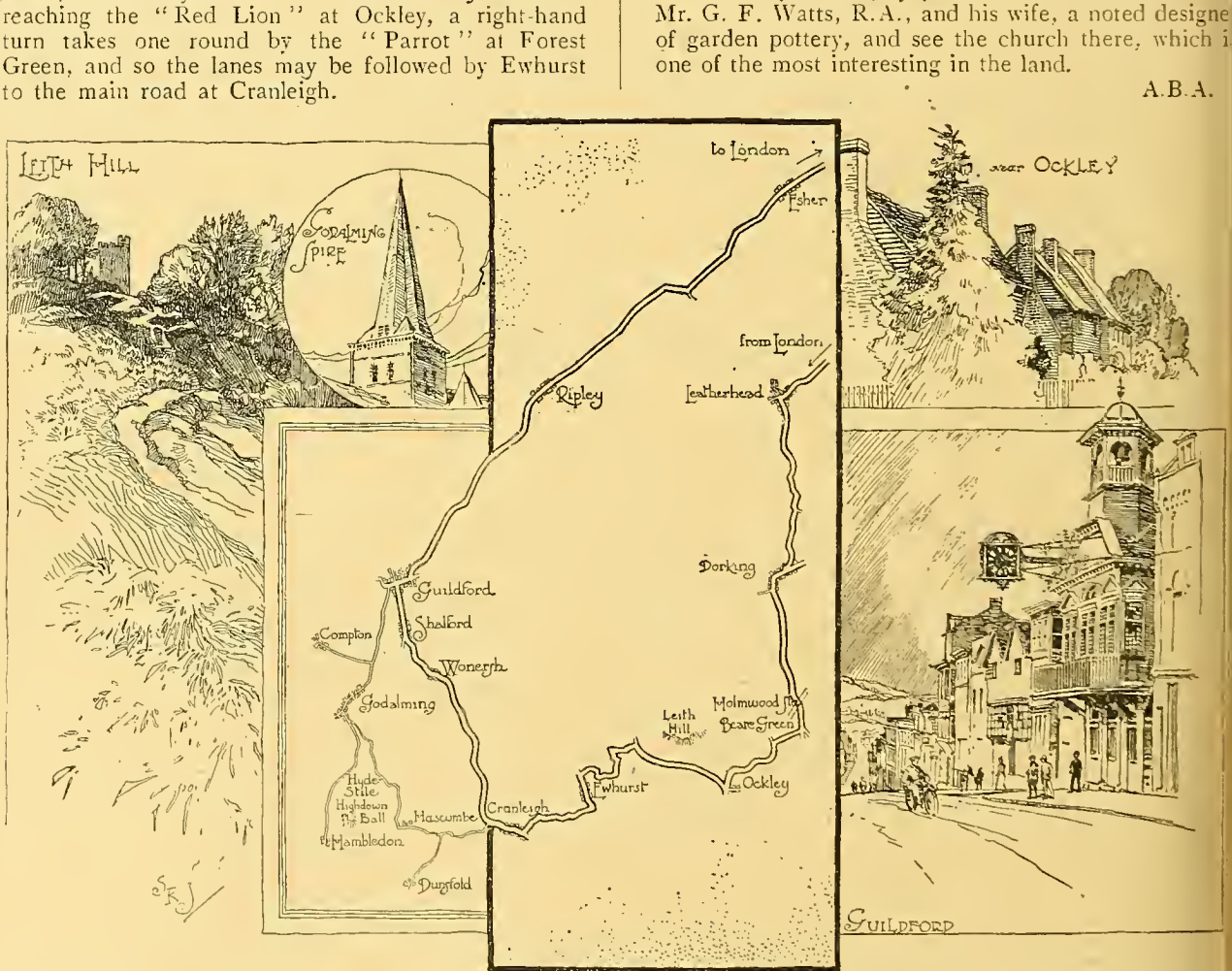
ANOTHER SUGGESTED SHORT ITINERARY FOR METROPOLITAN RIDERS.

ON October 28th we published the outline of a trip from London to Tunbridge Wells avoiding the beaten track. This was much appreciated, so the following route through the byways of Surrey will probably also be of interest to our London readers.

Travel down the Epsom Road through Leatherhead to Dorking, then turn to the right at Beare Green beyond Holmwood Station, on the Horsham Road, for Ockley on the Roman Road. Just before reaching the "Red Lion" at Ockley, a right-hand turn takes one round by the "Parrot" at Forest Green, and so the lanes may be followed by Ewhurst to the main road at Cranleigh.

Around here there are lovely little villages to see, with many high hills around, Hascombe and Hambledon especially, and Highdown Ball, that fine hill preserved by the National Trust. Arriving eventually in Guildford the rider may reach home by way of Ripley and Kingston, after a most enjoyable saunter amidst delightful lanes. If time permits the rider should make for Godalming, and pay a visit to Compton, near by, for many years the home of the artist Mr. G. F. Watts, R.A., and his wife, a noted designer of garden pottery, and see the church there, which is one of the most interesting in the land.

A.B.A.



SPARE VALVES FOR KNIGHT ENGINES.

Anent the paragraph in our last issue respecting orders for valves for two-stroke machines, we heard of a very similar case that occurred at a certain base in France where an officer of high rank was questioning A.S.C. men as to their equipment, and asked a driver if he had a spare exhaust valve complete with spring and cotter for his car. On receiving a reply "No sir," he demanded in a loud voice to know why no spare valve was carried. "Because it is a sleeve valve engine, sir," the driver meekly replied.

OCCASIONAL COMMENTS

BY 'IXION'

An American Cycle Car.

One of my colleagues has been showing round a photograph of an American cycle car, compounded out of aeroplane bits and the engine and transmission of a Harley-Davidson bicycle. It is asserted to be capable of 70 m.p.h. and is an extraordinarily attractive little vehicle to look at. Most cycle cars look spidery and flimsy, but the make-up of this little monocar satisfies the eye at any rate. Its body outlines are those of a Grand Prix racer with a very long tapered snout; but the secret of its pleasant appearance seems to rest with the wire aeroplane wheels shod with 20in. × 4in. tyres—they absolutely eliminate the faint, haunting suggestion of a buggy or perambulator which offends one in most British monocars with their high, lightly shod wheels. If I can rake a few pennies together this winter, I think I must have a try to see what I can do on similar lines. These big puddingy tyres should go far to solve the springing problems usually associated with light and speedy cycle cars.

A Two-speed Gear for Simple Machines.

It so happens that two machines of very different types now being built to my order—the one a "baby" two-stroke, the other a speed demon—both have an unusual type of two-speed gear, well adapted to any mount on which cheapness, simplicity, and absence of friction are desiderata. The drive consists in both cases of a single chain to the countershaft, on which a sliding dog couples up either of two chain and sprocket drives to the back wheel. Such a method is obviously cheaper than a gear box. It eliminates friction, in that the whole of the transmission runs on ball bearings, whilst one of the chains can be removed for speed events. The gears are easily changed, and their ratios are as easily varied by fitting different sprockets. The design seems to me preferable to that which employs two front chains and one back chain, as the slower running chains should wear less rapidly. I wonder the idea does not figure on more "baby" machines, whilst it is plainly ideal for a speed merchant's jigger.

Foreign Magnetos.

I started this season with the liveliest anticipations of magneto troubles ahead, and my apprehensions deepened when my first two 1915 magnetos—both American—promptly gave up the ghost in their first thousand miles, both of them suffering from acute internal troubles. Luckily I have had no more misfortunes, as the two American instruments which replaced them *gratis* are still sparking gaily. I am careful not to tinker with them unnecessarily, as their small screws have very poor threads. Up to date I have only struck one of the new British magnetos, a C.A.V.; it possesses the obvious solidarity of the Bosch, and has functioned quite as well. I hope the other British *débutantes* are as good. I hoped my last new cycle car would boast another Britisher, but as luck would have it the makers fitted the last survivor of their last pre-war batch of Bosch. I hope next year will bring me a varied assortment of home-made igniters, and that they will be worthy of their nationality. How are other users getting on, I wonder? I have heard very few complaints.

Single Lever Carburetters.

I have been teaching a couple of tyros to drive lately, and as usual, my main troubles arose in connection with the air lever. Neither had the pluck to straddle the four-cylinder Henderson and the 70 m.p.h. A.B.C. which I showed them, but both were cute enough to perceive that these machines possessed single lever carburetter control, and demanded why they were afflicted with twin levers? There was nothing to be said. You cannot deny that the single lever is economical, for the Claudel-Hobson, as fitted to the A.B.C. bicycle, will take a 12 cwt. car forty miles on a gallon of petrol, which is tantamount to about 120 m.p.g. on a big twin bicycle, and the Henderson, developing about 10 b.h.p., does 70 m.p.g., and accelerates like a scream on its one-lever Schebler. I could only say—knowing that I lied—that motor cyclists are mostly mechanics, and find the single lever dull. Tap twiddling is all very well so long as the motor cycle is a new toy; but when one wants it for serious locomotion, the coquettishness of the air lever is nothing more or less than a nuisance to most men. At any rate, it should be a simple matter for the carburetter makers to offer us an option; and if they do, they will find that 60% of their trade will be in the one-lever type.

Rubber-cum-steel Treads.

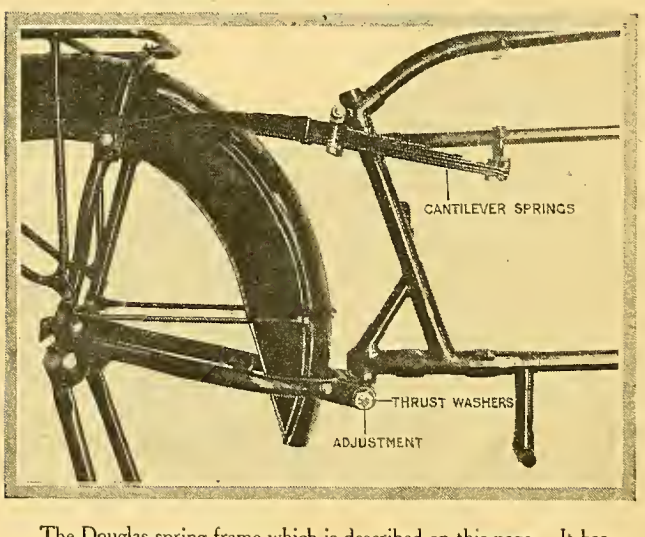
An awful week of fast work over grease in a former Scottish Trial, which is now ancient history, served to teach me that the "combination" type of tyre tread, in which rubber projections alternate with steel studs, is easily the best for solo work on genuinely virulent grease. In those days I was by no means so steady on slimy surfaces as I am now, and the speed at which the trial was run, the vile weather which accompanied it, and the delays which my machine occasioned *en route*, combined to fix the non-skidding merits of such covers indelibly in my memory. I notice that comparatively few winter riders employ these treads, but if anybody finds that the standard rubber studs do not give him adequate confidence, he can hardly do better than try a combination on the back wheel at any rate. Its value needs emphasising, because it has never really made good in the car world; the stresses of heavy vehicles result in the rubber bars wearing down or ripping off before the studs get low, and the result is a miserable caricature of the ordinary full steel-studded tread. But on motor cycles and light cars the rubber projections last much better, and as long as the tread retains any projections at all, it is a good non-skid on all manner of surfaces.

THE DOUGLAS SPRING FRAME.

A Neat Design gradually evolved after Three Years' Experiment.

THE matter of springing the rear portion of the frame is at last beginning to claim the attention of the various manufacturers, though, perhaps, more slowly in this country than in America. This is probably due to the fact that British manufacturers will not place an article on the market until they are thoroughly convinced that it is a reliable and satisfactory article. However, several British manufacturers have announced their intention of standardising a spring frame in the near future. Among these are Messrs. Douglas Bros. There is no doubt that there are hundreds of Douglas enthusiasts in England and the Overseas Dominions who will receive this announcement with joy and anxiously await the delivery dates, which unfortunately, owing to the present crisis, are likely to be very uncertain.

As far back as the year 1912 Messrs. Douglas Bros. realised that a spring frame was a necessity, and ever since have been testing to destruction a number of experimental models, out of which has been evolved



The Douglas spring frame which is described on this page. It has received a thorough testing.

the latest design. Not only has this model undergone very strenuous tests in the experimental department, but has during the last twelve months given most satisfactory results in Scotland, Canada, France, and Australia in the hands of riders unattached to the firm.

As will be seen from the illustration, the springing is carried out in a very neat and unobtrusive manner, and at the same time contains very few moving parts.

The Method of Attachment.

The back forks are pivoted about the centre of the bottom bracket, and are attached by an unusually large plain bearing. On both sides of this are fitted steel thrust bearings, which are adjustable, and by means of which the little wear that is bound to take place from time to time may be taken up. The first duty of these side thrust bearings is to prevent all lateral play in the back stays. The movement of the

Testing the spring-framed Douglas on the snow-bound roads of Canada. Mr. W. J. Tester, who is driving, has given the new Douglas a year's hard work under all conditions. His wife, seated in the sidecar, came over to England to take delivery of the outfit.

forks is in a radius, the centre of which is only just behind that of the pulley centre, so that the tension of the belt is practically unaffected by the movement.

Cantilever Laminated Springs.

The springing is obtained by means of cantilever laminated springs. The benefits derived from the adoption of this system are beyond question, for it is the method generally used and approved by the manufacturers of our most expensive and luxurious cars. These springs, as will be seen in the illustration, are clamped at their forward end firmly to a lug attached to the tank tube, while they are suspended by a bracket hung from the saddle lug. These long springs also have the advantage of assisting to prevent to a considerable extent any liability of lateral sway of the rear wheel. All the moving joints are, of course, provided with suitable methods of lubrication.

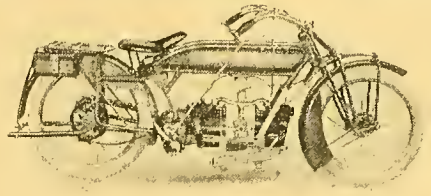
One of the new spring frame 4 h.p. Douglas outfits that has been giving Mr. A. H. Alexander, of Edinburgh, satisfaction for the past twelve months.

THE MOTOR CYCLE BUYERS' GUIDE OF 1916 MODELS

COMPLETE SPECIFICATIONS (ALPHABETICALLY ARRANGED) AND ILLUSTRATIONS OF MOTOR CYCLES ON THE BRITISH MARKET.

In the absence of a Show, "The Motor Cycle" Buyers' Guide, which has formed an annual feature of this journal since 1906, again fulfils an important mission. Naturally, great difficulties have been encountered this year in the compilation of the Guide, owing to the fact that most of the manufacturers are either wholly or partially engaged on the production of munitions of war. A number of models are unobtainable, and in preparing the Guide we have, as far as possible, in conjunction with the manufacturers, selected for illustration and description the machine which the makers are in a position to deliver. Other models produced are noted at the foot of the Specifications.

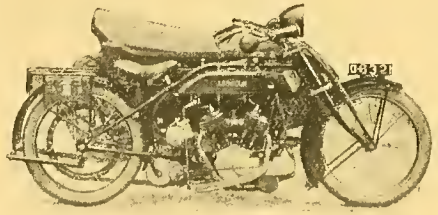
A.B.C.



3½ h.p., 2-cyl. (180°), 70×64 mm., 494 c.c., overhead exhaust valves, steel cylinders.
Dixie magneto. Claudel-Hobson carburetter.
A.B.C. 4-sp. countershaft gear, gate change. Chain.
Height 27in. Clearance 5½in. Wheelbase 57in.
Tyres, 26 × 2½in. Mechanical pump.
Petrol, 1¾ galls. Spring frame.
Price £72. Weight, 195 lb.
Other models.—Racing machine, rigid frame, weight 150 lb, same price.

A.B.C. MOTORS, LTD.,
Hersham, Walton-on-Thames.

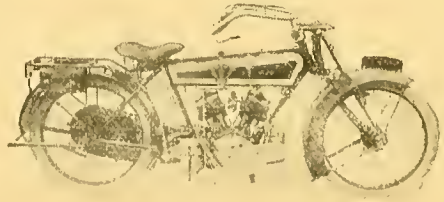
Abingdon "King Dick."



6-7 h.p., 2 cyls. (50°), 73 × 95 mm., 795 c.c., s.s.
B. & B., Amac, or Senspray carburetter.
Abingdon 3-speed countershaft gear. Chain and belt (1in.)
Height 31in. Clearance 4½in. Wheelbase 59in.
Dunlop H.S. tyres, 26 × 2½in.
Hand pump and drip feed. Petrol, 2¼ galls.
Price £83. Weight 286 lb.
Other models.—Same machine with fixed gear and belt drive, £66; 3½ h.p., 1 cyl., 499 c.c., as above, £69 6s.; with fixed gear, £53.

ABINGDON-ECCO, LTD.,
King's Road, Tyseley, Birmingham.

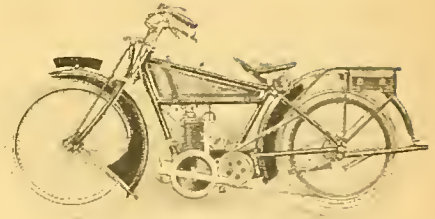
A.J.S.



6 h.p., 2-cyl., 74 × 87 mm., 748 c.c., s.s.
Splitdorf magneto. Amac carburetter.
A.J.S. 3-speed countershaft gear. Chain.
Height 30in. Clearance 4½in. Wheelbase 57in.
Avon tyres, 650 × 65 mm.
Spring-loaded hand pump. Petrol, 2½ galls.
Detachable wheels. Price, £84 Weight, 280 lb.
Other models.—2¾ h.p., 1-cyl., 349 c.c., 2 or 3-speed, £55 or £58; 4 h.p., 2-cyl., 550 c.c., 3-speed, £76.

A. J. STEVENS AND CO. (1914), LTD.
Retreat Street, Wolverhampton.

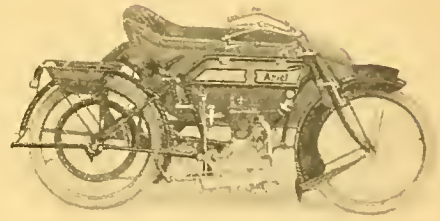
Alldays-Allon.



2¾ h.p., 1-cyl., 2-stroke, 70 × 76 mm., 292 c.c.
E.I.C. magneto. Senspray carburetter.
2-speed countershaft gear. Chain and belt.
Height 29in.
Dunlop tyres, 26 × 2¼in.
Hand pump and drip feed.
Petrol, 1½ galls.
Price £42.
Other models.—Same machine with clutch, £45; single-geared, £34; de Luxe model, £52 10s.

ALLDAYS AND ONIONS CO., LTD.,
Small Heath, Birmingham.

Ariel.



3½ h.p., 1-cyl., 86.4 × 85 mm., 498 c.c., s.s.
Splitdorf magneto. B. and B. carburetter.
Ariel 3-speed countershaft gear. Chain and belt.
Height 30in. Clearance 4¾in. Wheelbase 56in.
Dunlop tyres, 26 × 2½in. and 2¼in.
Hand pump and drip-feed.
Petrol, 1⅝ galls.
Price £64 (with sidecar, £81). Weight, 250 lb.
Other models.—2¾ h.p., 1-cyl., 2-stroke, 350 c.c., 2-speed, £44; 3½ h.p., as above, single geared, £49 10s.; 5-6 h.p., 2-cyl., 668 c.c., 3-speed, £74 10s.

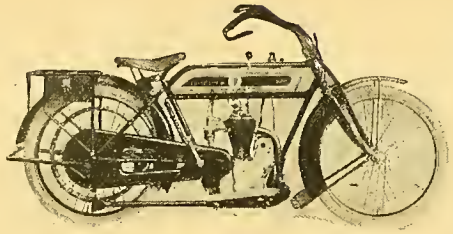
ARIEL WORKS, LTD.,
Bournbrook, Birmingham.

Bat.

5-6 h.p. J.A.P., 2-cyl. (50°), 76 × 85 mm., 770 c.c., s.s.
Bosch magneto. Amac carburetter.
Bat 3-speed countershaft gear. Chain and belt, 1in.
Height 29in. Clearance 5in. Wheelbase 54in.
Kempshall tyres, 26 × 2¼in.
Hand pump and drip feed.
Petrol, 2 galls.
Price £73. Weight, 240 lb.
Other models.—4½-5 h.p., 2-cyl., 654 c.c., £57 10s.; 7-8 h.p., 2-cyl., 976 c.c., £75.

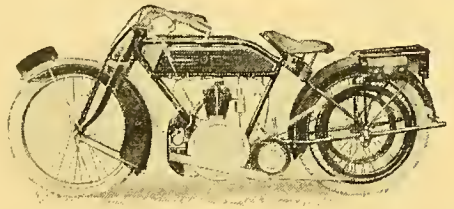
BAT MOTOR MANUFACTURING CO.,
Penge, London, S.E.

Bianchi.



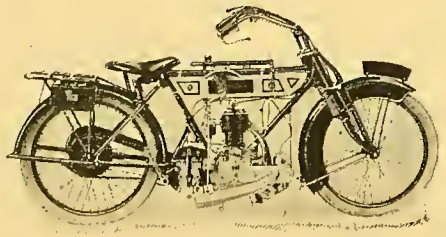
3½ h.p., 1-cyl., 75 × 112 mm., 495 c.c., s.s.
Bosch magneto. B. and B. carburetter.
Bianchi 3-speed countershaft gear. Chain.
Pirelli tyres, 26 × 2¼in.
Drip feed (Enots).
Petrol, 1½ galls.
Price £82 10s. Weight, 210 lb.
BIANCHI MOTORS, LTD.,
26, St. James's Street, London, W.

Blackburne.



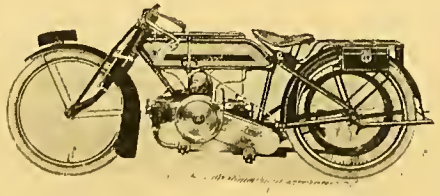
3½ h.p., 1-cyl., 85 × 88 mm., 499 c.c., s.s., outside flywheel.
Splitdorf magneto. B. and B. carburetter.
Sturmey-Archer 3-speed countershaft gear.
Chain and belt (1in.).
Height 28½in. Clearance 5in. Wheelbase 57in.
Hutchinson tyres, 26 × 2¼in.
Hand pump and drip feed.
Petrol, 2 galls.
Price £62. Weight, 212 lb.
Other model.—Same machine, single-geared, £49 10s.
BURNEY AND BLACKBURNE, LTD.,
Tongham, Surrey.

Bradbury.



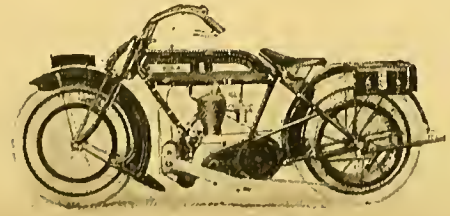
4 h.p., 1-cyl., 89 × 89 mm., 554 c.c., s.s.
Splitdorf magneto. B. and B. carburetter.
Bradbury 3-speed countershaft gear. Chain.
Height 31in. Clearance 5in. Wheelbase 53in.
Clincher, Dunlop, or Palmer tyres, 26 × 2¼in.
Hand pump and drip feed.
Petrol, 1½ galls.
Price £60. Weight 280 lb.
Other models.—Same machine, single geared, £47; 2-speed, £55; 6 h.p., 2-cyl., 749.75 c.c., 3-speed, £73 10s.
BRADBURY AND CO., LTD.,
Wellington Works, Oldham.

Brough.



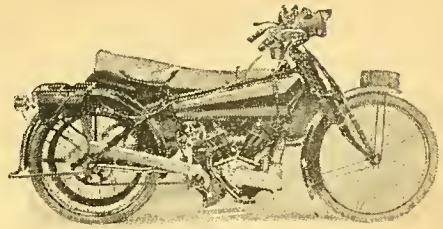
3½ h.p., 2-cyl. (180°), 70 × 64.5 mm., 497 c.c., overhead valves.
Thomson-Bennett magneto. Amac carburetter.
Brough 2-sp. countershaft gear. Chain and belt.
Height 28½in. Clearance 7in. Wheelbase 53in.
Dunlop tyres, 26 × 2¼in.
Hand pump and drip feed.
Petrol, 2 galls.
Price £63. Weight, 170 lb.
Other models.—3½ h.p., 2-cyl. (180°), 497 c.c., Sturmey-Archer 3-speed countershaft, £66 3s.; 5 h.p., 2-cyl. (180°), 685 c.c., 3-speed, £80.
W. E. BROUGH AND CO.,
Basford, Nottingham.

B.S.A.



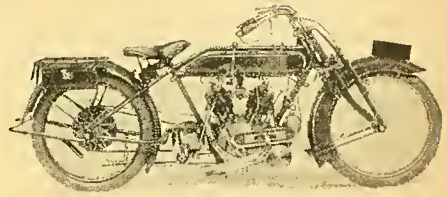
4½ h.p., 1-cyl., 85 × 98 mm., 556 c.c., s.s.
B.S.A. carburetter.
B.S.A. 3-sp. countershaft gear. Chain and belt.
Dunlop or Palmer tyres, 26 × 2¼in.
Semi-automatic sight-feed drip.
Petrol, 1¾ gals.
Price £62.
Other models.—Same machine, chain-driven, £64; 3½ h.p., 1-cyl., 499 c.c., T.T. model, single gear, £50 10s.
BIRMINGHAM SMALL ARMS CO., LTD.,
Small Heath, Birmingham.

Calthorpe.



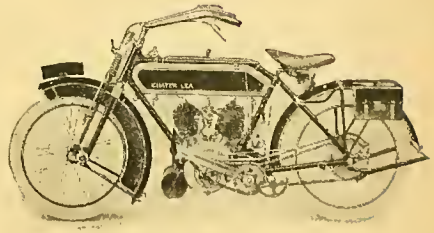
4 h.p. J.A.P., 2-cyl. (50°), 70 × 64.5 mm., 496 c.c., s.s.
Dixie magneto. Amac carburetter.
Enfield 2-sp. countershaft gear. Chain
Height 29½in. Clearance 4½in. Wheelbase 51½in.
Moseley tyres, 26 × 2¼in.
Hand pump and drip feed. Petrol, 1½ galls.
Price, with sidecar, £69. Weight, 200 lb.
Other models.—2¾ h.p., 1-cyl., 2-stroke, 245 c.c., 2-speed, £31 7s.; single geared, £27 14s. 6d.; 2½ h.p. J.A.P., 292 c.c., Enfield 2-speed, £36 15s.; single geared, £30 15s. Ladies' machines.
CALTHORPE MOTOR CYCLE CO.,
Barn Street, Birmingham.

Campion.



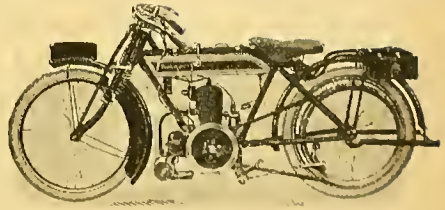
8 h.p. J.A.P., 2-cyl. (50°), 85.5 × 85 mm., 976 c.c. s.s.
Dixie magneto. B. and B. carburetter.
Jardine 4-sp. countershaft gear. Chain and belt.
Clearance 4½in.
Dunlop tyres, 650 × 65 mm.
Hand pump and drip feed. Petrol, 2 galls.
Price £82.
Other models.—4 h.p., 1-cyl., 488 c.c., Sturmey-Archer 3-speed countershaft, £67; 2½ h.p., 2-str., 269 c.c., 2-speed, £38; single geared, £31; 6 h.p., 2-cyl., 770 c.c., 4-speed, £80.
CAMPION CYCLE CO., LTD.,
Robin Hood Street, Nottingham.

Chater-Lea.



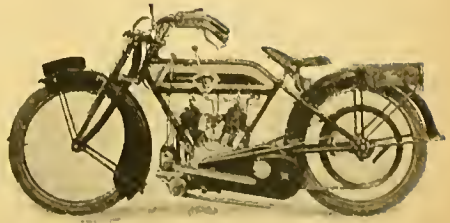
8 h.p., 2-cyl., 85 × 85 mm., 964 c.c., s.s.
B. and B. carburetter.
Chater-Lea 3-speed countershaft gear. Chain.
Clearance 5½in. Wheelbase 54in.
Tyres, 650 × 65 mm.
Drip feed. Petrol, 2 galls.
Price £82 13s. 9d. Weight, 285 lb.
Other model.—2½ h.p., 1-cyl., 2-stroke, 269 c.c. 2-speed countershaft, £38 6s. 6d.
CHATER-LEA, LTD.,
74-84, Banner Street, Golden Lane, E.C.

Connaught.



2½ h.p., 1-cyl., 2-stroke, 73 × 70 mm., 293 c.c.
E.I.C. magneto. Amac carburetter.
Single geared. Belt, ¾in.
Height 30in. Clearance 5in.
Dunlop tyres, 26 × 2in.
Petroil. Petrol, 1 gall.
Price £36 17s.
Other models.—Same machine, 2-speed countershaft, £41 16s.; with clutch, £45 2s.; miniature model, 293 c.c., £28 17s. 6d.; with 2-speed, £66 6s.
BORDESLEY ENGINEERING CO., LTD.
New Bond Street, Birmingham.

Coventry Eagle.



5-6 h.p. Abingdon, 2-cyl. (50°), 67 × 95 mm., 670 c.c., s.s.
Amac or Senspray carburetter.
Sturmey-Archer 3-speed countershaft gear.
Chain and belt, 1in.
Height 29in.
Dunlop tyres, 26 × 2¼in.
Drip feed.
Petrol, 2 galls.
Weight, 175lb.
Other models.—2½ h.p. Villiers, 1-cyl., 2-stroke 269 c.c.; 2½ h.p. J.A.P., 1-cyl., 292 c.c.; 3½ h.p. Abingdon, 1-cyl., 499 c.c.
COVENTRY EAGLE CYCLE AND MOTOR CO.,
Foleshill Road, Coventry.

De Luxe T.D.C.

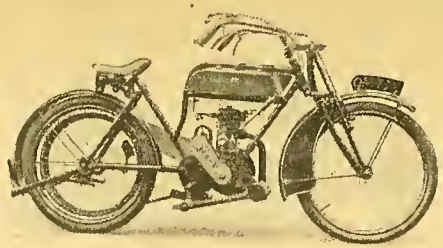
2¾ h.p. T.D.C., 1-cyl., 2-stroke, 70 × 70 mm., 269 c.c.
Dixie magneto. Amac carburetter.
Albion 2-speed countershaft gear. Chain and belt.
Height 28in. Clearance 4in. Wheelbase 50in.
Palmer tyres, 24 × 2in.
Petroil.
Petrol, 1½ galls.
Price £25 19s. Weight, 129 lb.
Other models.—Same machine with clutch, £27 5s.; single geared, £19 19s.

DE LUXE MOTOR CO.,
174, Corporation Street, Birmingham.

Despatch Rider.

2 h.p., 1-cyl., 2-stroke, 64 × 67 mm., 210 c.c.
Ericson magneto. Amac carburetter.
Single geared. Belt, ¾in.
Height 25in. Clearance 7½in. Wheelbase 46in.
Dunlop tyres, 24 × 2in.
Drip feed.
Petrol, 1¼ galls.
Price £28 7s. Weight, 89 lb.

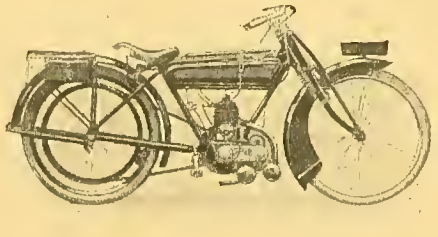
DRENG, LTD.,
Fern Road, Erdington, Birmingham.



Diamond.

2½ h.p. Villiers, 1-cyl., 2-stroke, 70 × 70 mm., 269 c.c.
E.I.C. or M.L. magneto. Amac carburetter.
2-speed countershaft gear. Chain and belt.
Height 29½in. Clearance 4½in. Wheelbase 50in.
Avon tyres, 26 × 2in.
Drip feed.
Petrol, 1¼ galls.
Price £38 17s. Weight, 120 lb.
Other models.—Same machine, single geared, £31 10s.; 2½ h.p. J.A.P., 1-cyl., 292 c.c., £40 19s.

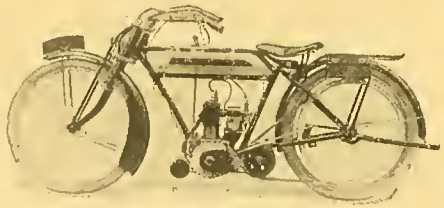
D. F. AND M. ENGINEERING CO., LTD.,
Vaae Street, Wolverhampton.



Dot.

2½ h.p. J.A.P., 1-cyl., 70 × 76 mm., 292 c.c., s.s
Dixie magneto. Amac carburetter.
Albion 2-sp. countershaft gear. Chain and belt.
Height 31in. Clearance 4½in. Wheelbase 52in.
Hutchinson tyres, 26 × 2in.
Hand pump and drip feed.
Petrol, 1¼ galls.
Weight, 134 lb.
Other models.—6 h.p. J.A.P., 2-cyl., 770 c.c., 4-speed; 8 h.p. J.A.P., 2-cyl., 976 c.c., 4-speed.

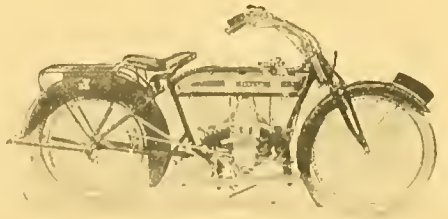
DOT MOTORS,
38, Ellesmere Street, Hulme, Manchester.



Douglas.

2¾ h.p. 2-cyl. (180°), 60.5 × 60 mm., 345 c.c., s.s.
Douglas Amac carburetter.
Douglas 3-sp. countershaft gear. Chain and belt.
Height 29in. Clearance 6½in. Wheelbase 53in.
Hutchinson tyres, 26 × 2¼in.
Hand pump and drip feed.
Price £56 14s. Weight, 175 lb.
Other models.—Same machine without clutch, £52 8s.; ditto, 2-speed, £50 8s.; 3½ h.p., 2-cyl. (180°), 592 c.c., 3-speed countershaft, £60 18s.; with sidecar, £80 17s.; Douglas spring frame, as above.

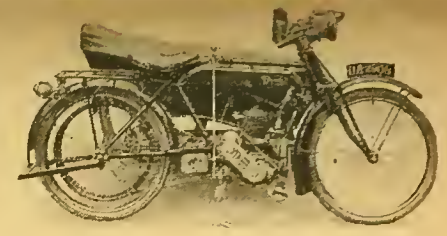
DOUGLAS BROS.,
Kingswood, Bristol.



Dunkley.

2¾ h.p. Peco, 1-cyl., 2-stroke, 75 × 79 mm., 349 c.c.
E.I.C. magneto. Amac carburetter.
2-speed countershaft gear. Chain and belt.
Hutchinson tyres, 26 × 2¼in.
Hand pump and drip feed.
Petrol, 1¼ galls.
Price £42; sidecar £10 10s. extra.
Other models.—4 h.p. J.A.P., 1-cyl., 488 c.c., 4-speed, £63; 5 h.p., 2-cyl., 654 c.c., 4-speed, £70 7s.; 6 h.p. J.A.P., 2-cyl., 770 c.c., 4-speed, £78 15s.

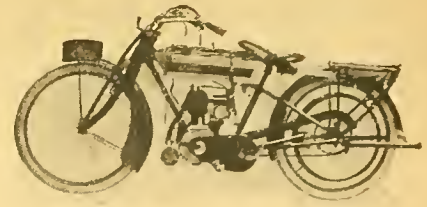
DUNKLEYS, LTD.,
Jamaica Row, Birmingham.



Edmund.

2½ h.p. J.A.P., 1-cyl., 70 × 76 mm., 292 c.c., s.r.
E.I.C. magneto. Amac carburetter.
Enfield 2-speed countershaft gear. Chain.
Height 28in. Clearance 4½in. Wheelbase 52in.
Hutchinson tyres, 26 × 2in.
Hand pump and drip feed.
Petrol, 1½ galls.
Spring frame.
Price £44 2s. Weight, 148 lb.
Other model.—Same machine with 2¾ h.p. 2-stroke Peco.

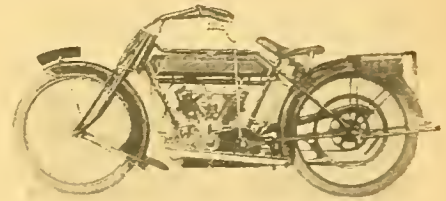
C. EDMUND AND CO.,
Crane Bank, Chester.



Enfield.

3 h.p., 2-cyl. (60°), 60 × 75 mm., 425 c.c., overhead inlets.
Thomson-Bennett magneto. Amac carburetter.
Enfield 2-speed countershaft gear. Chain.
Height 30in. Clearance 4¾in. Wheelbase 55in.
Palmer tyres, 26 × 2¼in.
Mechanical pump.
Petrol, 1½ galls.
Price £52 10s. Weight, 182 lb.
Other models.—2½ h.p., 1-cyl., 2-stroke, 225 c.c., 2-speed, £42; 6 h.p., J.A.P., 2-cyl., 770 c.c., with sidecar, £89 15s.; with Lucas dynamo set, £105.

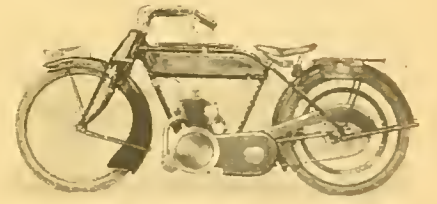
ENFIELD CYCLE CO.,
Redditch.



Excelsior.

2¾ h.p., 1 cyl., 2-stroke, 75 × 79 mm., 349 c.c.
Ericson mag. Senspray or Amac carb.
Excelsior 2-speed countershaft gear, Chain.
Height 31in. Clearance 4in. Wheelbase 53in.
Dunlop or Palmer tyres, 26 × 2¼in.
Hand pump and drip feed.
Petrol, 1 gall.
Price £44 2s. Weight 178 lb.
Other models.—2½ h.p., 1 cyl., 2-stroke, 210 c.c. £30 16s.; 3½ h.p., 1 cyl., 499 c.c., 3-speed hub, £56 14s.; 4½ h.p., 1 cyl., 650 c.c., 3-speed countershaft, £60 18s.; 5-6 h.p., 1 cyl., 800 c.c., 3-speed countershaft, £71 8s.; 8 h.p., 2 cyls., 976 c.c., 3-speed countershaft, £78 15s.

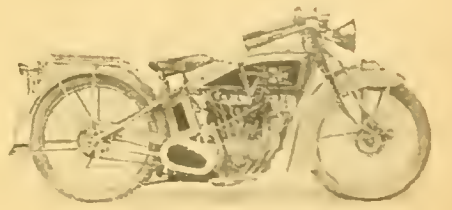
BAYLISS, THOMAS, AND CO.,
Excelsior Works, Coventry.



Excelsior (American).

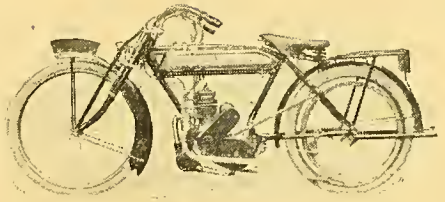
7 h.p., 2-cyl., 84 × 89 mm., 986 c.c., overhead inlets.
Bosch magneto. Schebler carburetter.
Excelsior 3-speed countershaft gear. Chain.
Height 31in. Clearance 4½in. Wheelbase 58in.
Firestone tyres, 28 × 3in.
Mechanical pump.
Petrol, 2 galls.

HARRIS AND SONS,
10, Great Chapel Street, Oxford Street, London, W.



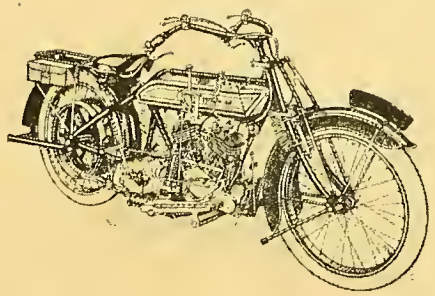
Grandex.

2¾ h.p. Precision, 1-cyl., 2-stroke, 64 × 70 mm. 225 c.c.
Splitdorf magneto. Amac carburetter.
2-speed countershaft gear. Chain and belt.
Height 28in. Clearance 5in.
Hutchinson tyres, 2½in.
Hand pump and drip feed.
Petrol, 1 gall.
Price £35. Weight, 125 lb.
Other models.—2¾ h.p., 1-cyl., 200 c.c., £30; 2¾ h.p., 1-cyl., 350 c.c., £35; 2¾ h.p., 1-cyl., 202 c.c., £35; 3¾ h.p., 1-cyl., 499 c.c., £40; 4¾ h.p., 1-cyl., 597 c.c., £60; 4 h.p., 2-cyl., 499 c.c., £60; 6 h.p. and 8 h.p., 770 c.c. and 976 c.c., £70.
GRANDEX MOTOR CYCLE CO.,
86, Gray's Inn Road, London, W.C.



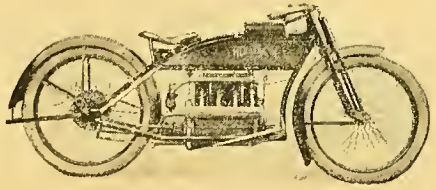
Hazlewood.

5-6 h.p. J.A.P., 2-cyl., 70 × 85 mm., 654 c.c., s.s.
Dixie magneto. B. and B. carburetter.
Countershaft gear. Chain and belt, 1in.
Height 28in. Clearance 4½in. Wheelbase 54in.
Hutchinson tyres, 650 × 65 mm.
Hand pump and drip feed.
Petrol, 1½ galls.
Price £74. Weight, 245 lb.
Other model.—4 h.p., 1-cyl., 488 c.c., £63.
HAZLEWOODS, LTD.,
West Orchard, Coventry.



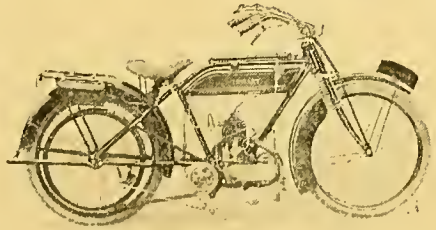
Henderson.

8 h.p., 4-cyl., 998 c.c.
Berling magneto. Schebler carburetter.
Henderson 2-speed hub gear. Chain.
Height 29½in. Clearance 5½in. Wheelbase 58in.
Tyres, 28 × 3in.
Mechanical and drip feed.
Petrol, 2½ galls.
Price £86 2s.; with sidecar, £105. Weight, 295 lb.
ROBERTSON'S MOTORS, LTD.,
157B, Great Portland Street, London, W.



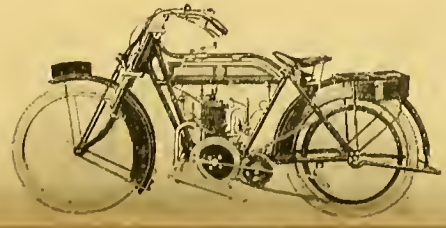
Hobart.

2½ h.p. Villiers, 1-cyl., 2-stroke, 70 × 70 mm., 269 c.c.
U.H. magneto. Amac carburetter.
Chater-Lea 2-sp. countershaft gear. Chain and belt.
Height 28in.
Dunlop or Hutchinson tyres, 26 × 2in.
Hand pump and drip feed.
Petrol, 1 gall.
Price £36 15s.
Other models.—Same machine, single geared, £30 9s.; 6 h.p., 2-cyl., 770 c.c., Sturmey-Archer 3-speed countershaft gear, with sidecar, £88 4s.
HOBART BIRD AND CO., LTD.,
St. Patrick's Road, Coventry.



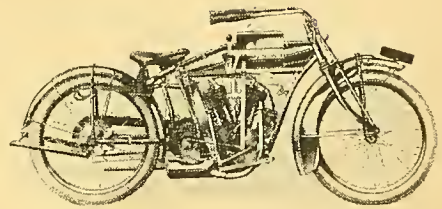
Hockley.

2¾ h.p., 1-cyl., 2-stroke, 70 × 70 mm., 269 c.c.
M. and L. magneto. Senspray carburetter.
Gear to order. Belt, ¾in.
Height 30in. Clearance 5½in. Wheelbase 50in.
Dunlop tyres, 26 × 2in.
Hand pump and drip feed with three-way tap.
Petrol, 1¼ galls.
Price £32 6s. 9d. Weight, 130 lb.
HOCKLEY MOTOR MFG. CO., LTD.,
126, Barr Street, Birmingham



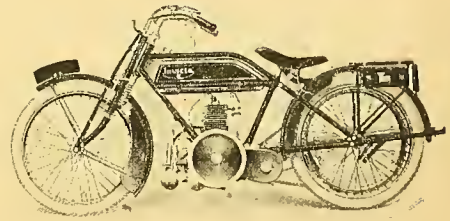
Indian.

7 h.p. "Powerplus," 2-cyl., 79 × 100 mm., 990 c.c., s.s.
Dixie magneto. Indian carburetter.
Indian 3-speed countershaft gear. Chain.
Height 29in. Clearance 5¾in. Wheelbase 59in.
Dunlop tyres, 28 × 3in.
Petrol, 2 galls.
Spring frame and dynamo lighting.
Mechanical pump. Price £90.
Other models.—2½ h.p., 1-cyl., 2-stroke, 215 c.c., 3-speed countershaft, £49 10s.; 5 h.p., 2-cyl., 684 c.c., 3-speed countershaft gear, £70; 7 h.p., 2-cyl., 994 c.c., 3-speed, battery lighting, £78; as above, with rigid frame and without dynamo lighting, £75.
HENDEE MANUFACTURING CO.,
366, Euston Road, London, N.W.



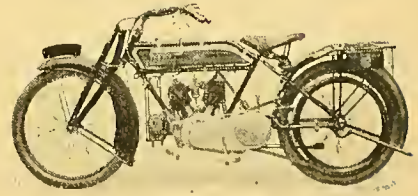
Invicta.

2½ h.p. Villiers, 1-cyl., 2-stroke, 70 × 70 mm., 269 c.c. Senspray carburetter.
Jardine 2-sp. countershaft gear. Chain and belt.
Height 27in. Clearance 4½in. Wheelbase 49in.
Tyres, 24in. or 26 × 2in.
Drip feed.
Petrol, 1½ galls. Weight, 148 lb.
Other model.—Same machine, single geared.
A. BARNETT AND CO.,
West Orchard, Coventry.



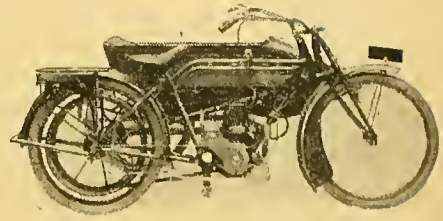
Ivy.

5 h.p. J.A.P., 2-cyl., 70 × 85 mm., 654 c.c., s.s.
Splitdorf magneto. Amac carburetter.
Sturmey-Archer 3-speed countershaft gear.
Chain and belt.
Height 31in. Clearance 5½in. Wheelbase 58in.
Drip feed.
Price £64. Weight, 230 lb.
Other models.—3½ h.p. J.A.P., 2-cyl., 496 c.c., as above; £62; single geared, £50; 2¾ h.p., 1-cyl., 2-stroke, 225 c.c., £29 14s. to £41 16s.
S. A. NEWMAN, LTD.,
Lichfield Road, Aston, Birmingham.,



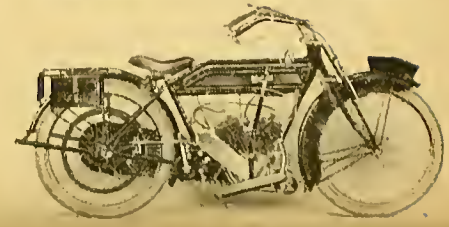
Ixion.

2¾ h.p. Peco, 1-cyl., 2-stroke, 75 × 79 mm., 349 c.c.
E.I.C. magneto. Amac carburetter.
Sturmey-Archer 3-speed hub gear. Belt, ¾in.
Height 29½in. Clearance 4½in. Wheelbase 52in.
Dunlop tyres, 26 × 2¼in.
Hand pump and drip feed.
Petrol, 1½ galls.
Price £55, with sidecar. Weight, 180 lb.
Other models.—2½ h.p. Villiers, 1-cyl., 2-stroke, 269 c.c., £28 10s.; with countershaft gear, £35 10s.; 2¾ h.p. Villiers, 1-cyl., 349 c.c., £48 10s.
IXION MOTOR MANUFACTURING CO.,
Great Tindal Street, Ladywood, Birmingham.



James.

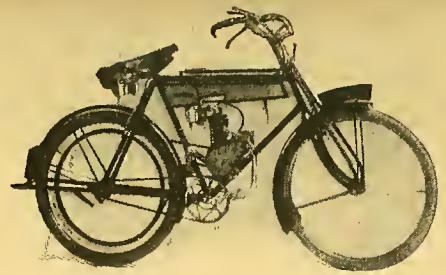
3½ h.p., 2-cyl., 64 × 77 mm., 496 c.c., s.s.
Amac, B. and B., or Senspray carburetter.
James 3-speed countershaft gear. Chain.
Height 29½in. Clearance 4½in. Wheelbase 52in.
Dunlop or Palmer tyres, 26 × 2¼in.
Hand pump and drip feed.
Petrol, 1½ galls.
Price £63. Weight, 195 lb.
Other models.—2½ h.p., 1-cyl., 2-stroke, 225 c.c., 2-speed, £36 15s.; 4½ h.p., 1-cyl., 600 c.c., 3-speed, £63.
JAMES CYCLE CO.,
Gough Road, Greet, Birmingham.



J.E.S.

1 h.p., 1-cyl., 51 × 57 mm., 116 c.c., overhead inlet.
Dixie magneto. J.E.S. automatic carburetter.
Single geared. Belt, ½in.
Height 36in. Clearance 9in. Wheelbase 44in.
Dunlop, 26 × 1¾in.
Hand pump.
Petrol, ¾ gall.
Price £23. Weight, 73 lb.

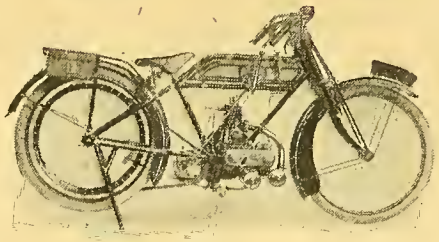
J. E. SMITH,
J.E.S. Motor Works, Gloucester.



J.H.

2½ h.p. Villiers, 1-cyl., 2-stroke, 70 × 70 mm., 269 c.c.
E.I.C. magneto. Amac carburetter.
2-speed countershaft gear. Chain and belt.
Height 28in. Clearance 5in. Wheelbase 51in.
Dunlop or Palmer tyres, 26 × 2in.
Drip feed.
Petrol, 1½ galls.
Price £39 5s. Weight, 135 lb.
Other models.—3½ h.p. J.A.P. or M.A.G., 2-cyl., 496 c.c., 3-speed, £70; 6 h.p. J.A.P. or M.A.G., 2-cyl., 770 c.c. or 742 c.c., 3-speed, £84 10s.; 8 h.p. J.A.P. or M.A.G., 976 c.c. or 996 c.c., 3-speed, with sidecar, £99; lady's model, as above, £40 8s.

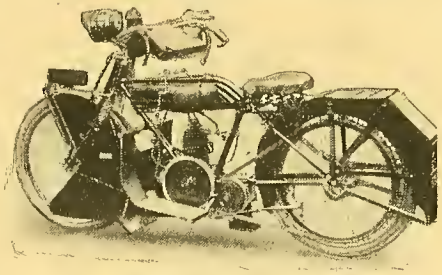
J.H. MOTOR ENGINEERING WORKS,
Castle Mill Street, Mumps, Oldham.



Kumfurt.

2½ h.p. Villiers, 1-cyl., 2-stroke, 70 × 70 mm., 269 c.c.
Thomson-Bennett magneto. Senspray carburetter.
2-speed countershaft gear.
Height 28in. Clearance 4½in. Wheelbase 53in.
Dunlop tyres, 26 × 2in.
Hand pump.
Petrol, 1¾ galls.
Price £40 10s. Weight, 140 lb.
Other models.—Same machine, single geared, £31 10s.; lady's model, as above, £42 10s.; 4½ h.p. Precision, 1-cyl., 597 c.c., Sturmey-Archer 3-speed countershaft, £66; 6 h.p. J.A.P., 2-cyl., 770 c.c., 3-speed, £78 10s.

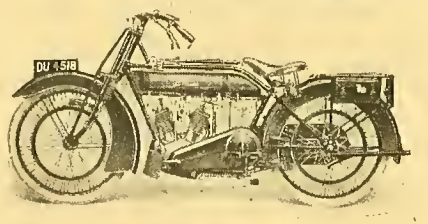
KUMFURT
MOTOR CYCLE AND ACCESSORIES CO.,
Cookham Rise, Berks.



Lea-Francis.

3½ h.p., J.A.P., 2 cyls. (50°), 70×64.5 mm., 496 c.c., s.s.
Bosch (American) mag. Amac carb.
Lea-Francis 3-speed countershaft gear. Chain.
Height 30in. Clearance 5½in. Wheelbase 55in.
Palmer Cord tyres, 26 × 2⅛in.
Hand pump and drip feed.
Petrol, 1¾ galls.
Price £72 19s. 6d.

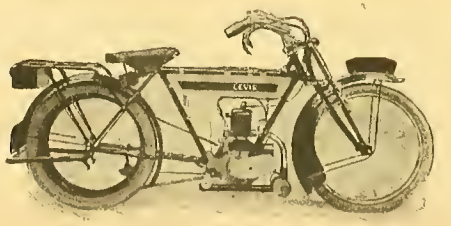
LEA AND FRANCIS, LTD.,
Lower Ford Street, Coventry.



Levis.

2¾ h.p., 1 cyl., 2-str., 62 × 70 mm., 211 c.c.
Dixie or E.I.C. mag. Amac or B. & B. carb.
Single-geared. Belt (⅞in.)
Height 28in. Clearance 4in. Wheelbase 50in.
Tyres, 24 × 2in.
Semi-automatic lubrication.
Petrol, 1¼ galls.
Price £30 16s. Weight 100 lb.

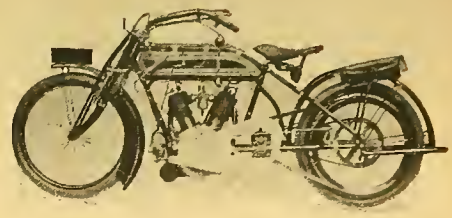
BUTTERFIELDS, LTD.,
Stechford, near Birmingham



Lincoln Elk.

6 h.p., 2-cyl. (50°), 76 × 85 mm., 770 c.c., s.s.
B. and B. carburetter.
Lincoln-Elk countershaft gear. Chain and belt.
Height 30in. Clearance 5in. Wheelbase 55in.
Palmer tyres, 26 × 2½in.
Drip feed.
Petrol, 2 galls.
Price £57. Weight, 265 lb.
Other models.—2½ h.p., 1-cyl., 2-stroke, 269 c.c., £27; 2¾ h.p., 1-cyl., 349 c.c., £30; 3 h.p., 1-cyl., 402 c.c., £33 10s.; 3½ h.p., 1-cyl., 499 c.c., £37; 4¼ h.p., 1-cyl., 597 c.c., £48.

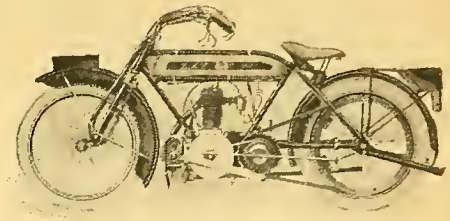
JAMES KIRBY,
Broadgate, Lincoln.



L.M.C.

3½ h.p., 1-cyl., 85 × 88 mm., 499 c.c., s.s.
Carlton or Thomson-Bennett magneto.
B. and B. or Senspray carburetter.
Sturmey-Archer 3-speed countershaft gear.
Chain and belt.
Height 31in. Clearance 5in. Wheelbase 52in.
Tyres, 26 × 2½in.
Hand pump and drip feed.
Petrol, 2 galls.
Price £62. Weight, 220 lb.
Other models.—4¼ h.p., 1-cyl., 597 c.c., 3-speed countershaft, £64; 6 h.p., 2-cyl., 842 c.c., 3-speed countershaft, £74.

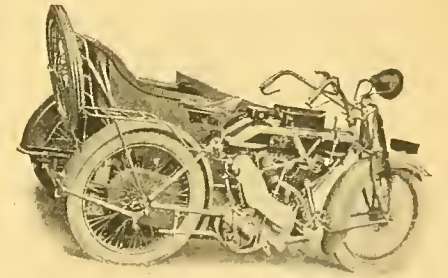
LLOYD MOTOR ENGINEERING CO., LTD.,
Monument Road, Birmingham.



Matchless.

7 h.p., 2-cyl., 82 × 94 mm., 996 c.c., overhead inlet.
Splitdorf magneto. Amac carburetter.
Matchless 3-speed countershaft gear. Chain.
Height 30in. Clearance 5in. Wheelbase 58in.
Hutchinson tyres, 26 × 3in.
Hand pump and drip feed.
Petrol, 2¼ galls.
Price £93 18s.

H. COLLIER AND SON,
44, Plumstead Road, Plumstead, S.E.



Metro.

2½ h.p., 1-cyl., 2-stroke, 70 × 70 mm., 269 c.c.
E.I.C. magneto. Senspray or Amac carburetter.
Single gear. Belt, ⅞in.
Height 30in. Clearance, 5in. Wheelbase 50in.
Palmer or Moseley tyres, 26 × 2in.
Hand pump and drip feed.
Petrol, 1 gall.
Price £28 10s.

METRO MANUFACTURING AND ENG. CO.,
Adderley Road, Saltley, Birmingham.

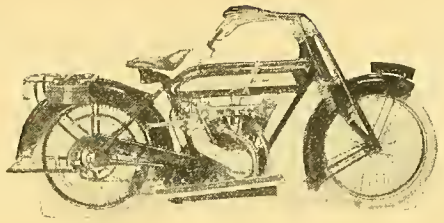
Monopole.

2½ h.p. Villiers, 1-cyl., 2-stroke, 70 × 70 mm., 269 c.c.
Senspray carburetter.
Jardine 2-speed countershaft gear.
Chain and belt, ⅞in.
Height 27in. Clearance 4in. Wheelbase 50in.
Dunlop tyres, 24 × 2in.
Hand pump and drip feed.
Petrol, 1½ galls.
Other model.—Same machine, single geared.

MONOPOLE CYCLE AND MOTOR CO., LTD.,
Foleshill, Coventry.

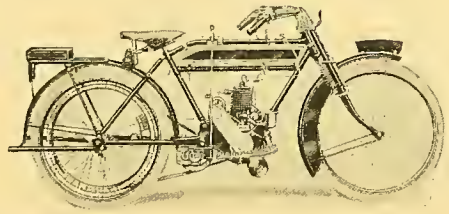
Motosacoche.

6 h.p. M.A.G., 2-cyl. (45°), 72 × 91 mm., 742 c.c., overhead inlet, enclosed tappet rods.
Dixie magneto. Amac carburetter.
Enfield 2-speed countershaft gear. Chain.
Height 31in. Clearance 4in. Weight 51½in.
Hutchinson (small car) tyres, 650 × 65 mm.
Hand pump and drip feed. Petrol, 2 galls.
Price £77. Weight, 265 lb.
Other models.—2½ h.p. M.A.G., 1-cyl., 290 c.c., variable gear, £35 14s.; single geared, £31 10s.; 3½ h.p. M.A.G., 2-cyl., 496 c.c., 2-speed countershaft, £65.
MOTOSACOCHE, LTD.,
Kenmont Works, College Park, Willesden Junction, N.W.



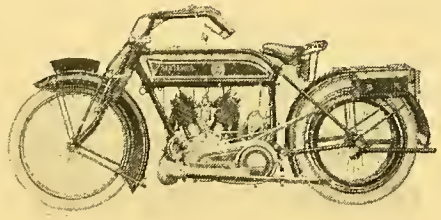
New Comet.

2¾ h.p., 1-cyl., 2-stroke, 62 × 70 mm., 211 c.c.
2-speed countershaft gear. Chain and belt.
Height 29½in. Clearance 5in. Wheelbase 51in.
Tyres, 26 × 2in.
Automatic lubrication. Petrol, 1½ galls.
Price £27 (without 2-speed gear). Weight, 108 lb.
Other models.—2¾ h.p., 1-cyl., 2-stroke, 349 c.c., £35; 2 h.p. Precision, 1-cyl., 199 c.c., 2-speed, £29; 3½ h.p., 1-cyl., 499 c.c., £44; 6 h.p. J.A.P., 2-cyl., 770 c.c., £68 10s.; 8 h.p. J.A.P., 2-cyl., 976 c.c., £70.
A. H. HADEN,
Princip Works, Birmingham.



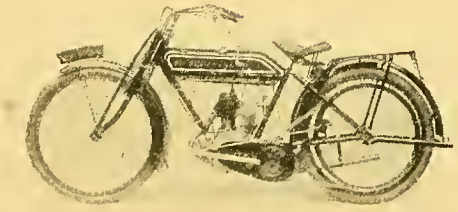
New Hudson.

6 h.p., 2-cyl. (50°), 76 × 85 mm., 770 c.c., s.s.
Standard magneto. B. and B. carburetter.
New Hudson 3-speed countershaft gear.
Chain and belt.
Height 30in. Clearance 5in. Wheelbase 57in.
Dunlop tyres, 650 × 65 mm.
Hand pump and drip feed. Petrol, 2 galls.
Price £75 12s. Weight, 300 lb.
Other models.—2¼ h.p., 1-cyl., 2-stroke, 211 c.c., 2-speed countershaft gear, £38; 4 h.p., 1-cyl., 499 c.c., 3-speed countershaft gear, £65.
NEW HUDSON CYCLE CO., LTD.,
Summer Hill Street, Birmingham.



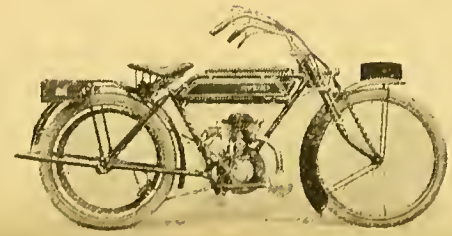
New Imperial.

2½ h.p. J.A.P., 1-cyl., 70 × 76 mm., 292 c.c., s.s.
E.I.C. magneto. B. and B. or Amac carburetter.
New Imperial 2-speed gear. Chain and belt.
Height 30in. Clearance 6in. Wheelbase 51in.
Dunlop tyres, 26 × 2in.
Automatic forced lubrication.
Petrol, 1¼ gall.
Price £43 1s. Weight, 132 lb.
Other models.—Lady's 2½ h.p., 3-speed, clutch, and kick starter, £45 3s.; 3½ h.p., 1-cyl., 488 c.c., £60; 6 h.p., 2-cyl., 770 c.c., £75 4s.; 8 h.p., 2-cyl., 976 c.c., with sidecar, £91 9s.
NEW IMPERIAL CYCLES, LTD.,
Princep Street, Birmingham.



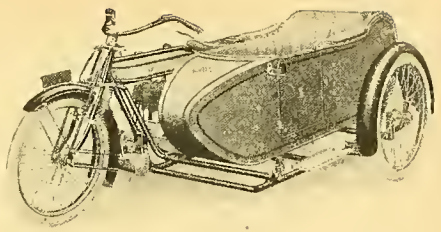
New Ryder.

2½ h.p., 1-cyl., 2-stroke, 70 × 70 mm., 269 c.c.
Dixie magneto. Amac carburetter.
Single geared. Belt, ¾in.
Height 28in. Clearance 7½in. Wheelbase 58in.
Hutchinson tyres, 26 × 2in.
Drip feed.
Petrol, 1¼ galls.
Price £28 13s. 6d. Weight, 130 lb.
Other models.—Same machine, 2-speed, £35.
NEW RYDER MOTOR CYCLE CO., LTD.,
76, Belmont Row, Birmingham.



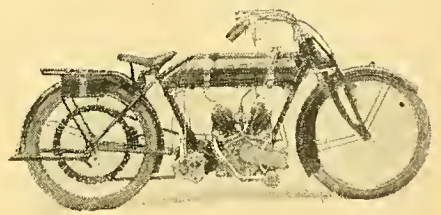
Norton.

4 h.p., 1 cyl., 82 × 120 mm., 633 c.c., s.s.
C.A.V. magneto. B. & B. carburetter.
Sturmey-Archer 3-speed countershaft gear. Chain or chain and belt (1in.)
Height 29in. Clearance 4in. Wheelbase 54in.
Dunlop tyres, 26 × 2½in.
Hand pump and drip feed.
Petrol, 1½ galls.
Price £68 15s. 6d. Weight 248 lb.
Other models.—3½ h.p., 1 cyl., 490 c.c., as above, £66 3s.; T.T. adjustable pulley, £50.
NORTON MOTORS, LTD.,
Sampson Road North, Birmingham.



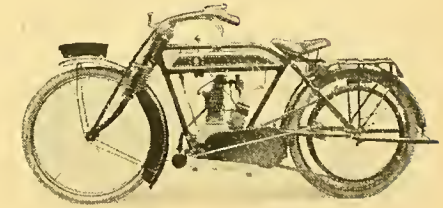
N.U.T.

3½ h.p. J.A.P., 2-cyl. (50°), 70 × 64½ mm., 496 c.c., s.s.
Amac carburetter.
3-speed countershaft gear. Chain and belt.
Height 30in. Clearance 3¾in.
Tyres, 26 × 2¼in.
Hand pump and drip feed.
Price £69 9s.
Other models.—2¾ h.p., 2-cyl., 350 c.c., 3-speed, £69 9s.; as above, single gear, £56 4s.; 6 h.p., 2-cyl., 770 c.c., 3-speed, £80 9s. 6d.; 8 h.p., 2-cyl., 976 c.c., £82 13s. 9d.
NEWCASTLE-UPON-TYNE MOTOR CO., LTD.,
South Benwell Newcastle-upon-Tyne.



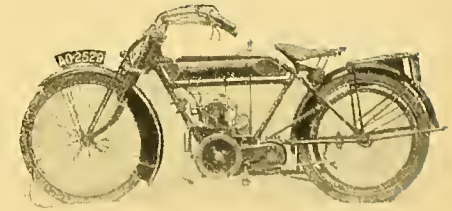
O.K.

2 h.p., 1-cyl., 58×72 mm., 190 c.c., overhead inlet.
Dixie magneto. Amac carburetter.
2-speed countershaft gear. Chain and belt.
Height 30in. Clearance 7¾in. Wheelbase 51in.
Clincher tyres, 26 × 2in.
Hand pump.
Price £31 10s. Weight, 120 lb.
Other model.—2½ h.p., 1-cyl., 292 c.c., £32 11s.
HUMPHRIES AND DAWES,
Hall Green, Birmingham.



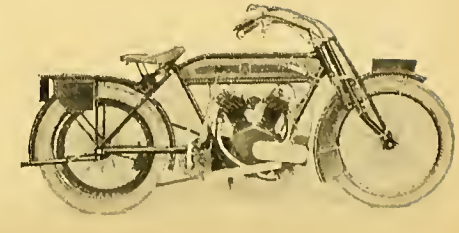
Omega.

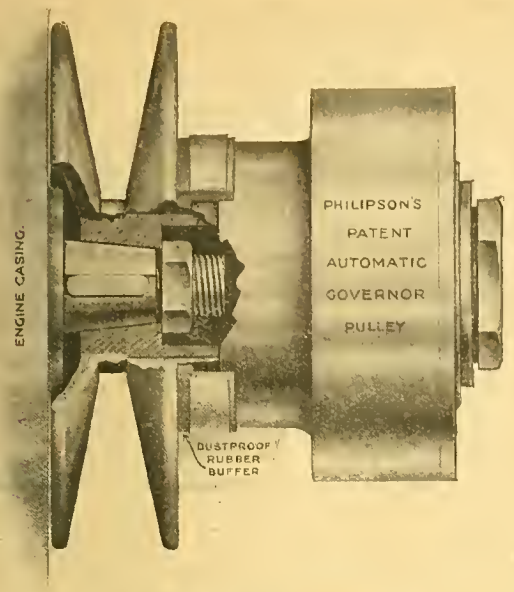
3 h.p., 1-cyl., 2-stroke, 75 × 76 mm., 340 c.c.
E.I.C. magneto. B. and B. carburetter.
2-speed countershaft gear. Chain and belt, ¾in.
Height 29½in. Clearance 3½in.
Duolop tyres, 26 × 2in.
Drip feed.
Petrol, 1¼ galls.
Price £37 16s. Weight, 135 lb.
W. J. GREEN, LTD.,
Croft Road, Coventry.



Overseas.

6 h.p., 2-cyl., 79 × 86 mm., 842 c.c., s.s.
Splitdorf or T.-B. magneto. Amac carburetter.
Sturmey-Archer 3-speed countershaft gear.
Chain and belt.
Height 31in. Clearance 5in. Wheelbase 54in.
Tyres, 650 × 65 mm.
Hand pump and drip feed.
Petrol, 2 galls.
Price £70. Weight, 255 lb.
Other model.—3½ h.p., 1-cyl., 499 c.c., Sturmey Archer 3-speed countershaft, £53.
OVERSEAS MOTOR CO., LTD.,
1a, Johnstone Street, Ladywood, Birmingham.





Philipson PATENT AUTOMATIC GOVERNOR PULLEY

AS SUPPLIED TO MOTOR CYCLE SECTION OF **HIS MAJESTY'S** FORCES. ——————— GIVING

GREATER DRIVING POWER.

MORE SPEED. NO TROUBLE.

Thousands of our Governor Pulley Gears are in use at home and abroad which, according to reports of users, are giving entire satisfaction.

UNSOLICITED TESTIMONIAL.

Lincoln, March, 1915.

Messrs. Philipson & Co.

Dear Sirs,—When you first placed before the public your wonderful pulley gear I ordered one immediately from you through Messrs. Binks & Co., of Lincoln. At the end of some weeks I had the gratification of testing it, and was thoroughly satisfied with it. Since then I have become the proud possessor of medals. etc. for which I am in some way indebted to you. I have used this pulley all this time and have had practically no trouble with it.

I put up fastest time of the day at the Oakamoor Hill Climb, after which Mr. J.A.P. ordered a racing pulley from you through Messrs. Goodwin & Co., of Hanley.

In the meantime I became foolishly interested in a new type of variable gear made by another firm. This was a most unsatisfactory affair, so I put the Philipson on again and went to the makers of the other gear. They fixed their gear on in a fashion, and I returned to test same under load and against watch—**result nil.** I go into my shed and take the beast off and find I have lost the Philipson, it having worn a great hole in my portmanteau and got lost on the road.

I am writing to see if you will let me have another new racing pulley for T.T. Triumph. Please let me know exactly on what date it will arrive and I will send you cheque.

Yours truly, A.F.W.G.

Extract from "The Motor Cycle," September 30th, 1915, page 334:—

We were pleased to see that Capt. Huntbach's Premier with Philipson Pulley, which behaved so well at the United Services meeting at Brooklands on the 4th inst., made a capital ascent."

NOTE.—This was a 3½ h.p. engine competing with 7 and 8 h.p. engines.

SEND FOR 1916 BOOKLET.

A FEW SUCCESSES

with the

PHILIPSON PATENT AUTOMATIC GOVERNOR PULLEY

in the hands of Experts and Amateurs.

GRAND PRIX OF TURIN.

FIRST—Malvisi. Six Philipson Pulleys ran on "Ariel" engines in the same race.

BOURNEMOUTH.

Winner of **Experts' Cup,** Mr. W. F. Newsome (Triumph). Winner of **Silver Cup** for General Riders, Mr. E. H. Littledale (Ariel).

COLMORE CUP TRIAL.

Winner of **Silver Cup** for best Amateur Performance; also **Gold Medal,** Mr. E. H. Littledale (Ariel).

PARIS-NICE TRIAL.

Gold Medal Winners.

CIRCUIT DE RAMBOUILLET.

Mr. C. T. Newsome on 3½ h.p. Rover and Sidecar obtained **First Award** (in 500 c.c. class), **Silver Cup** (from Motor Cycle Union), and **Bronze Award** (for first in 500 c.c. sidecar class). Mr. Newsome also obtained **Bronze Cup** for best Sidecar Equipment, beating all Solo and Sidecar machines entered.

STOCKPORT OPEN HILL CLIMB.

In Classes 2, 4, 6, 7, 10, **Rover First.** *Motor Cycling* says: "The features of the day were the wonderful speeds put up on the 3½ h.p. Rover. Newsome had the **Philipson Pulley** on, and found it of great service."

ACCEPT NO GEAR AS GENUINE UNLESS IT BEARS THIS TRADE MARK ⟩⟩⟩⟶

PATENTED AND REGISTERED PA PH GO PY TRADE MARK HOME AND ABROAD

ENTIRELY FREE from troublesome and weighty complications—only **2 working parts**—no levers, rods, wheels, etc., to worry about. Simply takes the place of the ordinary pulley **(one nut only secures the complete gear to the engine)—can be fitted without any alteration to most engines in a few minutes**—Send for 1916 booklet.

☞ THIS GEAR HAS A WORLD-WIDE REPUTATION FOR SIMPLICITY AND EFFICIENCY. ☜

SOLE MAKERS: **PHILIPSON & CO., Engineers, ASTLEY BRIDGE, BOLTON.**

Telegrams—"Safety, Bolton." **ESTABLISHED OVER 30 YEARS.** Telephone—147, Eagley.

Orders and enquiries in LONDON and DISTRICT, please apply Newsome and Fletcher, 3, Sandringham Parade, Ealing, W.

In answering this advertisement it is desirable to mention "The Motor Cycle." B7

Established 1897.

BOWDEN WIRE LTD.

LONDON

PRATT ST. N.W.

BOWDEN WIRE MECHANISM.
The only efficient method of controlling all movements from the handle-bar. Made in various strengths and finishes.

BOWDEN CONTROLS.
Levers for use with Bowden Wire for Brakes, Clutch, Air Inlet, Magneto, and other Controls. Straight or Curved, for right or left hand and for one to three movements.

STOPS, PORTABLE CLIPS,
Etc., and all necessary fitments for use with Bowden Wire Mechanism and Controls.

BOWDEN TWO-SPEED GEAR.
A very simple and highly-efficient countershaft gear with kick-starter. Can be fitted to a number of machines without any — to most with slight—alteration. Guaranteed for engines up to 6 h.p.

BOWDEN RAPID VALVE GRINDER.
Grinds a valve quickly, and with absolute accuracy, without dismantling the cylinder. Most efficient. Also useful as a Valve Spring Lifter.

Godbolds

TAN LEATHER M.C. COSTUME.

Best Quality Tan Chrome Skins, lined camel fleece.

A magnificent costume for Winter Riding.

The coat is double-breasted and cut on smart lines. The Trouser Overalls are also lined camel fleece and have a strap at the ankle.

Price of Coat, £2 12 6
Price of Overalls, £2 2 0
Overalls (lined tweed) £1 12 6

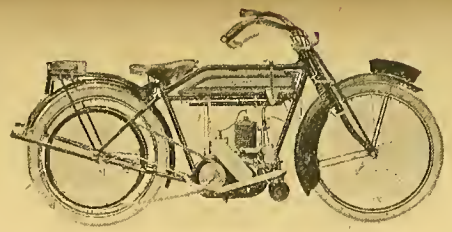
Dunhills Ltd.,

359-361, Euston Road, LONDON, N.W.
2, Conduit St., W. 42, Lombard St., E.C.
Manchester: 90-92, Cross St. Glasgow: 72, St. Vincent St.

Vindec.

2½ h.p., 1-cyl., 2-stroke, 64 × 70 mm., 225 c.c.
Dixie magneto. Senspray carburettor.
Vindec 2-sp. countershaft gear. Chain and belt, ⅝in.
Height 30in. Clearance 4in.
Dunlop tyres, 26 × 2in.
Petroil.
Petrol, 1 gall.
Price £40. Weight, 90 lb.
Other model.—6 h.p. J.A.P., 770 c.c., Sturmey-Archer 3-speed countershaft, with sidecar, £88.

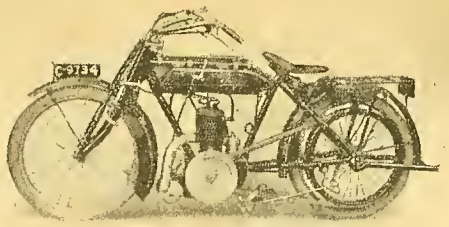
BROWN BROS., LTD.,
22-34, Great Eastern Street, London, E.C.



Ward.

2¾ h.p., 1-cyl., 73 × 70 mm., 293 c.c.
E.I.C. magneto. Amac or Senspray carburetter.
Roc 2-speed countershaft gear. Chain and belt.
Height 28in. Clearance 5in. Wheelbase 48¾in.
Clincher tyres, 24 × 2in.
Hand pump and drip feed.
Petrol, 1½ galls.
Price £34 16s. Weight, 120 lb.
Other model.—Same machine, single geared, £26 10s.

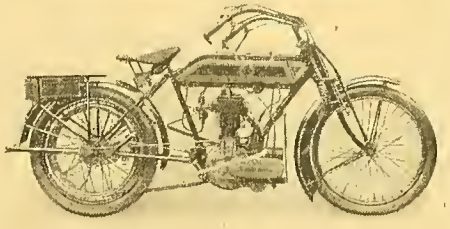
W. WARD AND SONS,
Motor Engineers, Wetherby, Yorks.



Westovian.

4½ h.p. Precision, 1-cyl., 89 × 96 mm., 597 c.c., s.s.
Dixie magneto. Amac carburetter.
Sturmey-Archer hub gear. Belt.
Height 30in. Clearance 5in. Wheelbase 55in.
Dunlop tyres, 26 × 2½in.
Hand pump.
Petrol, 2 galls.
Price £52 10s. Weight, 185 lb.
Other models.—2½ h.p. T.D.C., 1-cyl., 269 c.c., 2-speed, £30 6s.; 3¾ h.p. Precision, 1-cyl., 499 c.c., 4-speed, £54; 2½ h.p. Villiers, 1-cyl., 269 c.c., 2-speed, £33 6s.; 4 h.p. J.A.P., 1-cyl., 488 c.c., 4-speed, £56; 4 h.p. J.A.P., 2-cyl., 496 c.c., 4-speed, £60; 6 h.p. J.A.P., 2-cyl., 770 c.c., £70.

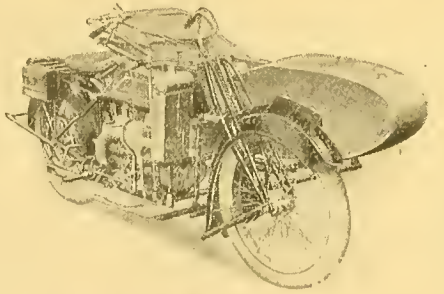
R. V. HEATH AND SON,
Catherine Street, South Shields.



Williamson.

8 h.p. Douglas, 2 cyls. (180°), 85 × 85 mm., 964 c.c., s.s.
Bosch magneto. Amac or B. & B. carburetter.
Douglas, 2-speed countershaft gear. Chain.
Clearance, 6½in.
Hutchinson tyres.
Hand pump and drip feed.
Petrol, 1¾ galls.
Price £100.

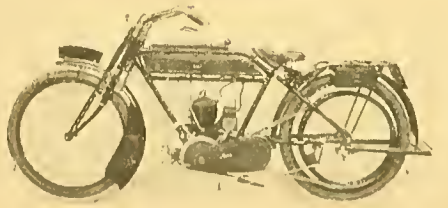
WILLIAMSON MOTOR CO., LTD.,
Earlsdon, Coventry.



Wolf.

2¾ h.p., 1-cyl., 2-stroke, 70 × 70 mm., 269 c.c.
Dixie magneto. Amac carburetter.
Countershaft gear. Chain and belt.
Height 28½in. Wolf tyres, 26 × 2in.
Hand pump and drip feed.
Petrol, 1¼ galls.
Price £35 16s. 6d. Weight, 127 lb.
Other models. 2½ h.p. T.D.C., 1-cyl., 269 c.c., £26 11s. 6d.; 2½ h.p. J.A.P., 1-cyl., 292 c.c., £31 5s.; 4 h.p. Abingdon, 1-cyl., 499 c.c., £41 12s. 6d.; 6-7 h.p., 2-cyl., £75.

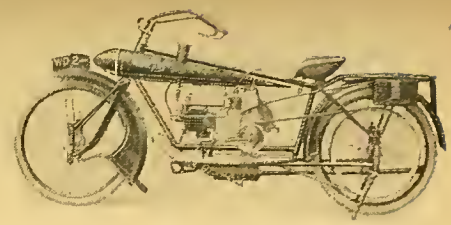
WOLFRUNA ENGINEERING CO., LTD.,
Wolverhampton.



Wooler.

2¾ h.p., 1 cyl., 2-stroke, 76 × 76 mm., 344 c.c.
B. & B. carburetter, with pilot jet.
Countershaft variable gear (7 ratios). Belt (¾in.)
Height 26½in. Clearance 7in. Wheelbase 59in.
Dunlop tyres, rubber studded, 26 × 2in.
Mechanical lubrication.
Petrol, 1¼ galls.
Spring frame.
Price £47 5s. Weight 170 lb.

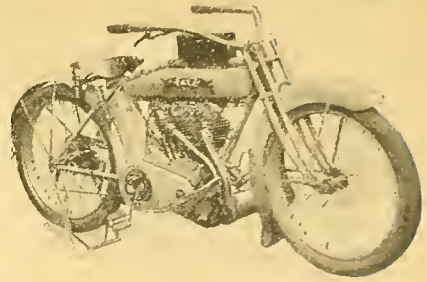
WOOLER ENG. CO., LTD.,
Old Oak Common Lane, Willesden Junction, N.W.



Yale.

7-8 h.p., 2-cyl., 82.5 × 93 mm., 994 c.c., overhead valves.
Bosch (American) magneto. Senspray carb.
Yale 2-speed countershaft gear. Chain.
Height 32in. Clearance 5in. Wheelbase 84in.
Goodyear tyres, 28 × 3in.
Mechanical pump.
Petrol, 2 galls.
Price £75. Weight, 300 lb.

T. BAXTER,
36, Great Eastern Street, London, E.C.



Zenith.

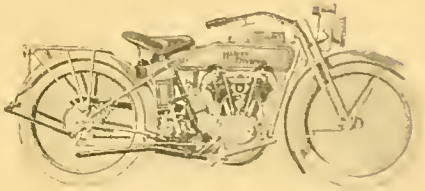
4-5 h.p. J.A.P., 2-cyl. (50°). 70 × 85 mm., 654 c.c., s.s.
Splitdorf magneto. Amac carburetter.
Zenith-Gradua gear, in countershaft.
Chain and belt, 1in.
Height 31in. Clearance 5in. Wheelbase 54in.
Hand pump.
Petrol, 1½ galls.
Price £70 11s. Weight, 245 lb.
Other models.—3½ h.p., 1-cyl., 488 c.c., £58 9s.; 3½ h.p., 2-cyl., 496 c.c., £59 10s. 6d.; 4-5 h.p., 2-cyl., 654 c.c., £62 17s.; 6 h.p., 2-cyl., 770 c.c., £72 15s. 6d.; 8 h.p., 2-cyl., 976 c.c., £73 17s. 6d. These models can also be obtained with countershaft drive at an extra cost.

ZENITH MOTORS, LTD.,
Hampton Court, London.

Harley-Davidson.

7-9 h.p., 2-cyl. (45°), 84.1 × 88.9 mm., 988.83 c.c., overhead inlet valves.
Bosch magneto. Schebler carburetter.
Harley-Davidson 3-sp. countershaft gear. Chain.
Height 30½in. Clearance 4¾in. Wheelbase 59½in.
Goodyear (Blue Streak) tyres, 28 × 3in.
Mechanical and hand pump. Petrol, 2½ galls.
Price £80 15s.
Other models, 4 h.p., 1 cyl., 565 c.c., single geared, and clutch, £63 10s. 6d.; with 3-speed countershaft, £70 15s.; 7-9 h.p., as above, single geared, £74 10s.; with Remy electrical equipment, £89; 7-9 h.p. racing machine, £78.

HARLEY-DAVIDSON MOTOR CO., LTD.,
Harleyson House, Newman Street, London, W.



N.B.—In connection with the prices of the 1916 models described above it may be well to throw out a warning to readers who may hereafter use this Guide for reference, that the prices quoted are those existing at this date, but cannot definitely be considered binding. This matter has been brought to our notice by more than one manufacturer, as a result of the fluctuating state of the material market. Those readers who propose placing their orders early may, of course, do so on the basis of the figures given, but should materials further increase in cost, then naturally it must be assumed that prices will be advanced in consequence. As regards delivery, several weeks of waiting are usually the rule, so that those in a position to place their orders early would be well advised to do so

NEW MODELS

· MANUFACTURERS' PROGRAMMES FOR 1916 ·

AN 8 h.p. TWIN-CYLINDER SUNBEAM.

New Three-speed Sidecar Mount in Addition to 3½ h.p. Single-cylinder.

THOUGH it has been known to a select few that Messrs. John Marston, Ltd., have had under test for some months past a powerful sidecar machine fitted with an 8 h.p. twin-cylinder M.A.G. engine of 82 × 94 mm. bore and stroke. = 992 c.c. capacity, the secret has been well kept. The machine having emerged successfully from its varied tests, and been definitely adopted as one of the Sunbeam models for 1916, we are able to illustrate it. In general design the machine follows the high standard which has characterised Sunbeam models of the past, the chief difference, as already indicated, being the adoption of the 8 h.p. twin-cylinder "V" type engine in place of the 6-7 h.p. engine used in 1915. The M.A.G. engine is so well known to our readers that it needs very little description; but it may be recalled that it has overhead valves, the mechanism being entirely enclosed and automatically lubricated.

A characteristic of this engine is the silence of its valve mechanism, its quiet running comparing very favourably with a four-cylinder car. There are but two timing wheels in this engine, three cams being formed on the single half-time wheel, one of them operating the exhaust valves and the other two the inlet valves. The engine is fed by an Amac carburetter, though a B. and B. may be supplied to order if desired. The capacity of the tank is no less than two and a half gallons.

Transmission throughout is perhaps naturally by chain in conjunction with the Sunbeam "little oil bath" chain cases, whilst the standard Sunbeam three-speed countershaft gear, in conjunction with a kick-starter, represents another fitment which has survived the test of time. One important departure from previous practice is the adoption of an internal expanding rear brake in place of the brake acting on a dummy belt rim. This brake is used in conjunction with a powerful front rim brake.

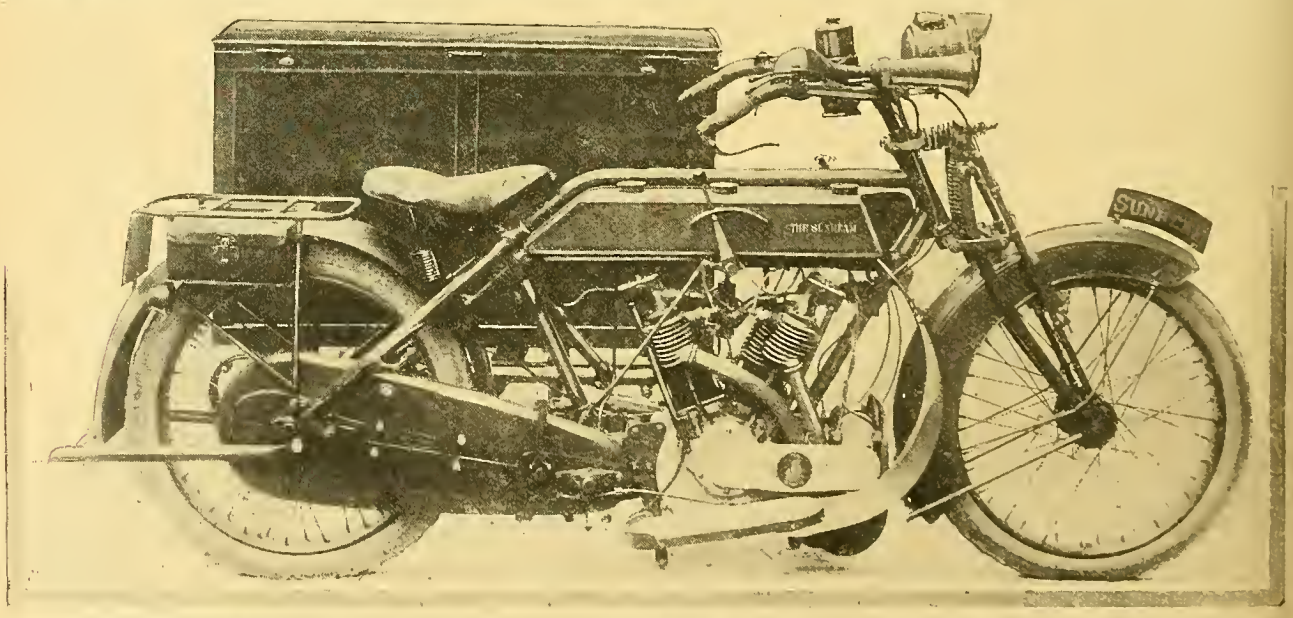
Details of the 8 h.p. Mount.

The mudguarding is excellently carried out, the valances extending the whole length of the front guard, whilst the back guard is very wide. In addition, leg shields are provided from footboards to tank tube, such as were dealt with in our article in the last issue on "Hints and Tips for Winter Riders."

The 1916 8 h.p. Sunbeam is one of the most attractive sidecar mounts on the market, for it has quickly detachable and interchangeable wheels, which are now so much sought after, whilst its design, down to the merest detail, has received very careful thought and attention, not a single flimsy part figuring in its construction. Stands for both front and rear wheels are fitted; the standard tyres are 650×65 mm. Bates or Dunlop. A ground clearance of 4½in. is provided.

The new Sunbeam is not a cheap machine—its very complete equipment could not permit of that—the price being £94 10s. With the standard sidecar fitted, the 8 h.p. Sunbeam sidecar combination retails at £119 14s.

The only other model Sunbeam for 1916 will be the 3½ h.p., which remains unaltered in design. No doubt the war has prevented the firm carrying out their intention of marketing the 4 h.p. long-stroke model, which scored such a signal success on its first appearance at the Wolverhampton Club's hill-climb at Style Cop.

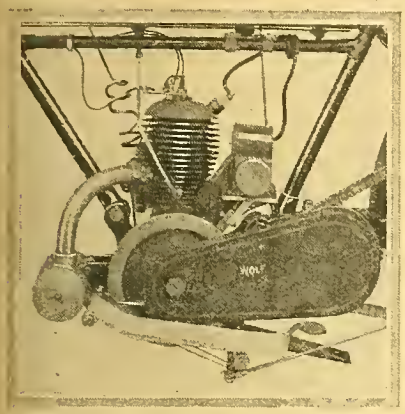


A NEW SUNBEAM—the 8 h.p. passenger machine, which follows the lines of the 6 h.p. 1915 model. A number of these new models, fitted with sidecarrier and finished in khaki, have been supplied to the Russian Government, and it is a specimen of these we illustrate.

WOLF MOTOR CYCLES IN 1916.

FOR 1916 the Wulfruna Engineering Co., Ltd., of Wolverhampton, have a range of models which should make a strong appeal to riders of all tastes. Commencing with the smallest machine, this is a 2½ h.p. two-stroke with T.D.C. engine, and, like the other single-cylinder models manufactured by the firm, may be obtained either with a single speed or countershaft gear, and also countershaft gear combined with kick-starter.

The second model two-stroke has a 2¾ h.p. Wolf engine with the same capacity as the former, viz., 70×70 mm.



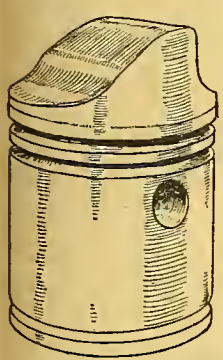
Power unit of the 2¾ h.p. two-stroke Wolf. It has a countershaft gear and the usual chain-cum-belt drive.

Two four-stroke single-cylinder Wolf machines are obtainable fitted either with a 4 h.p. J.A.P. engine or a 4 h.p. Abingdon, both with side by side valves.

A sturdy mount which should attract sidecarists is the 6 h.p. twin with a three-speed countershaft gear. This model may be obtained complete with a coachbuilt sidecar attached if desired.

1916 TWO-SPEED OMEGA.

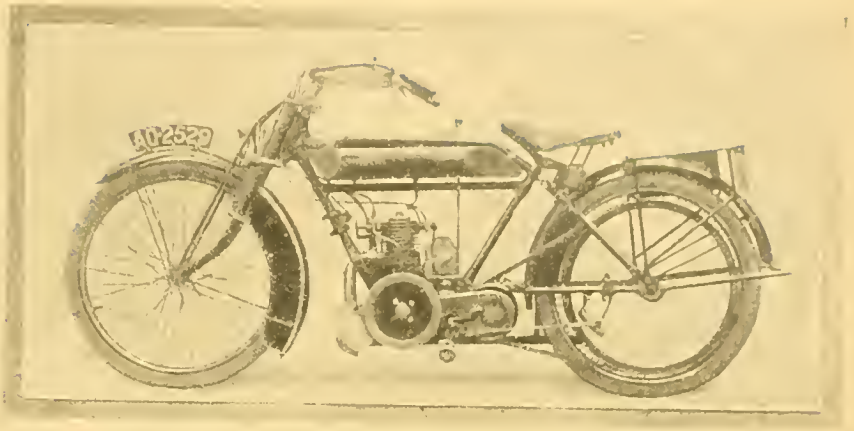
IN our issue of October 28th we gave some details of modifications to Omega machines for 1916, and since then further improvements have taken place, notably in the oiling system. Oil was formerly admitted through the inlet pipe, and it was found that a certain amount leaked at the joint of the pipe, thereby causing the engine to present a dirty appearance. On referring to the sketch it will be seen that in the new system two unions of the oil pipes are screwed to bosses on the cylinder wall. Oil entering by these means lubricates the piston and its bearings, and trickles down the cylinder, and is caught by cup-shaped projections cast on the inside of the crank case. Thence it is conducted through ducts direct to the engine-shaft bearings. These latter are thus constantly and amply lubricated so long as any oil remains in the engine, and leakage of oil is prevented by a channel leading excess lubricant back into the bottom of the crank chamber.



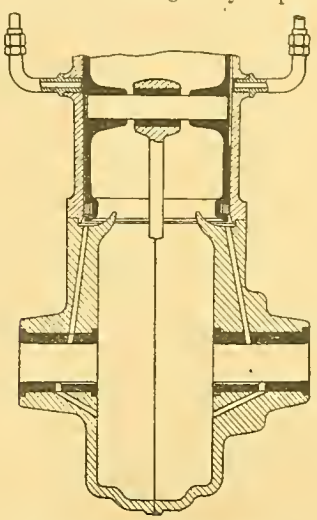
New piston of the Omega two-stroke engine. The back of the deflector has a "flat" formed on it.

Recognising that bad scavenging is responsible in a large way for loss of power, Messrs. W. J. Green, Ltd., the makers of the Omega, have gone carefully into the point, with the result that the exhaust port has been widened and the bottom of the piston head has been hollowed out to give the exhaust gases a freer escape. This modification, we are assured has made an appreciable difference to the "revving" powers of the engine.

The two-stroke Omega may be obtained with a single or two-speed gear, and the two-speed countershaft model has an aluminium cover over the chain. A further option is the fitting of a neat Watsonian sidecar attachment.



The 1916 model 3 h.p. 340 c.c. Omega two-speeder, improvements to the engine of which are described on this page.

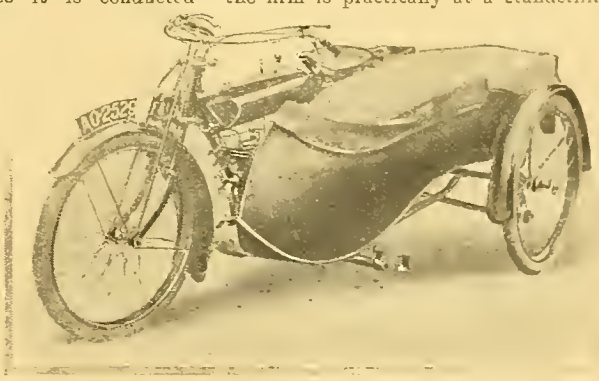


Sectional drawing showing method of lubricating piston and engine-shaft bearings of the two-stroke Omega. The piston dips into the well of oil on the bottom of the stroke.

JUNOS IN 1916.

JUNO motor cycles for 1916 will be marketed in no less than eight different types, thus catering for all requirements. The smallest is the 2½ h.p. two-stroke Juno-Villiers, of which there are four variations, from the standard fixed gear machine to the *modèle de luxe* two-speeder. At the other end of the programme is the 6 h.p. Juno-Jap with Sturmey-Archer three-speed countershaft gear.

Owing to the fact that all the employées in the motor department of the Victoria Motor and Cycle Co., Ltd., have enlisted and other men are unprocurable, the motor cycle production of the firm is practically at a standstill.



A two-stroke lightweight passenger outfit. The latest two-speed Omega with sidecar.

COVENTRY EAGLES FOR 1916.

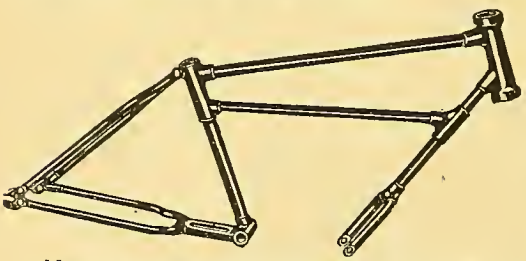
The Addition of a Four-stroke Lightweight Model.

THE models of the Coventry Eagle Cycle and Motor Co. will remain unaltered for the coming year, viz., the 5-6 h.p. twin for sidecar work, which is fitted with an Abingdon engine and chain-cum-belt transmission, the 3½ h.p. single, and a lightweight two-stroke, which is listed in both two and single-speed models.

We were interested to hear that, owing to the extravagance and many other little eccentricities of the small two-stroke type of engine, the company are also fitting the lightweight model with a single-cylinder 2½ h.p. J.A.P. engine for the coming year, making yet another model. This helps to prove the correctness of the remarks in our leader of October 14th, viz., that unless these small faults in the two-stroke were remedied, it is quite possible in the future that the lightweight four-stroke engine would eventually come into its own again, instead of being entirely ousted by the simpler two-stroke.

THE NEW TWO-STROKE HOBART.

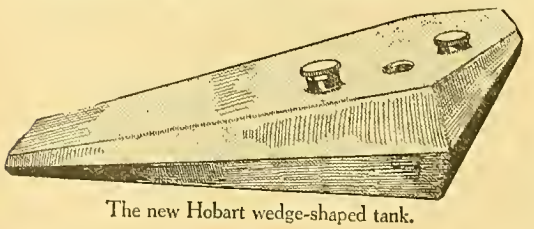
FOR the coming year the two-stroke Hobart will incorporate, in addition to several small detail improvements, an entirely new design of frame and tank. Instead of only dropping the rear portion of the top tube, the whole tube is sloped, making a straight line from the head to the upper ends of the rear stays—a design growing in favour. This not only has a neat appearance, but also increases the strength considerably. The tank, of course, is altered in shape to suit the new design, and is of the wedge-shaped variety, being wider in front than at the rear.



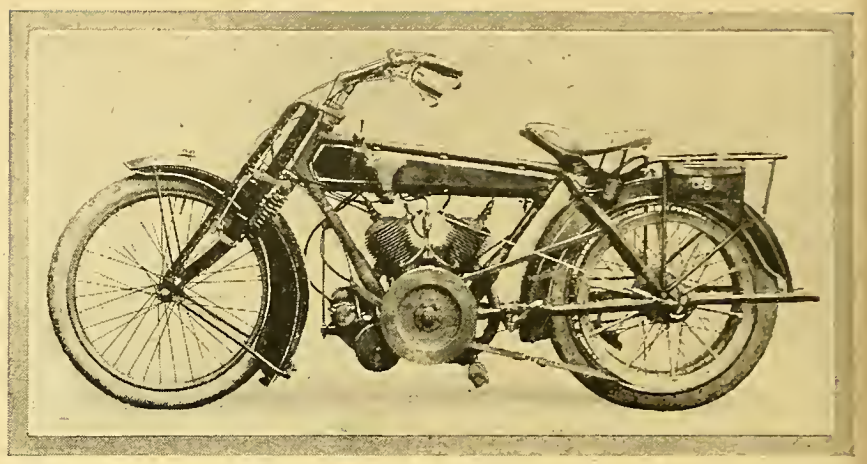
New design frame to be adopted on the 1916 model two-stroke Hobart.

An extremely low riding position is provided, the top of the saddle being less than 28in. from the ground when 26in. wheels are fitted. The engine is the Villiers, having a bore and stroke of 70 mm.=269 c.c. The Chater-Lea two-speed countershaft gear is used, this being operated from the handle-bar by a Bowden cable. The touring model has aluminium footplates, the T.T. machine having two sets of footrests. All models are fitted with Druid spring forks. Lubrication is carried out from a Best and Lloyd sight drip feed lubricator to the induction pipe; the mudguards have deep side valances and are of ample width. The new design tank will have a larger capacity than the old pattern, and will be finished like the rest of the machine in black enamel.

The Hobart lightweight has gained a fine name for quality and reliability in 1915, and its reputation promises to be enhanced next year.



The new Hobart wedge-shaped tank.



A Sun innovation—a twin-cylinder V type two-stroke, which has been under test for some months past.

SUN MODELS.

A V Type Two-stroke.

THE Sun Cycle and Fittings Co. have a range of models which appeal to all tastes, the 2½ h.p. two-stroke being the lightest and the 6 h.p. J.A.P.-engined model the heaviest mount. The lightweight may be obtained either with a Villiers or V.T.S. engine, and with a two-speed countershaft gear of the Jardine or Albion type. An excellent point of the two-speeder is the neat and efficient chain case provided for the primary drive. The fact of the flywheel of the V.T.S. being separately detachable from the shaft enables the chain casing to be fitted very neatly and efficiently, and, moreover, it is a comparatively simple matter to remove the case to shorten or replace the chain. Whether with a Villiers or V.T.S. engine, the new Thomson-Bennett lightweight magneto is used, this instrument being of very neat and compact construction and all-British.

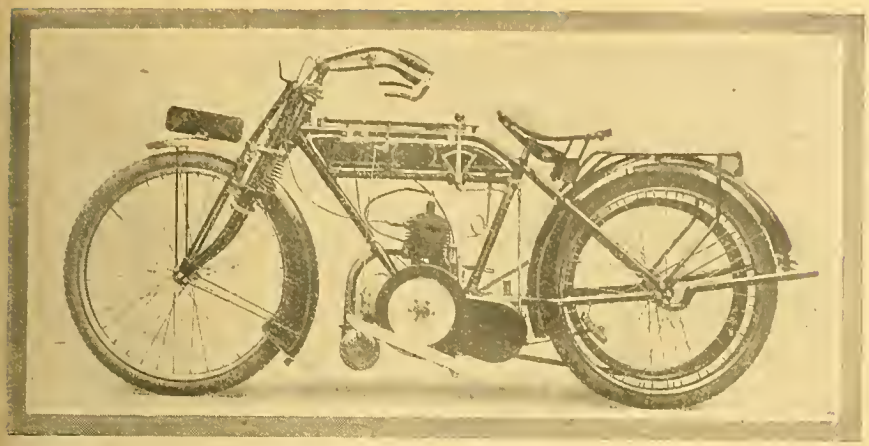
The 4 h.p. single-cylinder J.A.P.-engined model has been modernised by the adoption of a Sturmey-Archer three-speed countershaft gear, in place of the hub gear formerly used. This machine follows standard lines through out, but strikes one as being of very staunch construction and workmanlike design. The same remarks apply to the 6 h.p. twin-cylinder J.A.P.-engined model, which also has a Sturmey-Archer three speed countershaft gear. An improvement in design noticed on this model is the substitution of a powerful brake operating inside the groove of the belt pulley, which is substituted for the band brake formerly used. Aluminium footplates of substantial size are used.

Chain and belt drive is adopted as the standard transmission on all Sun machines, and the fitting on the larger models of the Sturmey-Archer countershaft gear with its operating lever connected directly to the gear unit greatly simplifies the work of adjusting the chain. This operation may be performed by simply loosening the four supporting nuts and sliding the gear along the slots provided in the bottom bracket lug on which the gear is suspended.

A V Type Two-stroke Twin.

Although the two-stroke V type twin is not by any means new, the number of different designs now undergoing experimental tests gives hope that this type will appear on the market as a capable rival to the four-stroke V engine. More especially does one hope for the success of twin two-strokes, whether V or horizontally opposed cylinder, because they are exceptionally nice to handle, smooth in running, and, having unusual "pull" at low speeds, should be equally tractable either in the thick traffic of a town or the open roads of the country.

The latest machine is the V twin Sun shown in the illustration, and, although it is of necessity an experimental machine, nevertheless our readers will admit that its lines are particularly pleasing, while the engine fits into the frame in that workmanlike manner only attained with careful design.



The 2½ h.p. two-stroke countershaft-driven Sun for 1916

The two cylinders are staggered, as the engine, although it has but one crankshaft, is otherwise composed of two "singles" joined together and having the exhaust ports so arranged that the pipes curve easily from the ports through forks in the frame to a very large silencer slung below the engine securing bracket. Thus there are no sudden corners or changes of section, and the exhausting gases have a free path of exit. It will be noticed that the rear cylinder discharges through a pipe curved almost to a semi-circle before reaching the silencer.

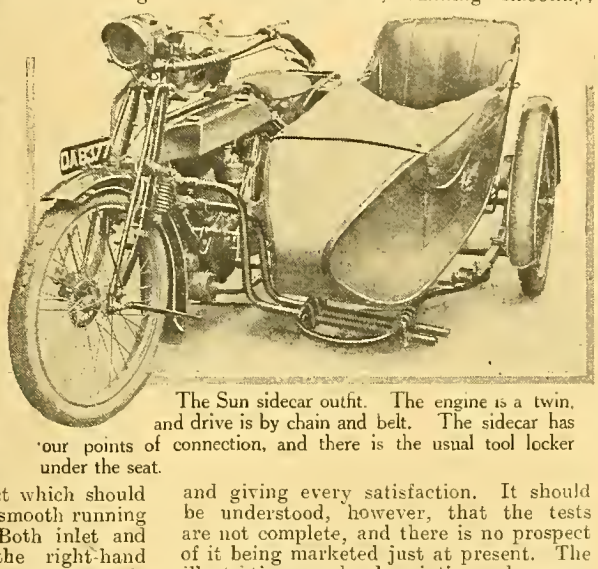
As the flywheel is external, its size is out of the common, the rim being deeper and the width greater than one is accustomed to see—a fact which should help to gain for the engine smooth running and low speed torque. Both inlet and transfer ports are on the right-hand side of the engine, being at an angle of 90° to the exhaust ports, while for experimental purposes small baffles are placed in a branch of the inlet pipe to adjust the flow of gas in each pipe from the B. and B. carburetter.

Oil is fed to a central chamber and then to the cylinder walls by the pipes seen in the illustration. Both compression releases are in the crowns of the cylinders.

As to the frame, the top tube is sloped in conformity with modern ideas, while there is a tank tube, and the head gives good space between the bearings. Both seat-pillar and down tube are forked to clear the exhaust pipes as already mentioned.

One brake acts on the front wheel rim, the other upon the belt rim well below the chain stays; this is operated by a small heel pedal of which the spindle is clipped to the bottom bracket by lugs. At present the drive is by belt with a hub gear controlled from a small lever in a quadrant bolted to the frame near the forward end of the tank.

We were informed that the road trials have proved highly satisfactory, the machine developing plenty of power with a sidecar attached, running smoothly,



The Sun sidecar outfit. The engine is a twin, and drive is by chain and belt. The sidecar has four points of connection, and there is the usual tool locker under the seat.

and giving every satisfaction. It should be understood, however, that the tests are not complete, and there is no prospect of it being marketed just at present. The illustration and description, however, show that the Sun Co. are alive to possible developments of the future.

NEW ALP TWO-STROKE.

THE Alp for 1916 will have a 2½ h.p. two-stroke engine fitted with a mechanical lubrication system, Alp magneto, and Amac carburetter. The two-speed gear is contained in an extension of the crank case, and is provided with a clutch. The Alperton Motor Co., Ltd., Alperton, Middlesex, have also adopted a spring frame, and it is hoped that the machine will be placed on the market shortly.

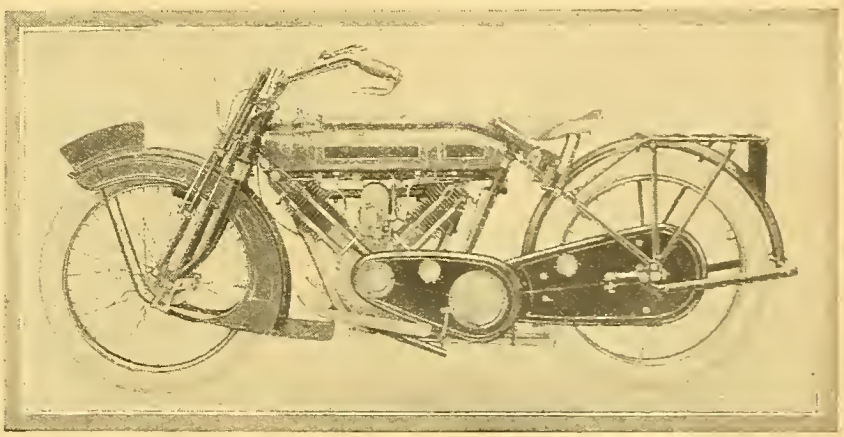
THE 1916 TORPEDOES.

MESSRS. F. HOPPER AND CO., Barton-on-Humber, have, as usual, a variety of models. There are two 2½ h.p. machines, a two-stroke of 225 c.c., and a four-stroke (292 c.c.), the latter being fitted with a two-speed countershaft gear as is also the 2¾ h.p. The larger machines have engines of 3½ h.p. and 4¼ h.p., 499 c.c. and 597 c.c. respectively, the latter being provided with a three-speed gear in the countershaft, and specially designed for sidecar work. The engines employed are Precisions.

1916 TWIN P. & M.

THE twin P. and M. is not altogether new to our readers, as it was described in detail in this journal as long ago as last November, but, owing to the demands of the R.F.C. for the 3½ h.p. model, the firm has been unable to deliver the twin to the public, and it is feared that these conditions will prevail for some time to come.

Some details of the latest twin will no doubt prove interesting. The outlines of the machine closely follow those of the famous single-cylinder. The engine is rated at 6 h.p., and has a bore and stroke of 76×85 mm., giving a cubic capacity of 770 c.c. The cylinders are placed at an angle of 90°, and, as in the case of the single-cylinder model, the front cylinder takes the place of the down tube of the frame. The magneto, which is snugly placed between the two cylinders, is driven by a shaft and bevel from the valve timing wheels. A four-speed gear is fitted. There is a kick-starter, and the drive is by entirely enclosed chains.



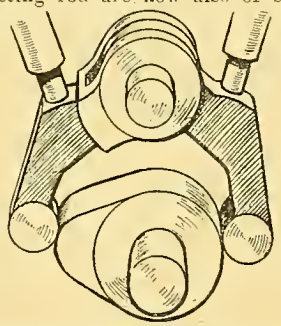
The 1916 edition of the 6 h.p. twin-cylinder (90°) P. & M. All chain drive and a four-speed gear are features of note.

Harley-Davidson Twin-cylinders for 1916.

84.1 mm. × 88.9 mm., 988.83 c.c., Chain Drive, Three Speeds, Electrical Equipment.

THE Harley-Davidson is comparatively a newcomer to these shores, but during the brief period it has been with us it has attained a well-deserved degree of popularity. It is chiefly in details that the Harley-Davidson machines have been altered.

For 1916 the engine has not undergone a great deal of alteration, the chief difference between the 1915 and 1916 models being that the valve ports are now of the streamline variety. A good deal, however, has been done in the way of improving the material used in its construction, the large inlet valves being made of nickel steel, and the springs of genuine Vanadium steel. In the case of the exhaust valves, the springs are of the same material, but the valves themselves are of tungsten steel, a material which is one of the most suitable for the purpose. Nickel steel is used for the flywheel keys, and the cages for the roller bearings of the connecting rod are now also of steel.

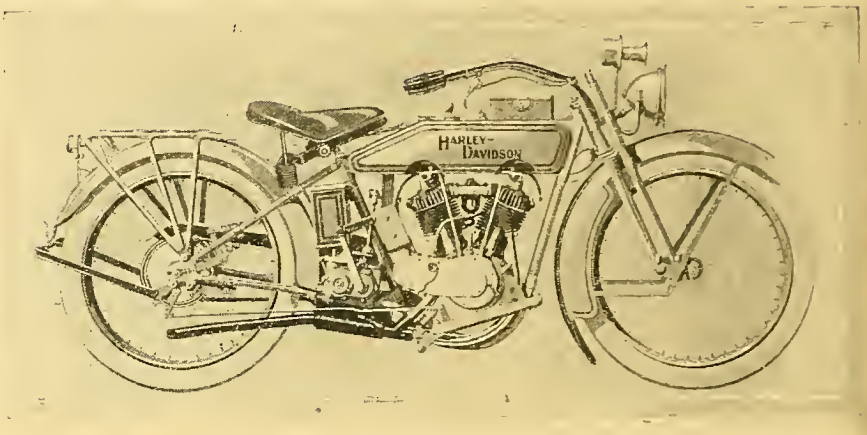


Inlet valve rocking levers. The cam is shown separately.

A new type of lubricator is fitted to the inlet valve rocker arm, and there is an oil hole in the push rod bearing on the inlet rocker arm, which makes it easy for this part to be lubricated.

The Electrical Equipment.

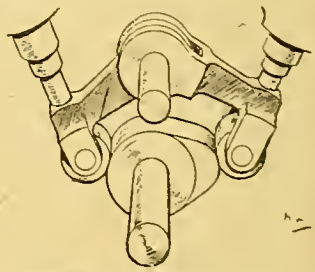
There is not very much alteration in the Remy electrical equipment, which, it may be remembered, serves to provide the current for the ignition and to charge the batteries, the chief being that a hand switch is fitted in place of the vacuum switch, as the latter was known on occasions to give a little trouble through the ingress of dirt. This year it is impossible to start the engine without turning on the ignition switch, which precludes the possibility of the driver running his generator without the battery being in circuit. In last year's model it was possible to run the generator without the battery being connected up, with the result that the voltage at high speeds was raised as high as 25, which would burn out the lamps and eventually burn out the generator. The head lamp is supplied with a bright and a dim bulb, and there is a plug in the generator casing for a sidecar lamp.



7-9 h.p. de luxe model Harley-Davidson for 1916.

An Ingenious Release Valve.

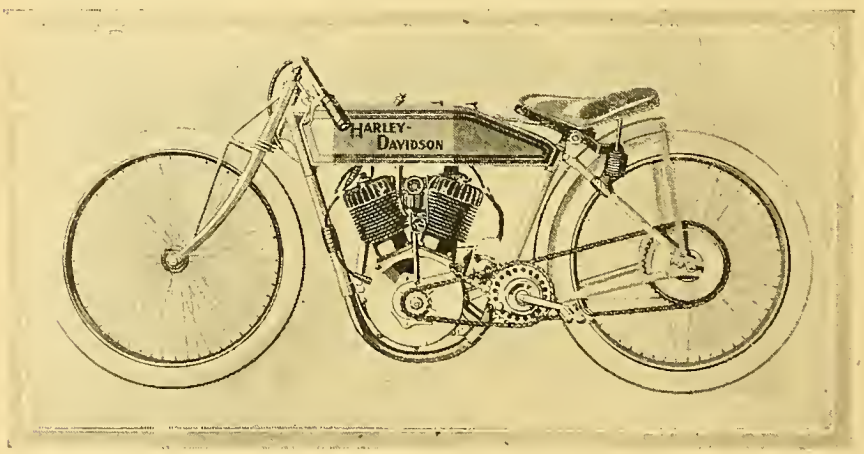
In the sketches (next page) of the timing gear the inlet rockers will be seen, and also the rollers at the end of the exhaust rockers. The great point of interest, however, in the timing gear case is the small wheel in mesh with the main pinion. This is a controlled release valve, which works in the following manner: The wheel spindle is hollow and projects right into the interior of the crank case. In it is cut a square slot which registers with a square port cut in the bearing. These two ports are made to register while the piston is descending, and remain open for practically half a revolution. This does away with all pressure in the crank case, and prevents the oil being blown through the bearings. So far it is clearly understood that the crank case pressure escapes into the timing gear case, whence the escaping oil is carried through a pipe of large diameter on to the front chain. One of the advantages of this release valve is that on account of the size of the port plenty of oil is blown through into the timing gear case, thus lubricating it adequately.



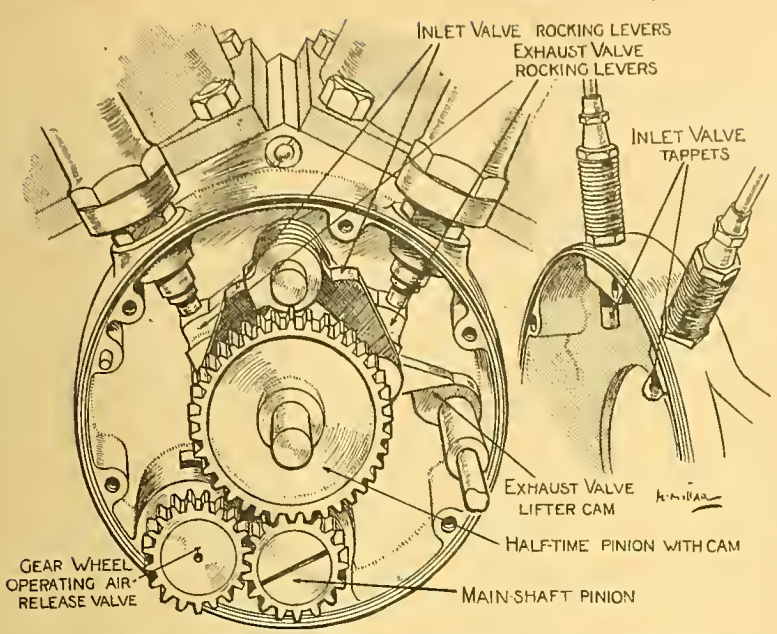
Exhaust valve rocking levers. The cam is shown separate from gear wheel to indicate operation of levers.

Three-speed Gear Box.

One of the chief innovations in the Harley-Davidson for this year is a new type kick-starter on the three-speed models, of which all the working parts are entirely enclosed, while the starter pedal folds so that if the machine is pushed over accidentally it cannot be damaged, nor injure the gear box. The starting pedal crank has been made heavier, and the leverage has been increased. A longer starter key of special steel is now fitted. The gears employed are genuine nickel chrome steel, heat treated.



Sporting edition of the 7-9 h.p. Harley-Davidson



Timing gear case with cover removed, showing timing gears, rocking levers, exhaust valve lifter, mechanically-operated release valve, and inlet valve tappets on inside of timing case cover.

As regards the gear box, the main shaft runs on special annular ball bearings, but the lay-shaft is now mounted on two Harley-Davidson roller bearings, in place of the bronze bushes formerly employed. As in the case of the engine, the rollers run in steel cages. The end thrust on the lay-shaft is taken up by ground and hardened steel thrust washers, while the shaft itself is now made heavier, and composed of chrome nickel steel. Self-aligning thrust ball bearings keep the new specially heat-treated striking rod and the clutch actuating parts in perfect alignment at all times. Special means are taken to prevent oil from leaking. The change-speed gate is made without a notch so that the lever may now be moved right through from first to second without a stop. All other parts have been specially strengthened.

Considerable improvement in the appearance of the machine has been brought about by the adoption of the new streamline tanks, the ends of which are beautifully rounded, and no seams are exposed to view. The tanks have been increased in capacity, the oil tank now holding one gallon and the petrol tank 16½ pints, while a small emergency tank holds 5½ pints, making a total of 22 pints (2¾ gallons).

We are glad to note that Messrs. Harley-Davidson have been enterprising enough to meet English tastes by incorporating larger filler caps, the new type being now 1½in. in diameter. Petrol taps are now fitted underneath the tanks, and gauze strainers are fitted inside both petrol tanks to prevent dirt reaching the carburetter.

Cycle Parts

As regards the frame, this is now made of special carbon steel tubing throughout, while nickel steel forgings are used in all important frame fittings. The head has been specially strengthened so as to render the machine still more suitable for sidecar work, and for this purpose the frame has received further strengthening in other portions. Wider front forks are now fitted, and throughout there is greater clearance for the tyres. Both mudguards have been made much wider, and the flap at the bottom of the front guard is also of greater dimensions.

The considerable improvement in the material used in the construction of the machines is due to the new Harley-Davidson process of heat treating the steel.

This, then, deals with the chief improvements in the 7-9 h.p. Harley-Davidson de luxe model. Yet another interesting machine is the 7-9 h.p. Harley-Davidson sporting model, which is single-geared, but provided with a clutch situated in the back hub. The ignition is by Bosch ignition, and rigid forks are supplied.

A NEW FOUR-STROKE DIAMOND.

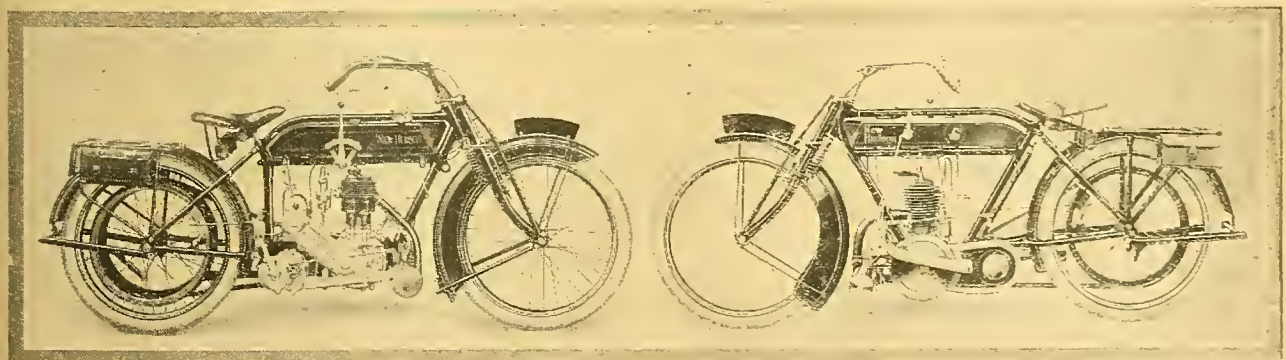
IN addition to the two-stroke Diamond lightweight which is described and illustrated in our Buyers' Guide, the makers of the Diamond will introduce for 1916 a machine fitted with a 2½ h.p. J.A.P. engine of 70×76 mm. This is a sign of the times, for we have several times thrown out hints of late that the miniature four-stroke engine would yet come into its own, in view of the difficulties connected with two-stroke engines which makers do not appear to be able entirely to overcome, even after two or three years' constant study of the question.

DETAIL IMPROVEMENTS TO NEW HUDSONS.

HARDLY any change is to be recorded in the New Hudson machines for next year, and the makers will concentrate on three models. These are the 2½ h.p. two-stroke, the 4 h.p. single-cylinder, and the 6 h.p. twin. All models have countershaft gear boxes and chain and belt drive, the lightweight having a two-speed gear and the two others three-speed gears.

The 2½ h.p. two-stroke lightweight is a sound and thoroughly tested proposition. The cylinder dimensions are 62×70 mm. (211 c.c.), the tank holds 1¼ gallons of petrol, and 24in. wheels with Dunlop tyres are standard.

The 4 h.p. single-cylinder engine (85×88 mm. = 499 c.c.) is now built into the same frame as the 6 h.p. twin model, and with its three-speed gear makes a good solo or sidecar machine. The 6 h.p. model is specially suited for sidecar work.



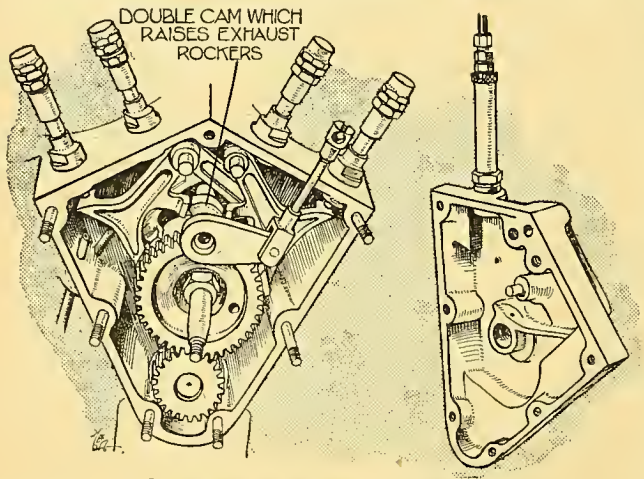
NEW HUDSON 1916 MODELS (Left) The 3½ h.p. single-cylinder and (right) the two-stroke lightweight, both chain-cum-belt driven

J.A.P. ENGINES IN 1916.

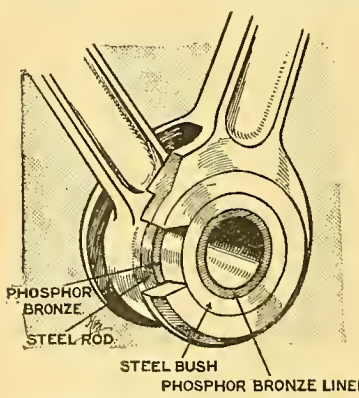
Further Details of the New Models.

IN last week's issue (p. 502) we gave a description of the new J.A.P. connecting rod, and this we are now able to illustrate. It will be remembered that a phosphor bronze bush passes through from one side of the fork rod to the other, while the centre rod works directly in the centre portion of the bush, a design which allows of a greatly increased bearing surface. The chief improvement is in the design of the bush, which is composed of steel lined with phosphor bronze. The centre rod in this case has also a phosphor bronze bush.

The latest pattern J.A.P. timing gear, the new method of lifting the exhaust valves, and the latest type of adjustable tappets are also worthy of note. The exhaust valves are raised by means of a double cam, which, when the exhaust lever is actuated, brings each cam in contact with two heels on the exhaust valve rockers, thus forcing them apart and causing the tappets to lift the valves.

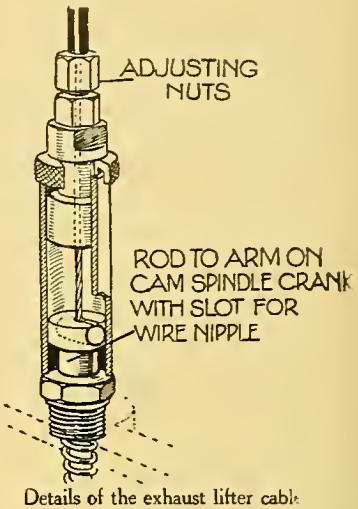


Timing gear on the latest J.A.P. engine



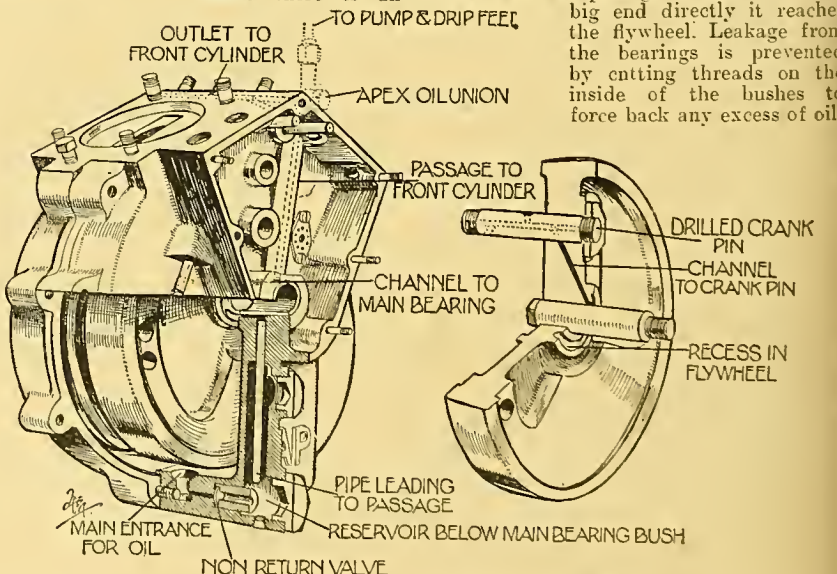
The new J.A.P. forked connecting rod, showing the arrangement of the bushes.

We now come to the interesting J.A.P. system of lubrication. The pressure system of lubrication is utilised. In this case the pressure is provided by the descending force of the piston. This forces a quantity of oil through a hole at the base of the crank chamber into a passage, and past the non-return valve into a box or reservoir cast upon the exterior of the crank case. This reservoir gives a sufficient head of oil to allow of a continuous flow. The only means of escape is a pipe through which it leaks into a recess under the main bearing bush into the flywheel, the oil being then led into a semi-circular recess on the flywheel boss, which presses tightly against the side of the crank case and registers with the oil channel, so that this recess is filled with oil under pressure, which flows through a hole in the recess through the flywheel to the centre of the crank pin, thus adequately lubricating the big end bearing. From the crank pin it descends again to the main bearing on the pulley side. Dotted lines are also shown indicating the passage of the oil from the main bearing to the hollow bolt running through the top of the crank case, where there is an outlet to the front cylinder. This bolt communicates with the apex oil union, to which the oil flows from the auxiliary pump or drip-feed into the crank chamber *via* the front cylinder; it is provided with a ball valve to prevent any blow back in the oil pipe. The non-return valve, which controls the supply from the crank case to the oiling system, is merely a flat steel disc.



Details of the exhaust lifter cable attachment.

The whole system is most ingenious, as practically the same effect is obtained as if a mechanical oil pump were employed, and yet the only additional moving part is the tiny, though absolutely reliable, non-return valve. It is also interesting to note that centrifugal force aids the passage of the oil to the big end directly it reaches the flywheel. Leakage from the bearings is prevented by cutting threads on the inside of the bushes to force back any excess of oil.



J.A.P. lubrication system

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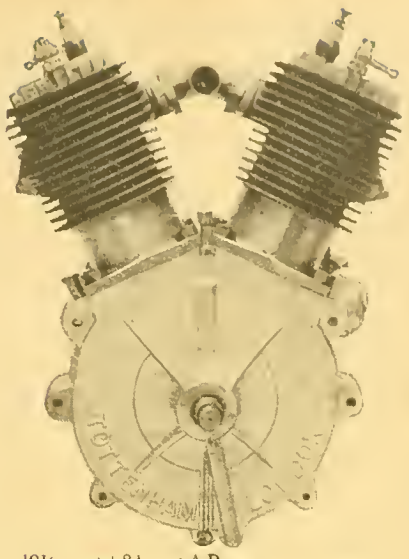
CLYNO AND GOVERNMENT REQUIREMENTS.

THERE are one or two notable absentees from the "Buyers' Guide," published in this issue. The reason is not far to seek, it being due to the fact that as such firms are solely engaged on munitions there is practically no prospect of them catering for the general public for a considerable time, unless the war ends sooner than at present appears probable.

One of these firms is the Clyno, the entire output of which is booked by the Government. As our readers know, Clyno motor cycles are used in increasingly large numbers by the War Office, their main sphere of action being in the Motor Machine Gun Section. In this and other work we have good reason to know that the Clyno is giving remarkably good results.

As has been pointed out on more than one occasion, motor traction, from the despatch rider's motor cycle to the big internal combustion engined tractor used for gun haulage, is undergoing a gigantic trial in the various theatres of war, and every motor manufacturer making war machines will benefit greatly by the lessons learnt, and the good derived therefrom will be reflected in "after the war" models.

Thus, the Clyno Co. will be in a position to put on the market a passenger motor cycle that should be an improvement on the already excellent 5-6 h.p. twin-cylinder Clyno. The manufacturers are already making their plans.



1916 model 8 h.p. J.A.P. motor cycle engine. (See previous page.)

THE ALLDAYS TWIN.

WE are informed by Messrs. Alldays and Onions that the twin-cylinder vertical engined two-stroke Allon, which we mentioned in our last issue had been on the road under test for some time, will be marketed within the next month or so. As soon as it is available for the market it will be dealt with in these pages.

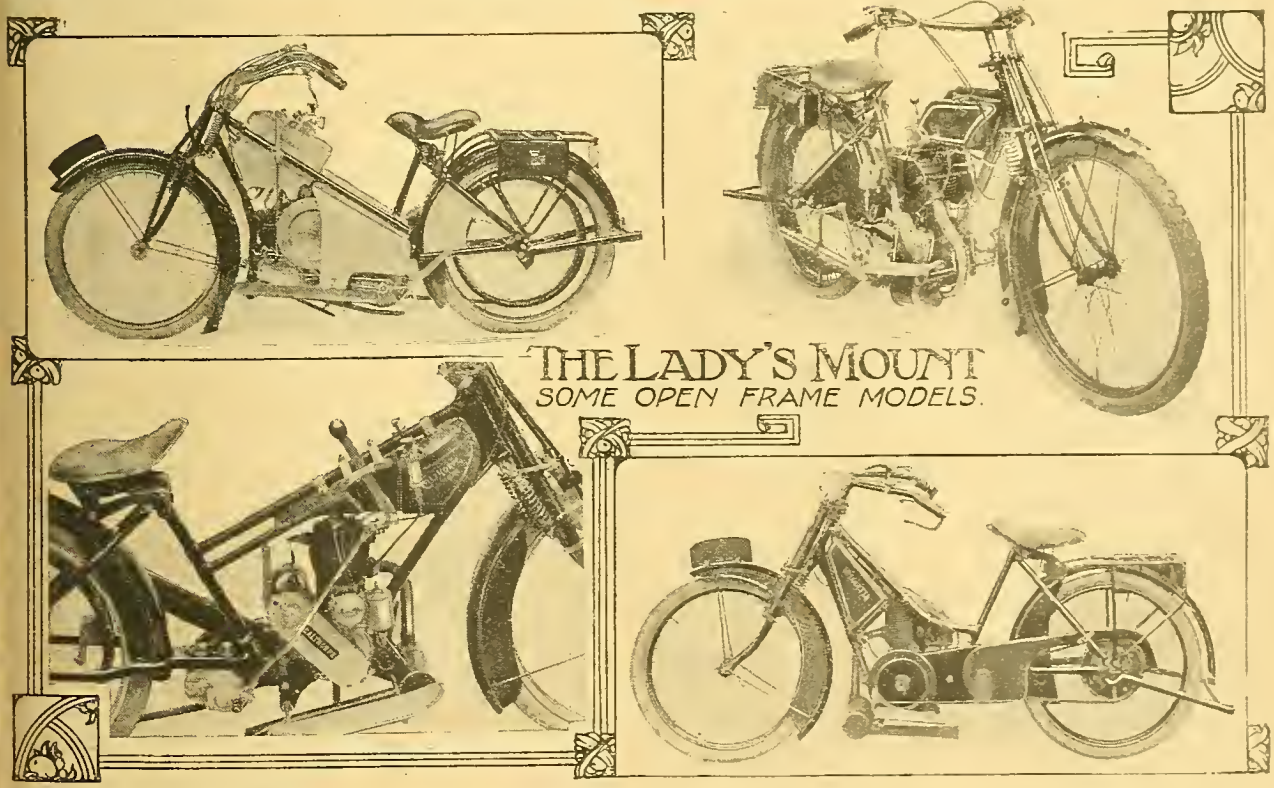
KENT LIGHTWEIGHT TOUR.

Munition Workers have a Welcome Break.

OVER a score of munition workers, mostly on two strokes, took part in the very successful two-hour forty mile tour of the Kentish hills on the 14th inst. Several competitors had been working all night at Woolwich. The two-strokes included Baby Triumphs, Allons, Clyno, Ixion, and P.V., and Scott and sidecar, and the four strokes included Douglas, J.A.P., and Enfields. A Grand Prix Morgan and a two-seater Straker-Squire joined in part of the tour. The leader, T. J. Ross, captain of the Woolwich and District M.C.C., rode a newly acquired Junior Triumph.

Owing to the bad state of Salt Box and the "new and secret hill," both were avoided, but the course included both Cudham hills, Chalk Pit, Polsteeple, and Titsey. Chalk Pit accounted for most failures. Both Junior Triumphs made clean climbs, the 8½ to 1 low gears suiting the climb. A fine climb was made by J. C. Bateman (Douglas) with a passenger on the carrier. The Scott sidecar was not apparently in tip-top condition. A rider of a 6 h.p. Enfield sidecar with two passengers climbed this and other hills. Two Matchless sidecar combinations, one steered by G. Hardee, made light work of the hills.

The return *via* Polsteeple and Cudham Church, provided some clean climbs, the two-strokes showing up well with one or two exceptions.



(Top left) The 2¾ h.p. Douglas with clutch and two-speed gear.
(Top right) Ladies' model of the 2½ h.p. New Imperial, which also has a clutch and two-speed gear.
(Lower left) Centre portion of the chain-cum-belt driven Calthorpe.
(Lower right) The Velocette has a two-stroke engine and all-chain drive.

Current Chat

TIMES TO LIGHT LAMPS

GREENWICH TIME.

Nov.	25th	... ...	4.58 p.m.
,,	27th	... ...	4.56 ,,
,,	29th	... ...	4.54 ,,
Dec.	1st	... ...	4.54 ,,

In London half an hour earlier

A.C.U. Notes.

Recently Mr. T. W. Loughborough, secretary of the A.C.U., had a visit from Sergeant Self, who is vice-president of the Canadian Motor Cyclists' Association, which is affiliated to the A.C.U. Sergt. Self is attached to a Canadian contingent of the A.S.C., at present stationed in the south-east of England. The motor cycles they use are mostly Indians and Harley-Davidsons.

The Illness of Lord Ragian.

We regret to hear of the serious illness of Lord Raglan, Lieutenant-Governor of the Isle of Man. The King has appointed Mr. Thomas Kneen, Clerk of the Rolls of the Island, as Deputy-Governor during Lord Raglan's illness. Mr. Kneen has on many occasions during the Isle of Man Races acted as Deputy-Governor, and has taken the place of Lord Raglan at various functions in connection with the Tourist Trophy Races.

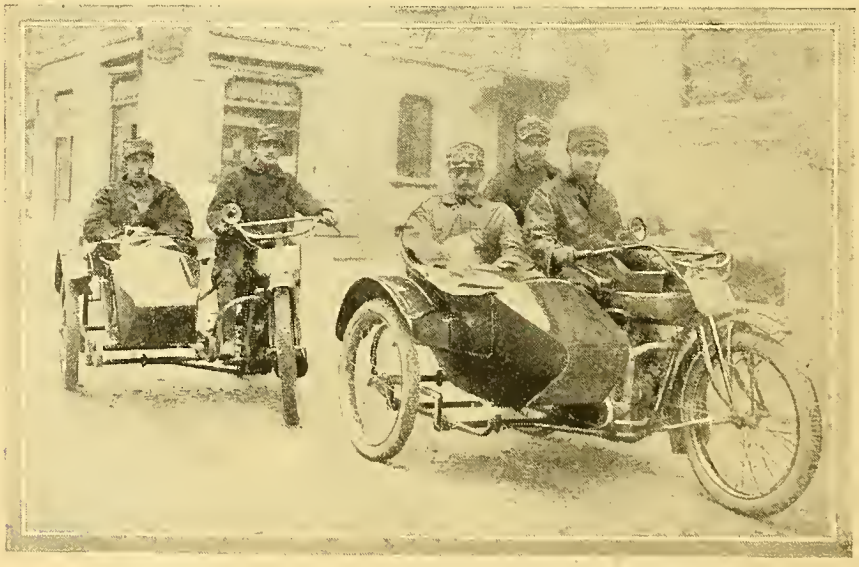
Items from Australia.

Australian motor cyclists are taking a leaf out of their English cousins' book *The Motor in Australia* says: "On English roads they are beginning to find that the 2¼in. cover does not give such good results, and is not so economical as the 2½in. How much more so, then does it apply to this country, with its inferior roads."

Quite a number of motor cyclists are considering the advisability of holding a genuine T.T. race of 220 miles in Australia, run under similar conditions to the classic event held in the I.O.M.

The Darkened Streets.

An inquest was recently held after an accident in which an unknown woman was killed by a motor omnibus. The omnibus driver said that he would have seen the woman if she had been wearing light-coloured clothing. He thought that it would be a good thing to carry a handkerchief or newspaper when crossing streets at night. Dr. Waldo, the coroner, stated he lived in a very dark road, and at night he always carried a newspaper which could be easily seen in the dark. Everyone is now wearing dark winter clothing, or else khaki, and khaki is the most difficult colour to distinguish at night.



Two of a large batch of 7-9 h.p. Indian sidecar outfits delivered to the Italian Army. The photograph was taken after the test the military authorities made before taking over the machines. They are being used mainly for the rapid transport of officers, but in some cases for carrying ammunition and general supplies. A number of solo machines of the same make for despatch riders have also been delivered.

SPECIAL FEATURES.

ANNUAL BUYERS' GUIDE
Over 130 Illustrations.
NOVEL TEST OF ENGINES AND CLUTCHES.
OPEN LETTER TO THE TRADE.

Where is Cheddar Gorge?

Following a statement below a picture in a Scottish paper to the effect that Cheddar Gorge is in Dorset, the office boy has suggested that Dorset must disgorge. (The perpetrator has been awarded an Iron Cross.)

Average Prices.

We give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model, the average for the past week is quoted. If there were not at least two advertisements, then the last occasion on which they were quoted is given.

Make.	Year	H.P.	Average for last week.	Latest weekly average obtainable
A.J.S.	1915	6 3-sp. sidecar	—	£90
,,	1914	6 3-sp. sidecar	£74	—
,,	1913	6 3-sp. sidecar	£48	—
,,	1915	2¾ 3 speed	£48	—
Allon	1915	2¾ 2-speed	£28	—
Ariel	1914	3½ 3-sp. sidecar	—	£56
,,	1913	3½ 3-sp. sidecar	—	£41
Bat	1914	6 3-sp. sidecar	—	£55
Bradbury	1914	4 3-sp. sidecar	—	£47
B.S.A.	1915	4¼ 3-sp. sidecar	£65	—
,,	1914	4½ 3-sp. sidecar	£56	—
,,	1913	3½ 2-sp. sidecar	£40	—
Calthorpe	1914	2 2-speed	£18	—
Clyno	1914	6 3-sp. sidecar	£63	—
,,	1913	6 3-sp. sidecar	£50	—
,,	1914	2½ 2-speed	—	£30
Douglas	1914	2¾ 2-speed T.T.	£40	—
,,	1914	2¾ 2-sp. kick start	£42	—
Enfield	1915	6 2-sp. sidecar	£78	—
,,	1914	6 2-sp. sidecar	£66	—
,,	1913	6 2-sp. sidecar	£50	—
,,	1915	3 2-speed	£46	—
H.-Davidson	1915	7 3-sp. sidecar	£80	—
Humber	1913	3½ 2-sp. sidecar	—	£32
Indian	1915	7 3-sp. sidecar	£76	—
,,	1914	7 2-sp. sidecar	£59	—
,,	1914	7 T.T.. tree eng.	—	£44
James	1915	4½ 3-sp. sidecar	£65	—
Matchless	1913	8 2-sp. sidecar	—	£55
New Hudson	1911	6 3-sp. sidecar	—	£61
New Imperial	1915	2½ 2-speed	£29	—
,,	1914	2½ 2-speed	£26	—
O.K.	1915	2-speed	£25	—
P. & M.	1914	3½ 2-sp. sidecar	—	£52
,,	1913	3½ 2-sp. sidecar	£43	—
Premier	1914	3½ 3-sp. sidecar	—	£54
,,	1913	3½ 3-sp. sidecar	£44	—
Rover	1914	3½ 3-sp. sidecar	£45	—
,,	1913	3½ 3-sp. sidecar	£42	—
Scott	1911	3½ 2-sp. sidecar	—	£53
,,	1913	3¾ 2-sp. sidecar	£41	—
Sunbeam	1914	6 3-sp. sidecar	£80	—
,,	1914	3½ 3 sp. sidecar	—	£61
,,	1914	3½ 3-speed	£52	—
,,	1915	3½ 3-speed	£63	—
Triumph	1914	4 3-sp. sidecar	£53	—
,,	1914	4 3-speed	£44	—
,,	1913	3½ 3-sp. sidecar	£48	—
,,	1913	3½ 3-speed	£38	—
Williamson	1914	8 2-sp. sidecar	—	£65
Zenith	1914	8 Gradua sidecar	—	£68
,,	1914	6 Gradua sidecar	—	£54

Motor Volunteers in the North.

The Newcastle and District Motor Club has decided to take no steps with a view to the formation of a local branch of the National Motor Volunteers. This decision has been arrived at by reason of the fact that nearly 70% of the club members are at present on active service, and of the remainder a good proportion are connected with the Voluntary Aid Detachment

Analysis of the Buyers' Guide

Of the eighty-five different makes of motor cycles of which specifications and illustrations are published in *The Motor Cycle* Buyers' Guide embodied in this issue, it will be seen from the analysis published below that the most popular mount as determined by numbers is the single-cylinder two-stroke chain and belt-driven machine. The figures are very interesting to students of design, but it must be remembered that only the most popular of a firm's productions is classified :

ENGINES.	
Single-cylinder	53
Two-stroke	33
Four-stroke	20
Twins	31
V	26
Horizontal	4
Two-stroke	1
Four-cylinder	1
TRANSMISSION.	
Chain and belt	47
Chain drive	26
Belt drive	12
CHANGE-SPEED GEARS.	
Three speeds	38
Two speeds	34
Single speed	8
Variable	3
Four speeds	2

A Closed Bridge.

From December 1st motor vehicles will be prohibited from using Penwortham Old Bridge (Lancashire). A new bridge is being constructed, and will in due course be open to motor traffic.

Undignified Attacks to Cease.

In the interests of truth we feel bound to correct a misstatement which has been twice repeated in another paper in regard to our list of average prices of second-hand machines. In this, one of a series of attacks, we are accused of plagiarism, whereas the fact is that this feature appeared in our columns on January 1st, 1914—*fourteen months prior to the date* of the rival claim. This paltry incident is akin to other unsavoury attentions which we would willingly have ignored, except that they are likely to mislead. However, we observe that the contemporary in question has at last seen the error of its ways, and, after a final outburst, announces that it will cease its quibbling.

Despatch Carrying over the Pennines.

In our next issue there will appear an article from the pen of Mr. G. D. Abraham describing a despatch riding test over the "backbone of England." The ride took place when the heights were snow-covered, consequently the difficulties to be overcome were enormous, and for once the motor cyclists were forced to accept defeat. The article will be illustrated by many striking photographs. Another article, which, in view of the great interest taken in the subject at present, will be read with interest, contains an account of the advantages to be gained by the use of aluminium pistons, or, to be more exact, of pistons constructed of an aluminium alloy.

Some well-known riders who now spend part of their time testing and delivering Vickers-Clyno motor machine gun outfits. From left to right—Noakes, Freeman, Hugh Gibson, Nott, Newey, Archie Cocks, and an A.S.C. corporal.

NEW MODELS ALREADY DESCRIBED.

Many 1916 models have been described in "The Motor Cycle" during the past few weeks, and for convenience of reference we give below an alphabetical list showing the dates on which these descriptions have appeared :

Allon 2-stroke	Nov. 18, p. 494
Ariel 3-speed gear	Sept. 30, p. 316
Auto-wheel	Oct 28, p. 418
Bamford variable gear	Sept. 2, p. 227
Borgo (Italian)	Nov. 11, p. 461
Bradbury	Oct. 21, p. 402
Brough horizontal twin	Sept. 9, p. 264
" " 6 h.p.	Oct. 28, p. 419
B.S.A.	Oct. 21, p. 397
Calthorpe 2-str. & 4 h.p. twin	Oct. 7, p. 349
Campion 2 and 4-strokes	Nov. 4, p. 442
Connaught	Oct 14, p. 369
Dot	Nov. 18, p. 497
Douglas 4 h.p.	Oct. 7, p. 348
Dunkley lightweight and sc.	Oct. 14, p. 369
Edmund spring frame	Oct. 14, p. 366
Enfield	Nov. 11, p. 474
Excelsior (American) 7 h.p.	Oct. 7, p. 346
Humber 4 h.p. horizontal	Nov. 18, p. 493
Indian 2-stroke lightweight	Oct. 14, p. 371
Indian 7 h.p. twin	Oct. 21, p. 394
Invicta 2-speed	Nov. 18, p. 496
Ivy 2 and 4-strokes	Oct. 14, p. 368
J.A.P. engines	Nov. 18, p. 502
J.H.	Nov. 18, p. 496
Jardine gears	Nov. 4 p. 444
J.E.S. 1 h.p. lightweight	Oct. 21, p. 393
Levis	Oct 21, p. 395
Metro 2-stroke	Nov. 18, p. 493
New Imperial	Oct. 14, p. 372
New Ryder 2 and 4-strokes	Oct. 21, p. 393
" "	Nov. 11, p. 465
Norton sidecars	Oct. 21, p. 396
N.U.T.	Nov. 11, p. 467
O.K.	Oct. 14, p. 373
Omega	Oct. 28, p. 418
P. and M.	Oct. 14, p. 370
Philipson pulley	Nov. 18, p. 497
Premier	Nov. 11, p. 468
Revere 2-stroke	Oct. 21, p. 393
Royal Ruby	Nov. 18, p. 495
Scott	Nov. 11, p. 466
Service 2¾ h.p. 2-stroke and sc.	Sept. 2, p. 228
Sturmey-Archer l'weight gear	Oct. 28, p. 421
Vindec 6 h.p. and sidecar	Oct. 28, p. 421
Wooler 2-stroke	Nov. 4, p. 445
Wulfruna	Oct. 14, p. 373
Yale 7 h.p. twin	Oct. 7, p. 357
Zenith	Oct. 21 p. 402

A Wounded Despatch Ride.

A paragraph in our last issue, under the above heading, enquiring for news concerning a despatch rider has brought forth the required information, which has been forwarded to his parents

The National Relief Funds

At the week-end the principal war funds stood as follow :

	£	s.	d.
The Times Fund for the Sick and Wounded ...	2,110,163	4	2
The *Weekly Dispatch* Tobacco Fund ...	89,617	4	11
The Queen's Work for Women Fund	167,039	11	5
Daily Chronicle Xmas Gift Fund	12,659	3	0
Daily News Xmas Gift Fund	15,294	0	0

Cork Club Annual Dinner.

The annual dinner of the Cork and District Motor Cycle Club was held on Saturday evening last at the Victoria Hotel, Cork, under the chairmanship of Mr. Frank Daly, the president of the club. There was a very big attendance of the members of the club and members of the Dublin club. It was announced that the open twenty hours trial would be held in 1916 on the Whitsuntide Bank Holiday as usual. Twenty-six members of the club have joined His Majesty's Forces, all of whom, with one exception, are now serving in the field.

"THE MOTOR CYCLE" RECRUITING SECTION.

Motor Cyclist Sections Closed until Further Notice.

Some of the riders attached to the 1/57 (West Lancs Div.) Signal Coy. R.E. Reading from left to right: Corpls. W. Kerr (Douglas), T. Chorley (Triumph), F. Martin (Douglas), G. Brown (Zenith), F. Rushton (Douglas), C. W. Abbotson (Douglas), Major Oppenheim, Corpls. R. P. Scaddan (Douglas), S. Wagstaffe (B.S.A.), Artificer C. Smith (Douglas), Sergt. W. G. Clements (Douglas), and Lieut. Moant (Douglas).

RECRUITING for the Motor Machine Gun Service has had a good run, and many hundreds of readers of *The Motor Cycle*—scores of them names well known in the motor cycle world—are now doing their duty to King and country. The M.M.G.S. has proved a very popular section among motor cyclists. No doubt the fact that friends were able to enlist together and to be allotted to the same battery has been a great inducement. This arrangement was suggested to the Commanding Officer of the M.M.G.S., Lieut.-Col. R. W. Bradley, by Mr. Geoffrey Smith, Editor *The Motor Cycle*, many months ago, and was readily agreed to. Since that time many chums have come up together to the weekly examinations. Their increased value as fighters as a result of the *esprit de corps* will be obvious.

Recruiting ceased with the batch of recruits accepted yesterday (Wednesday), and no more enquiries can be dealt with until further notice.

Though there has been a steady flow of applications every morning for many months past, the influx has been greatly augmented since Lord Derby's recruiting scheme was announced. So numerous were the applications of the last fortnight that it was found impossible to accept more than a proportion of those offering their services, and naturally men of good physique and experienced motor cyclists had to be given preference.

Among the recruits accepted for the M.M.G.S. last week by Mr. Geoffrey Smith are the undermentioned:

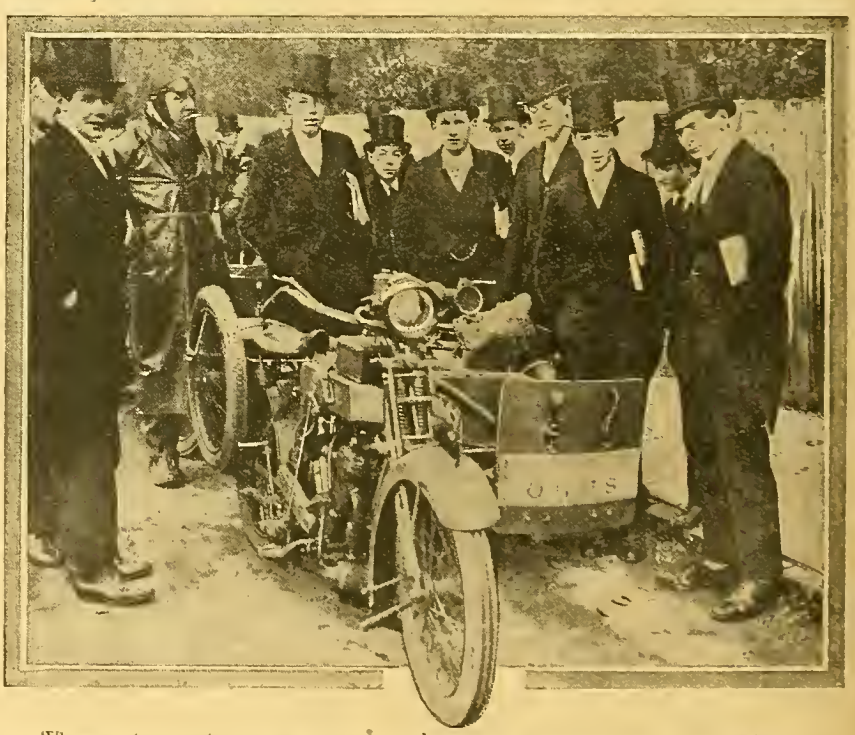
F. E. Barnes (Coventry)
A. Boswell (Coventry)
R. Brown (Dorking)
R. T. Caldecott (Birmingham)
W. Cheadle (Manchester)
R. Clarke (South Bank)
O. F. Collins (High Wycombe)
L. J. Davis (London)
H. E. Gross (Barrow-in-Furness)
R. Hall (Hertford)
A. E. Haydon (Birmingham)
J. Hill (Birmingham)
W. Hudson (Birmingham)
A. E. Hunt (Birmingham)
B. R. Hurst (Birmingham)
F. Hurst (Skipton)
J. Loving, jun. (Belper)
V. C. Newby (Bradford)
A. Nicol (Hull)
J. J. Parsons (Bedworth)
A. R. Pearce (Doncaster)
W. J. Peckham (Ringmer)
E. Read (Tunbridge Wells)
F. A. Rennison (Manchester)
C. C. Ridout (Birmingham)
J. E. Robson (Dover)
G. L. Russell (Birchfields)
R. F. Shaw (Stafford)
W. F. Steer (Sittingbourne)
W. H. Stockdale (East Grinstead)
T. D. Thomas (Llanelly)
J. Turner (Birmingham)
T. Wyatt (Fillongley)

Yesterday a further batch of fifty men were to be examined with a view to enlistment at the Coventry Recruiting Office, and those accepted will be on their way to the training centre by the time this issue is in the hands of readers.

In reply to enquiries, there are no more vacancies for officers in the M.M.G.S. at present.

We mentioned last week that recruits for the M.M.G.S. could not be accepted under the Group System, which will answer all enquiries addressed to us on this subject.

Those who have enquired for positions as motor cyclists in the Royal Flying Corps should note that recruiting in this section closed last week.



Wherever they go, the motor machine gun sidecars attract attention, and our illustration shows the interest aroused among Eton boys when a batch of new Vickers-Clyno outfits were passing through the ancient borough on their way to the M.M.G.S. training centre.

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street Coventry, and must be accompanied by the writer's name and address.

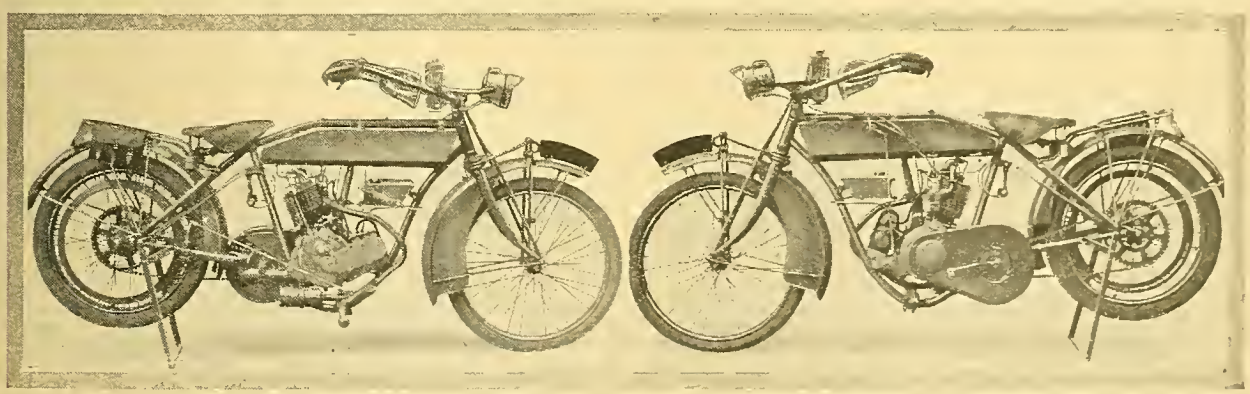
5,000 Miles with Double-seated Sidecar.

Sir,—After eighteen months' experience, during which period I have covered the distance mentioned, I claim to know something of the behaviour of this type of motor vehicle. I am sure there are many sidecar users who will be interested in my experience. When I contemplated the purchase I did not receive much encouragement from my sidecar friends, but time has upset their prejudice, and I have yet to find a sidecar driver or passenger who, after a trip with me, will not readily admit that the double-seater possesses distinct advantages over the type he favours. Of course the great advantage is that both driver and passenger are protected by hood and screen. After long journeys through rain, mud, and wind, my passenger and I arrive dry, clean, and warm. The position of a sidecar rider to the cycle driver is not my idea of comfort and sociability—the double-seater gives both. Satisfactory wheel steering, I am sure, is far and away better than handle-bar control, and I must not forget to mention the comfort of back support, specially noticeable on long journeys. As to the conduct of the engine and other working parts, I have nothing but praise. Minor troubles have been experienced, but on the road I have only had a broken inlet valve and one puncture—not so bad for 5,000 miles! The 8 h.p. air-cooled engine is "some" power unit, and, although the double-seater is rather heavy, a speed of over 40 m.p.h. is possible with a passenger. When it comes to climbing, well, Reigate on top gear, not less than 22 m.p.h. all the way up, is a specimen of what can be done. The three-speed gear box and clutch also call for praise. The chain drive has given no trouble whatever. The springing of the little car I will admit might be better, but with 700 × 80 tyres the running is not by any means uncomfortable, unless a very bad road is struck; 175 miles in eleven hours has been accomplished without fatigue. The initial outlay was not greater than that of a de luxe combination, but the running cost is perhaps a little more. When I took delivery I could not obtain more than 40 m.p.g.; now the consumption is 50, which is better than any cycle car I know. Being a three-wheeler the tax is £1. At 3,500 miles the tyre on the driving wheel was removed for retreading, and is now good for more service. The tyres on other wheels are in splendid condition. Altogether I am very well satisfied, and glad I did not go in for a motor cycle and sidecar. I am firmly convinced that the double-seated sidecar is a practical proposition, and I really wonder why a leading firm has not promoted such a vehicle. I have purposely omitted to mention the make of the machine I am driving with pleasure and satisfaction E.N.I.

An Assembled Motor Cycle.

Sir,—In reading *The Motor Cycle* I have noticed several articles and illustrations on rear springing, and I thought that it would be of some interest to you and your readers to let you know what I have done in that connection. A friend of mine who emigrated to Australia left me a 3½ h.p. Fafnir engine, a Bosch magneto, and an Indian frame with odd forks. The front and rear wheels are Chater-Lea. The spindles of these wheels were too short to bridge the frame, so I hit on the idea of making bell cranks and leaf springs, as will be seen by the accompanying illustration. This got over that difficulty, and also gave me a spring frame into the bargain. I sent the engine away and got the cylinder re-ground and a new piston fitted, and I overhauled the valves and working parts, which made it as good as new It is chain-driven, with a single gear of about 5 to 1. The double wheel on the countershaft was a find. It is cupped out on either sides, and also has a free wheel ring, which I purchased for 2s. at a second-hand shop. After getting cones and balls to fit I turned a steel spindle on which to mount them. The chain case is a wooden frame cut out of a solid piece of plane-tree with a sheet steel panel on either side which is both light and strong. The tank is home-made. I have a B. and B. carburetter with an induction pipe made out of two bends used for electric wire casing. The brake is very simple. It has a wooden shoe with an iron back which thrusts against the belt rim. It is operated by a connecting rod to the foot-rest, and is very effective. The carrier and stand are home-made. The lamp, horn, and mudguards I bought new. I have painted it the prevailing colour—khaki—and it excites great curiosity amongst motor cyclists on the road.

Seeing that I have had no experience outside of a wood-turner's shop, you will excuse me feeling a little proud of my achievement. T. PURVES, Jun.



A home-assembled machine, mainly from Indian and Fafnir parts (See letter on this page from Mr. T. Purves, Jun.)

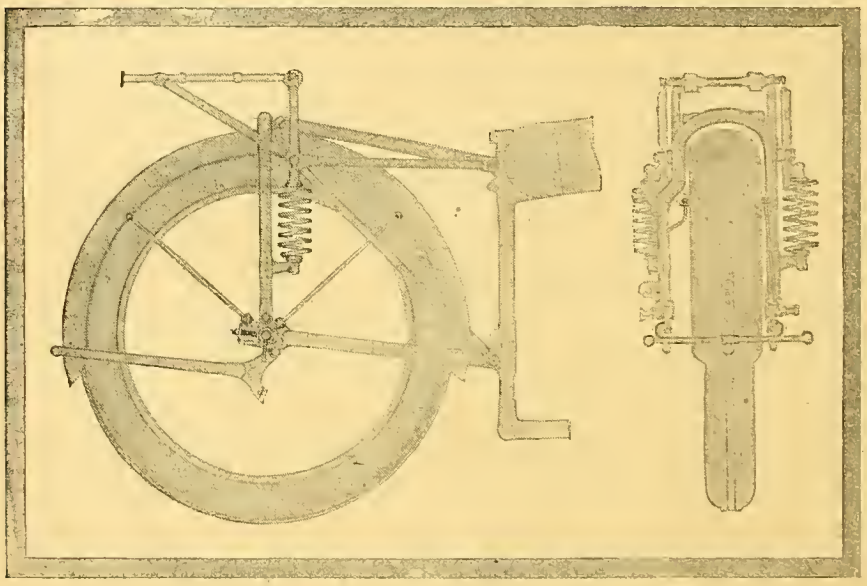
Spring Frame Design.

Sir,—Will you allow me a small space in your journal in order to answer the letter from Mr. C. H. Forbes, which appeared in your issue of the 11th inst., and which refers to "elastic" frames?

He is under the impression that only the Indian possesses a luggage carrier that is unaffected by the shocks of roads, but this is not so.

I wish to point out that in my frame the luggage carrier is independent of the wheel, and that this improvement is obtained without weakening and changing the shape generally. In my system it is only the wheel and the mudguard which move. M. VAN GEERT.

Sir,—Your correspondent last week on spring frame design is in error in stating that the luggage carrier on the Matchless design of rear spring frame is fixed to the back wheel spindle attachment. A careful examination of the illustration which appeared in *The Motor Cycle* will show that the carrier is fixed to the main part of the frame, and is, consequently, sprung.



How the Matchless carrier is sprung (see letter accompanying).

The illustration described was presumably taken from the Patent Office Records, and I might say that the present design of frame differs in detail from that shown.

H. COLLIER AND SONS, LTD.,
H. A. COLLIER, Works Manager.

Sir,—We notice in your issue of November 11th a letter from a correspondent, Mr. C. A. Forbes, dealing with spring frames in general, but the Douglas in particular. We at all times welcome criticism, but in this case we think the author should have given a little more consideration to the subject in question before seeking the publicity of the press.

Mr. Forbes admits that his information is obtained from the illustrations published in the above issue, and claims that the carriers of certain spring frames are unsprung. We are afraid your correspondent pays but a very poor compliment to the artist responsible for the drawings, and, although we have never had an opportunity of examining these frames, the illustrations leave little doubt that two of the carriers are exceptionally well sprung.

We admit that the Douglas carrier is unsprung, and it was the deliberate intention of the designer it should be so. The carrier, to our mind, is a convenience by which a certain amount of luggage may be carried, and was never intended as a passenger-carrying attachment. Otherwise we should have designed something that, although not altogether eliminating the danger of such a practice, would at least obtain for the passenger a certain amount of comfort and convenience. This, however, is but a side issue, and Mr. Forbes is privileged to retain his own opinion.

What we really object to is the paragraph in which Mr. Forbes claims that, unlike two other particular makes, the belt tension of the Douglas cannot remain constant, and endeavours to substantiate his statement by mentioning the fact that he had worked the movement out to scale. Considering that Mr. Forbes has never had access to the drawings of the Douglas spring frame, nor yet the opportunity of measuring the actual frame, we fail to see how this could be possible. It may interest Mr. Forbes to learn that the Douglas spring frame is so constructed that a 2in. movement above or below the centre line affects the chain or belt tension to the very infinitesimal extent of $\frac{1}{16}$in. Now, considering a chain requires at least $\frac{1}{4}$in. slack to run efficiently, and that dirt and grit may affect the tension more than $\frac{1}{8}$in., we fail to see how the $\frac{1}{16}$in. variation will prevent a chain, let alone a belt, from carrying out its work successfully. In this respect the Douglas frame is no worse off than the examples Mr. Forbes cites. Finally, we can assure Mr. Forbes that the Douglas is a practical frame, and has proved itself during the past two years both at home and in the Colonies, and will be included in our 1916 programme.

DOUGLAS BROTHERS.

Sir,—In the November 11th issue of *The Motor Cycle* I notice a letter by Mr. C. A. Forbes on this subject, and concur in his remarks regarding the tension of transmission on the Douglas and other spring frames of similar design. In every case where the radius fork is mounted behind the driving centre, the distance between driving and driven centres is bound to vary with the movement of back axle. This is more pronounced in some designs than in others. In the Indian machine the radius forks are mounted only about two inches behind the driving centre, and therefore the transmission tension is not seriously affected. At the same time this varying distance and transmission tension precludes the fitting of oil bath chain cases.

I would draw Mr. Forbes's attention to the fact, however, that all these difficulties have been got over in my patented system of rear springing (as illustrated in *The Motor Cycle*, October 7th). With my design there is always an equal transmission tension, whether chain or belt be used. Oil-tight cases may be fitted if desired. The carrier is sprung along with the frame, and the only unsprung weight is the back wheel and mudguard.

I have secured these advantages in my design without, as your correspondent suggests, mounting the radius fork on the countershaft driving centre (which in the case of a countershaft gear box would be a rather complicated matter, not to mention the inaccessibility of the clutch, gears, etc.). His suggestion would work all right with gears of the Enfield and P. and M. type.

E. F. DE BURGH GREENWOOD.

The Lady Motor Cyclist—A Protest.

Sir,—Just allow me to give a few words in reply to "LK 2994" and "Frankette," and I will be as brief as possible.

Surely "LK 2994" has jumped before he looked. He is entirely wrong when he says an open frame cannot be made as strong as a closed pattern, and I would particularly draw his attention to the 3½ h.p. horizontally-opposed lady's Brough, for instance. The frame of this machine is, if anything, stronger than a diamond frame: it is made throughout of straight tubing, two strong duplex tubes run down the centre forming the open frame, and the mount is thus rendered very rigid.

Accessibility, your correspondent "LK 2994" says, is reduced in a lady's mount, and here again I must contra-

dict him. Accessibility has always been an important feature in the lady's Brough, and I can remove both cylinders from my machine without taking out the engine. Surely he sees through one eye only when he speaks of "constructional difficulties," for these, to me, are something new when connected with a lady's motor cycle of to-day.

I note what "Frankette" says, and if she considers herself neat, as she says she is, whilst encased in a man's overalls and riding breeches, well, then, she should sign herself "Frank," not "Frankette."

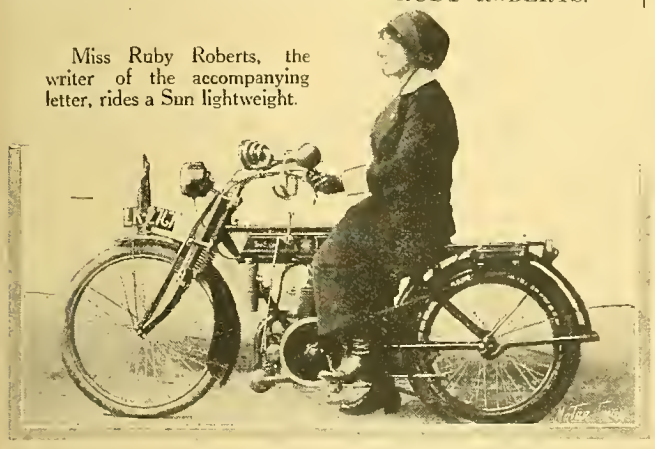
After all is said and done, I am pleased to know that my sisters of the pastime agree with me when I say that a woman encased in a man's attire is not a thing of beauty and a joy for ever.

MARY REID.

Sir,—I have read with interest during the past few weeks the articles entitled "A Protest," and if you will kindly allow me space I would like to add "my bit." I do not think our readers will say that I look "bold and mannish" when they look at my photograph. The costume which I use for motor cycling is quite an ordinary one. It is made of heavy navy cloth. The skirt is open down the front, which enables me to tuck the ends round neatly after I have mounted, which is the work of one moment, and answers my purpose admirably. When I dismount I fasten the front. My knickers are of the same material as my costume, therefore when mounting I do not "shock the public." During the past three years I have been motoring I have seen many lady motor cyclists: some have been attired in knickers and puttees, and some in men's overalls. After all, men's attire is the safest, and the women that have the pluck to wear it for motoring—well, good luck to them.

My present mount is a two-stroke lightweight Sun, which I should not wish to exchange for any open frame. It has given me every satisfaction, it is most simple to manipulate, and is very powerful and reliable.

RUBY ROBERTS.



Miss Ruby Roberts, the writer of the accompanying letter, rides a Sun lightweight.

Sir,—If you will allow me a small space of your paper, I would like to say a few words on the subject of the lady motor cyclist. I do not see that your correspondent Mary Reid should call her own sex names, when in her letter published in your paper of September 23rd she states that she must excuse the makers of her machine for not advertising their machines, as she knows they are doing their bit in making bombs to bring us back to the good old peaceful days, but yet she can call members of her own sex who are wearing breeches and doing dangerous work at the Front such names as mannish, bold, and slightly touched. I myself ride a diamond frame with much comfort, but as for looking graceful or womanish I leave that to others.

EVA LILLEY.

Paraffin as a Fuel.

Sir,—The experience of your correspondent of November 11th on the use of "Paraffin as a Fuel" closely resembles my own. I ran a 1912 Douglas a considerable distance on a mixture of paraffin and petrol in the proportion of one to two. This necessitated a large increase in the oil consumption, though even this liberal oiling did not prevent a seized big end with its train of ruin, a bent connecting rod and fractured piston, as I was at the time travelling well over the limit. Although this mishap cost me 30s., yet, reckoning this and the saving in the petrol bill and the increase in the oil bill, I saved money by the use of the heavier fuel.

Miss Eva Lilley on her New Imperial. (See letter on this page.)

For use in police infested districts a slightly greater percentage of paraffin might be used, as the opacity of the local fog in the rear of the machine is thereby greatly increased, completely obscuring the rear number plate from prying eyes. 'Ware, however, police interference for creating a nuisance, "to wit a visible vapour, evil-smelling, calculated to do grevious harm to animal life on, upon, by, or proximate to the King's highway." Smoke helmets can be obtained for a few pence or less. Wishing your paper continued success,

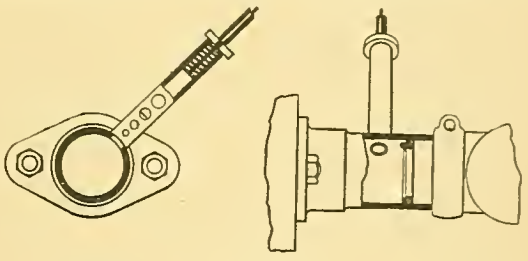
K. S. KELWAY (Corporal, R.E., 54180).

A Cure for Four-stroking.

Sir,—For a considerable time I have noticed in *The Motor Cycle* letters and enquiries from owners of two-stroke machines, who, like myself, have found that their machines have a great habit of four-stroking at slow speeds and also when going down hills, *i.e.*, when the engine has only a light load.

It may interest those who are still unable to find a remedy to know that I have quite overcome the evidently mysterious symptom.

My machine is an All-days-Allon single-gear model. I can reach a speed of forty miles per hour, and can throttle down to such an extent as to be able to get off and walk with the engine still revving; and it simply loves hills.



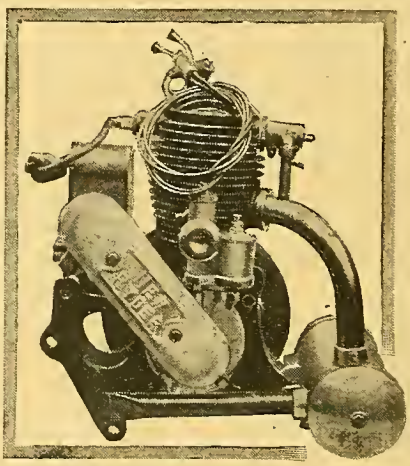
The whole secret is just this: An extra air valve, and also a non-return valve in the induction pipe. With these fitments it is possible to run down a hill with the throttle only just open, and the air valve at a position determined by trial, and engine firing on every stroke. Petrol consumption is cut down to about two-thirds the original amount; in fact, the difference these two small additions make is remarkable, and I strongly advise those who have the opportunity to do the same as I have done and try it for themselves.

R. S. CARR.

AN Open Letter to the Trade.

By B. H. DAVIES.

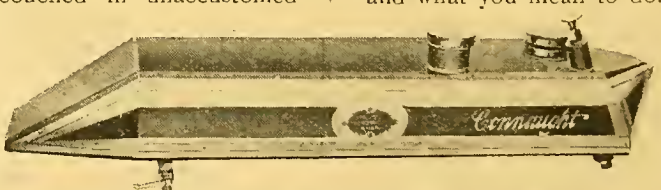
GENTLEMEN,—My epistles of previous years have usually sounded a faint note of impatience. A motor cycle manufacturer is first and foremost a trader, and in most cases he is the managing director of a limited liability company, and trades with other people's money. His primary attention must, therefore, be given to profits: and if he is already making saleable machines of a sound design, he is excusably loth to face the expense and uncertainty of evolving novel and revolutionary models. On the other hand, nobody can effect much in this vale of tears without being something of an idealist, and most of you cherish visions of the fearsome motor cycles of days to come. So there is constant war, we hope, in your bosoms—war between the commercial caution which urges you to adorn your well-tried last season model with a few trivial novelties, and the inventive originality of the keen engineer, which makes you dream dreams of a 10 h.p., 60 m.p.h., 200 m.p.g., 100 lb. four-cylinder lightweight, or some other world-shattering bantling. I have often suggested that your trading instinct is too prone to smother your inventive faculties: but at a time like this such innuendoes are silenced, and I hope that after the Peace of Berlin they would be wholly unjustified. For the present time we, the users, and you, the purveyors, are alike marking time—marking time till Joffre ceases to nibble and until the Watch on the Rhine needs a fresh mainspring. So my letter to you this year will be couched in unaccustomed accents, as befits unaccustomed times.



Power unit of the 1916 model two-stroke New Ryder. The cylinder dimensions are 70 mm. × 70 mm. (269 c.c.)

The Industry's Part in the War.

And first I join heartily with your innumerable clients, whether at home, in Flanders, in Gallipoli, in Serbia, in congratulating you on the magnificent manner in which you have organised yourselves, your staffs, your works, and your brains unreservedly at the service of the nation. You are making almost anything and everything in the world except motor cycles: the few thousand machines with which you provide the despatch riding and machine gun services are a drop in the ocean compared to the shells, fuses, searchlights, hand grenades, guns, aeroplane parts, and other munitions, destined—we hope shortly—to hunt the Hun back into his Fatherland. You have had to plan and scheme largely as men groping in a fog. You seldom knew whether the completion of a contract spelt the closing of your works, or the receipt of a second contract ten times as big. You had to frame quotations in abysmal ignorance about your chances of securing raw materials, or of the prices you would be charged for them. You have lost the cream of your skilled men, and you have had to improvise fresh staffs out of their wives, sweethearts, and daughters—aye, and even out of their fathers and grandfathers. You have had to control a—mercifully small—percentage of men temporarily demoralised by inflated pay sheets, and to employ a few hands whom you never expected to see inside a decent factory again. Many of these factors contain the seeds of possible labour troubles in days to come. But, all credit to you and to those who have flocked into your employment, the industry has emerged from all these ordeals, and to-day it is among the most formidable in an iron ring of menacing organisations, which is daily being welded tighter and tighter round the heart of the Central Powers. We, who have often sneered and cavilled and grumbled about some of your petty shortcomings, are lost in honest, British admiration at what you have done, what you are doing, and what you mean to do.



Attractive tank as fitted to the 1916 model two-stroke Connaught.

Nevertheless, though you are Government munition makers for the nonce, you have not forgotten your first love, nor have we. When we speak of peace, we remember, not first, nor second, but we remember still, the call of the road. So do you, and ere long you will help us again to respond to that call. Let us pretend, for a moment, that the Allies entered Berlin in triumph yesterday, and weave our fancies about the summer's riding that lies ahead.

Our roads were bad before poor William went crazy, and they have hardly been touched in the way of repair ever since. Ceaseless streams of W.D.

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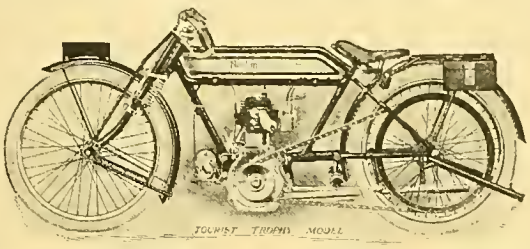

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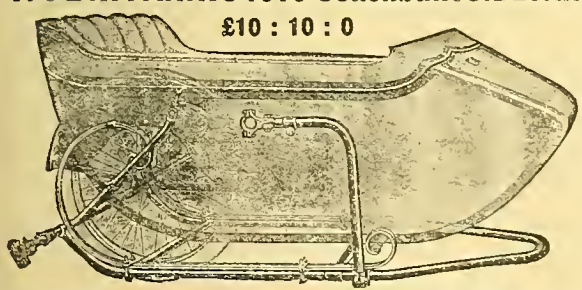

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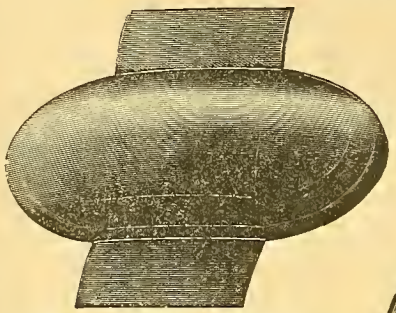

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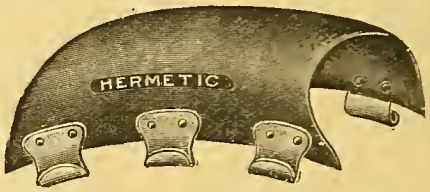

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SPECIFICATION.

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CARBURETTER Senspray or Amac, latest type, actuated by Bowden handlebar control.
IGNITION—Magneto, high tension, well-known make.
FRAME—Height 28½ ins. from ground, easy riding position, built of best Weldless Tubing, with Accles & Pollock reinforced tubing where required.
WHEELS—James 26 x 2 in. Beaded Edge rims, all black enamelled special tempered steel spokes.
TYRES—We have a special studded tyre named "The Wolf," built for this Model, which we can recommend.
FORKS—Pilot Spring Forks of the latest type. If Druid Forks are required, we can supply at 20/- extra.
TRANSMISSION—On single gear by ¾ in. rubber belt, either Dunlop, Avon or Pedley. Two-speed—Perry's chain from engine to gear, and ¾ in. belt from gear to driving rim. The chain is enclosed in a neat, but substantial steel cover.
FOOTBOARDS—Aluminium, light and easily detached
MUDGUARDS—Wide with side splashers.
STAND AND LUGGAGE CARRIER—Detachable, tubular, of the latest design.
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HANDLEBARS AND BRAKES—The Front Brake, Handlebar, and all levers and controls are manufactured by the Bowden Brake Co., Ltd. The bar is neat in design and fitted with two inverted levers, one which actuates the Bowden front brake. The back brake is operated by the foot on the left side of machine.
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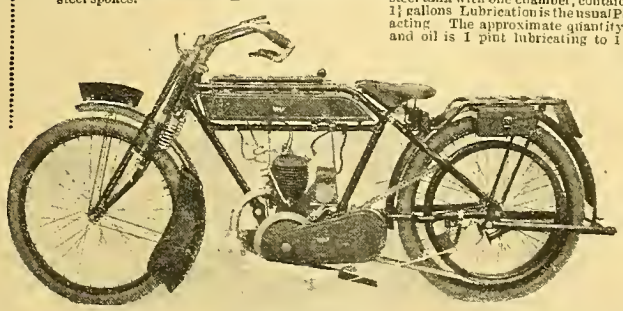

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Therefore you are "buying light."

Therefore, again, before you buy consider well the reputation of the makers—their experience and—the success of their productions.

And, in such consideration, always bear in mind that

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—"the lamps that won't go out"—are the product of a Company with an experience extending over four decades and a reputation quite unequalled.

Miller merit will please you—Miller dependability ensure your safety under all conditions—even the enforced darkness of the present War period.

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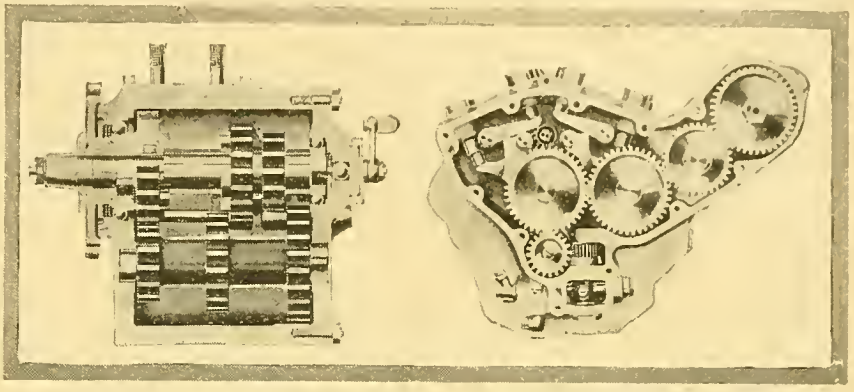
N.B.—It's a safe guide to tell you to insist on

An Open Letter to the Trade.—

lorries and heavy guns have hammered and battered them ever since, and to-day their surface resembles the craters of the moon as viewed through a 6in. telescope. On my desk lies a letter from an able-bodied professional man of 35. Last month by an incredible miracle of perseverance and wire-pulling he obtained delivery of a brand new 1916 3½ h.p. —— well, one of the very best conventional machines of the day. Last week he advertised it, because his doctor told him the vibration was injuring his spine. Money is very tight, despite the indemnity of £1,000,000,000 of which Mr. McKenna fetches the first instalment from Spandau next week. The roads will not recover inside five years, and we are not going to buy any more rigid frames. You will tell me that the satisfactory springing of a motor bicycle is an awkward problem. I know it, gentlemen. I also know it is soluble. At this moment there rests in my garage a certain machine—again I mention no names, because it cannot be available for the public just yet—with fore and aft springing so ingenious and efficient that I can take it to the roads mentioned by the above correspondent, and cover them without vibration at 20 m.p.h.; without perceptible discomfort at 30 m.p.h.; and at 40 and 50 m.p.h. without more unpleasant sensations than your 1914 machines produced at 20 m.p.h. on the average road surfaces of that date. We buyers rejoice to know that a dozen of you have heeded the exhortations of *The Motor Cycle* and are busily perfecting spring frames by prolonged test on the road; yours are the machines round which we shall crowd at the next Olympia Show.

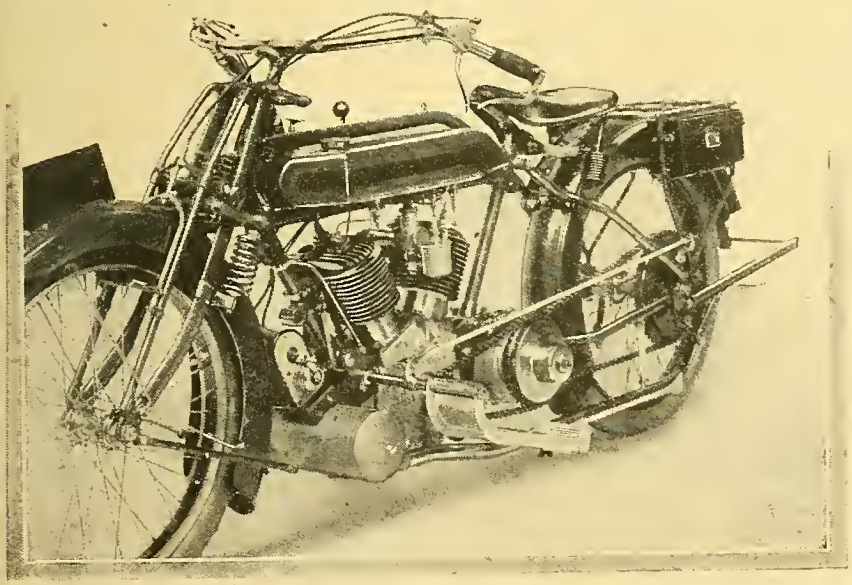


Mechanical features of the 1916 model 7 h.p. long-stroke side-by-side valve Indian. (Left) New design gear box, which has two sliding pinions in place of the single member as in 1915. (Right) Valve timing gear and magneto drive, showing mechanical pump.

The Consumption Question.

Our next anxiety has reference to petrol consumption. The war has made things difficult for the petrol people in many ways: and some of us fancy that the Government monopoly of benzole has enabled them to do more than recoup themselves. There is less love than ever lost between them and us, but that is not your business. Still, here is a point that intimately concerns you. Last week I made a certain journey on a light car equipped with a water-cooled four-cylinder foreign engine. I took a passenger with me, and the entire outfit scaled over half a ton. We used petrol at the rate of 58½ m.p.g. I covered this identical route under identical conditions with a brand new Bristol 2 h.p. two-stroke and a brand new British 3½ h.p. touring machine; the "baby's" consumption was 60 m.p.h. and the tourist's 72½ m.p.h. I do not know what percentage of your customers may be seriously affected by the gross wastage of fuel which such figures prove, nor whether petrol will be cheaper after the war. I put it to you on the highest grounds. You are—or should be—scientific men, and your true scientist's conscience is as sensitive as that of a Christian saint. Will your engineering conscience connive at the continuance of such glaring carelessness and inefficiency?

For many years past we have watched appreciatively your successful development of the single-cylinder engine. The time has arrived for us to say frankly that we are tired of it. It was perfect, regarded as a temporary makeshift. We are now familiar with the infinitely smoother paces of the "baby" two-stroke, we have tasted the power of the Scott twin, and we have gloried in the delicious running of the horizontal Douglas and its imitators. No rider acquainted with such sensations is in the least danger of backsliding towards the thumping one-lunger, or is he likely to become smitten



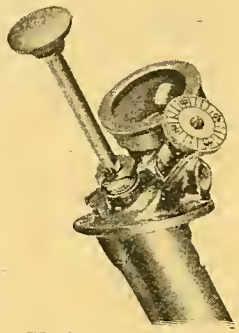
A high-powered machine—the 8 h.p. twin-cylinder Campion—which, with its Jardine four-speed gear and all-chain drive, is a most desirable sidecar mount.

An Open Letter to the Trade.—

with the jig-jiggety firing of the V twin. Yet the majority of you still hanker after the vertical four-stroke single and the unconscionable V twin. Leave the first to the second-hand market and the second to the Yanks, whilst you come on ahead with us. So long as British roads remain, there will be sufficient inevitable vibration without designing engines to produce more.

The Two-stroke Lightweight.

A word must be said about the "baby" two-stroke. The market must cause you some anxiety. The best firms are head over ears in munition work, and a few unscrupulous duffers have been dumping some miserable caricatures on a guileless public, and so threaten to poison a most promising boom. Well, Joffre enters Berlin, and the way lies open for a proper scientific trial of the "babies," to take account of fuel consumption, bearing life, easy starting, even firing at low speeds, absence of vibration, and all the rest of it. Then these get-rich-quick gentry shall go to their own place.



The latest pattern Best and Lloyd lubricator.

I have been asked to suggest that you should list a complete equipment in your catalogues if only as an option. The faddy man, with time on his hands, money in his pocket, and opportunities of inspecting accessory stocks, naturally likes to fit the new machine out in accordance with his own whims. But the practical rider is increasing in numbers. He does not wish protracted delays and manifold expenses to intervent between delivery and use. He wants his machine to arrive ready equipped with lamps, numbers, speedometers, spares, and hooter. At the very least you should imitat Triumph, Rudge, and Douglas procedure by adding to your catalogues a priced appendix of suitable accessories.

Sidecars or Cycle Cars.

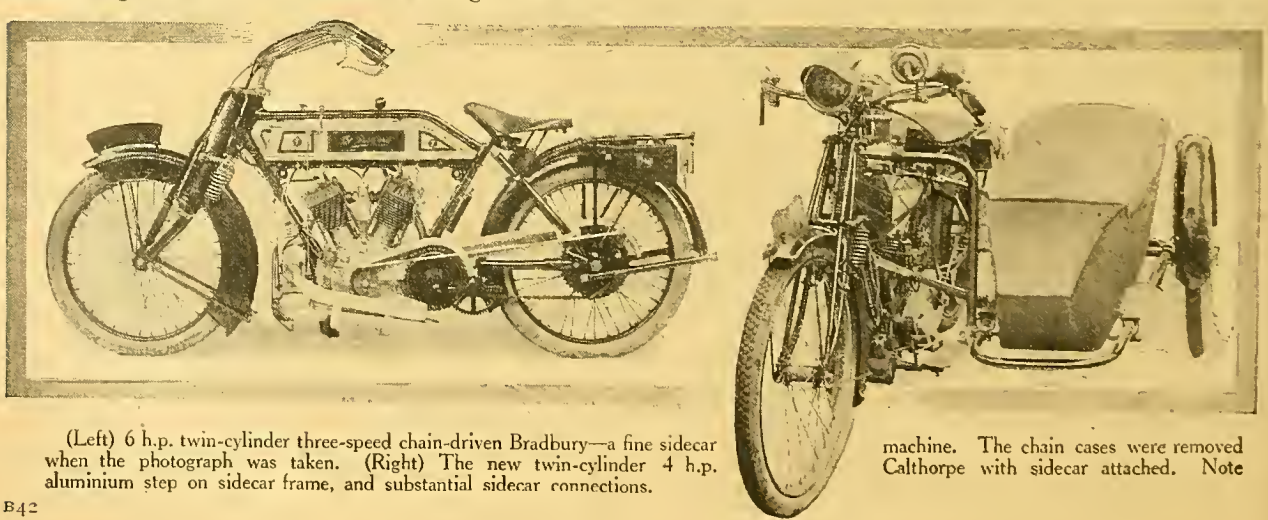
I approach the question of sidecars with some timidity. The sidecar is frenziedly popular at the moment. You know it is an unmechanical job from start to finish: you know it is expensive to buy and run, considering what it is. But it sells, and it goes. This is where your trading instincts may wreck the true hope of the light passenger industry, and even betray themselves. The sole alternative is, of course, a "cycle car," an ill-omened word for you, since you have seen a tricar boom and several feverishly-fostered cycle car booms die of sheer internal inanition: and a few of you burnt your fingers rather badly over one or the other. Well, forget all about dividends, shareholders, and the annual meeting for half an hour. Put off the merchant, and put on the engineer. Turn over your well-stored memory. Pull out and glance at, for a moment, your mind-picture of the first push bicycle and the latest, the first motor car and the latest, the first motor cycle and the latest, the first aeroplane and the latest, the Montgolfier balloon and the super-Zeppelin. Done it? Got a prophet's cap anywhere on those pegs in the hall? Fit it on, take a long breath, concentrate your memory and imagination—now then for it, *the first cycle cars and your own 1917 cycle car?*

A little exhausted by the effort, eh, gentlemen? You shall have a wee breather, and then I have done. Become the merchant again for a minute. Been to America lately? Well, anyhow, you know what they are doing. Perhaps you've seen an Argo, a Ritz, or a Saxon? Not quite in your line, I know. But they're brand new, aren't they? Give them two years to grow up. Take the 33⅓% import duty off. Multiply their output by 1,000 *à l'Américaine.* You know. Where will your £120 sidecar outfit *de luxe* be then?

Well, I see Sergeant Smithers has just gone off duty for the day—there he goes back to the station. The sun is shining, and I've a new Brooklands Norton in the garage. No, there's no carrier on it—never approved of that dangerous practice, anyhow. One last drink? No, thanks, I'm on the King's pledge for the war, like so many of you: but we'll have it without heel taps when the Kaiser is interned on the summit of Mount Erebus. To our next merry meeting, I am, gentlemen,

Yours with unfeigned respect,

B. H. DAVIES.



(Left) 6 h.p. twin-cylinder three-speed chain-driven Bradbury—a fine sidecar machine. The chain cases were removed when the photograph was taken. (Right) The new twin-cylinder 4 h.p. Calthorpe with sidecar attached. Note aluminium step on sidecar frame, and substantial sidecar connections.

MOTOR CYCLES IN 1916.

A Brief Commentary on the Design of New Models.

IN normal times there is no difficulty in keeping oneself *au fait* with the various manufacturers' yearly amendments in design. The show at Olympia provides that opportunity, but, having been abandoned for the second year in succession, the press alone fills the breach. Perhaps a short review of the most notable machines for next year, which have already been described in these pages, will be of general interest. While the British motor trade is so occupied upon the all-important munitions of war, it is not to be wondered at that the alterations from last year's models are very slight indeed, being confined to detail only in most cases. This we look upon as a blessing in disguise. Instead of bringing out new models, a number of firms have ceased making some of their existing ones, and are strengthening up and improving the detail work. Some firms are not able to produce motor cycles at all. Messrs. Humber, Ltd., are a notable example of this. When circumstances permit they will produce a very attractive mount in the form of a double-purpose 4 h.p. horizontal air-cooled twin, on the lines of the big 6 h.p water-cooled model which has proved so satisfactory.

Among the Horizontal Twins.

Talking of horizontal twins reminds one that when this type of engine was first introduced in the form of the Fairy, and later in 1908 by Messrs. Douglas Bros., it was difficult to convince the public that this was a sound proposition and the forerunner of a popular type. Of late, however, the horizontal twin has been coming into its own, as is proved by the ever-increasing number of firms now listing machines with this type of engine. Even this year, in spite of the war, several horizontal new-comers are to be found, including the Connaught two-stroke and the new 6 h.p. Brough. Perhaps one of the most interesting is the horizontally-opposed twin two-stroke Levis, the first example of which was described in *The Motor Cycle* of July 29th. In this interesting engine, which works on exactly the same principle as the well-known Levis single, the explosions occur in both cylinders simultaneously. It should be mentioned that this model is not yet actually on the market. Of course, the machine which has practically made this class is the Douglas; this wonderful little machine, which, among other achievements to prove its worth, has attained on Brooklands a speed of nearly 70 m.p.h., can now be obtained in either 2¾ h.p. or 4 h.p. models. Very few alterations appear in the standard models of this make, though the firm intends to list a model for the coming year fitted with a very neat spring frame, which depends on two cantilever laminated springs to absorb the road shocks.

The new 6 h.p. horizontal Brough should appeal to the man requiring a double-purpose mount. In spite of the fact that it is fitted with so large an engine, the whole machine presents an extremely neat appearance. In this model a point of interest is that the overhead valves previously used in the Brough horizontal twin have been replaced by valves of the more usual side-by-side type.

The "Growing" Lightweights.

Among those machines which claim to come under this heading there are few now except the baby two-strokes which can genuinely claim to be lightweights. The addition of two and even three-speed gears, clutches, kick-starters, etc., has brought most of them well up to the 150 lb. mark, when, except for the small capacity engine, they can hardly claim this title. It is interesting to notice that most of the pioneers of this type of machine have now grown to such an extent, frequently in both power and weight as well as price, that there would appear to be but little demand for the ultra light machine. No doubt it is not the light weight so much as the low price of these little mounts which makes them so popular.

Though French and Swiss manufacturers were always partial to lightweights. British makers have had to perfect this class, but the introduction of the 1916 Indian baby two-stroke denotes the first arrival of American competition. It will prove quite a novelty so far as this type of machine is concerned, possessing, as it does, a gear box with three speeds, a proper free engine clutch, kick-starter, and chain drive throughout.

At present all the real lightweights have two-stroke engines, but in the 2½ h.p. class the four-stroke is still a rival to the "valveless" engine.

Although some makers are dropping four strokes in favour of the two-stroke, on the other hand, one or two firms who have only made two-strokes have new added a four-stroke lightweight to this range. Notable examples of this are the Calthorpe and the Coventry Eagle Co.'s, which will list machines with 2½ h.p. J.A.P. engines in 1916. The Campion is another example of a four-stroke lightweight. These firms also make models with two-stroke engines.

Sidecar Outfits.

In spite of the criticism of this type of passenger-carrying device, mainly owing to its unmechanical design and the exposure of the driver in wet weather, the sidecar machine is still gaining in popularity. The Clyno Co. are so busy making gun-carrying sidecars for the M.M G.S. that there is little possibility of their producing pleasure machines for a long time to come. Messrs. Brown Bros. are making a serviceable machine under the old name of Vindec. It has a 6 h.p. J.A.P. engine and three speeds.

Mr. Scott's three-wheeler, which is really a permanent sidecar outfit in a weatherproof form, undoubtedly opens up another lease of life for the "cycle car." It overcomes a large number of the disadvantages that the ordinary sidecar presents, especially the driver's discomfort and the difficulty of changing tyres, as all three wheels are detachable and fitted outside the chassis.

The American invasion does not seem to bring so many new makes of bicycles as it does cars to this country. The only new arrivals of recent date are the Excelsior, Yale, Thor, and Pope machines all chain-driven big twins beloved of the Yankee. One of the biggest surprises of the autumn was the fact of the Indian abandoning the overhead inlet valves and detachable cylinder heads that have characterised this machine since its infancy, and which the designers have steadfastly adhered to for so long. Another point where this machine has altered in design is the fitting of the timing gear outside the crank case and covering both the magneto wheels and valve gear under one cover. This was originally done to give more room for a larger big end bearing, but will also be a real benefit when the engine has to be taken down for overhaul. The new twin Indians, too, are of the long stroke variety—which should cheer up Mr. J. L. Norton, who has always been a firm believer in this type.

The four-cylinder Henderson is a powerful machine which has no rival at present—it is a machine apart. Now that the wheelbase has been reduced there is no doubt that it will appeal even more than before to the rider who delights in the luxurious running of a powerful car, yet requires the handiness and convenience of a motor cycle.

The Harley-Davidson completes the entire list of Americans over here. This luxurious outfit has caught the favour of the British motor cyclist in surprisingly quick time.

Fittings and Accessories.

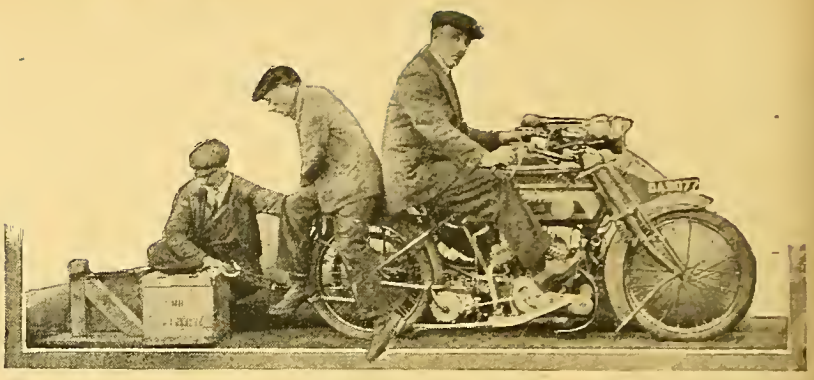
To turn to the question of spring forks, gear boxes, clutches, lubricators, carburetters, and the like, we find many detail improvements. Even among lubricators of the drip-feed type, we find a number of small improvements, although various forms of mechanical lubricators are becoming more popular. Among machines fitting some form of this system we find such machines as Enfield, Indian, and Harley-Davidson. The latest pattern of J.A.P. engines are also fitted with a device of this kind.

The countershaft three-speed gear is now practically a standard fitting, at any rate on machines of 3½ h.p. and upwards, though four speeds are receiving a certain amount of support. The new Jardine countershaft gear, in addition to several other makes, has a fourth speed incorporated. By utilising the kick-starter pinions in such a way that they furnish the low gear train, it is no more complicated. The Zenith and Rudge machines are now practically the sole representatives of the infinitely variable type of gear, although the Philipson pulley is still very popular as a simple light compromise for people who prefer the simplest type of machine.

Rear springing systems are gradually beginning to be looked upon as desirable standard equipment. Among the newcomers in this direction we have the Royal Ruby, Matchless, and Douglas, and satisfactory results are obtained from such machines as the Indian, Edmund, Bat. P.V., A.B.C., and Pope.

A NOVEL TEST OF ENGINE AND CLUTCH EFFICIENCY.

A Practical Test Providing Useful Information.



Preparing to test the 5-7 h.p. twin Abingdon.

RECENTLY a novel and interesting form of competition, in which a number of Leeds and Bradford motorists took part, was organised by the Headingley Motor Co. at their Leeds premises. A variety of machines having been obtained, each, in turn, was attached to a set of spring scales, and readings were taken as to its pulling capabilities on the various gear ratios with which it was provided.

This novel test opens up many interesting lines of enquiry, but it will readily be understood that the results obtained were almost as much dependent on the efficiency and the progressive action of the clutch as on the pulling capabilities of the engine. With most of the machines it was found that the same reading could be obtained time after time, the engine beginning to "konk out" each time the pointer reached the deciding figure. This fact alone speaks well for the efficiency of modern clutches. With one or two of the machines, however, much difficulty was experienced in obtaining an accurate reading, the tendency being for the clutch to bind solid suddenly after a few seconds of slipping in half engagement.

This difficulty was experienced only with the metal-to-metal expanding ring clutches, which, with the exception of the P. and M., were all susceptible to a certain harshness of engagement. The pointer of the spring scales recorded very accurately the smoothness of engagement, and with the expanding ring type of clutch it was very difficult to obtain a steady reading with the engine pulling at its best. Only too often the clutch would suddenly grip and stop the engine, and, though this type of gear has the desirable features of reliability, simplicity, and foolproofness, it cannot be regarded as so ideal in action as, for instance, the multi-disc type.

In the case of the machines fitted with hand-controlled multi-disc clutches no difficulty whatever was experienced in obtaining a reading. Each machine was tried several times, and there was seldom variation of more than 3 lb. or 4 lb. in the different readings.

The Results arrived at.

The object of the trial was, to test (1) the efficiency of the various clutches employed; (2) the comparative pulling powers of the engines of various cubic capacity; (3) the power actually conveyed to the road wheels on the different gear ratios provided.

This seems simple enough on paper, but it is only to be expected that bewildering and contradictory results are to be obtained in practical test. It was generally found, for instance, that, though the engine speed was kept constant, the machine that could pull 50 lb. on a 4 to 1 gear could pull very much more than 100 lb. on an 8 to 1 gear, though one would naturally anticipate a certain loss of power by the friction of the gears on the lower ratio.

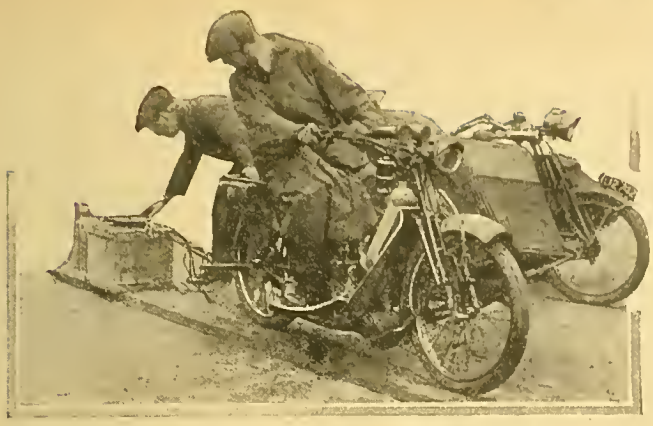
How the Test was carried out.

The machines to be tested were placed on a dry plank, erected at one end of which was a strong post. To the post was secured the spring scales, and the machine was harnessed to the latter in such a manner that, when desirable, the scale registered half the energy exerted.

The accompanying table gives at a glance the results produced. It will be seen that in the last

Machine.	H.P.	No. of Sp'ds	Drive.	Gear Ratios.			Pull Exerted in lb.			Comparison of Engine Power on Top Gear at Common Ratio of 4.5 to 1.	H.P. at Road Speed of 20 m.p.h.	C.C.	Remarks.
				Top.	Mid.	Low.	Top.	Mid.	Low.				
1914 Sunbeam	3½	3	Chain	4.9	8.2	13.7	70	120	204	64 lb.	3.7	499	Clutch action excellent.
1914 Sunbeam	6	3	Chain	4.5	7.5	10.5	110	170	270	110 ,,	5.9	770	Clutch action excellent.
1914 P. and M. ...	3½	2	Chain	4.8	—	8.4	65	—	115	61 ,,	3.5	498	Steady engagement.
1915 Abingdon	5–7	3	C. & B.	5.3	8.7	16.4	135	180	320	110 ,,	6.65	796	Belt slip.
1914 Matchless	7–9	3	Chain	4.5	8.2	11.0	100	190	280	100 ,,	5.33	994	Steady reading.
1914 A.J.S.	6	3	Chain	4.75	7.5	16.0	61	130	250	58 ,,	3.3	696	Engine in dirty and neglected state.
1914 Scott	3¾	2	Chain	3.75	—	6.8	60	—	120	72 ,,	3.2	532.5	Fierce clutch.
1915 Edmund-Jap .	2½	2	Chain	4.6	—	8.9	30	—	70	29 ,,	1.8	292	Fierce clutch.
1915 Edmund-Levis	2½	2	Chain	4.6	—	8.9	35	—	80	34 ,,	1.9	293	Fierce clutch.
1914 Bradbury	4	3	Chain	5.2	8.5	15.0	90	150	240	78 ,,	4.8	554	Clutch action excellent.

H.P. constant = 0.0533, by which to multiply the pull in pounds at 20 m.p.h.



The Scott, ridden by H. O. Wood, pulling 120 lb. on its low gear.

column is entered the actual horse-power conveyed to the road wheel on the top gear with which the machine is provided, while the column next to it shows the actual pull exerted by the various machines at a common gear ratio of 4.5 to 1. From this we obtain the comparison that while two of the 5 h.p. machines each pulled 110 lb., the two 2½ h.p. lightweight machines pulled 29 lb. and 34 lb. respectively, the two-stroke beating the four-stroke. Therefore, if 34 lb. represents 2½ h.p., 110 lb. represents 9½ h.p., which is not so bad for the twin.

At all events these figures help us to realise the folly of overloading small solo mounts.

The column also points to the distinct advantage of the big twin for sidecar use. Whereas on a 3½ h.p. machine it becomes necessary to change down from a 4½ to 1 gear when the machine is exerting a pull equivalent to 63 lb., the change is not necessitated in the case of a 5 h.p. twin till a pull is equivalent to something in the neighbourhood of 107 lb. And while apparently the average twin is capable of exerting a pull of about 120 lb. on its top gear, it is doubtful whether the average 3½ h.p. single is capable of exerting a pull of 60 lb. on its top gear unless that gear be unpleasantly low.

The column showing what the machines actually pulled on their bottom gears points an emphatic finger to the advantage of a really low gear. Note that the Abingdon King Dick, with its low gear ratio of 16.4 to 1, tipped the beam at 320 lb., and also that the 3½ h.p. Sunbeam, with its low gear of 13.7 to 1, is enabled thereby almost to hold its own with the twin-cylinder machines when it comes to climbing. Really at all times the low gear is merely an emergency provision, so why not have a provision that is sufficient for an extreme emergency?

The Results.

Dealing briefly with the machines as they came, the 3½ h.p. Sunbeam was the first to toe the mark, and started off with a bark fragrantly reminiscent of the good old competition days. The clutch of this machine and of the twin Sunbeam that succeeded it was all that might be desired, and the twin ran beautifully steadily and without apparent exertion on the heavy load. Some little delay was occasioned with the latter owing to the clutch plates becoming hot and refusing completely to disengage, but, having cooled down, the clutch was as sweet in action as before.

The P. and M. was the only machine with expanding ring clutches that caused no difficulty. Both gears engaged in proper proportion with the movement of the controlling lever, and the friction surfaces showed no tendency to seize suddenly together after a few seconds of slipping.

Surprising Power of the Abingdon.

Some little excitement was experienced with the Abingdon "King Dick," which obtained the highest readings for the day. Having piled sundry spectators on the carrier to prevent rear wheel spin, the belt began to slip, and, this remedied, it was still found impossible to subdue the vitality of the engine till the cork insets of the clutch began to burn. The fire extinguisher was produced, and the highest reading yet obtained was taken as a fair estimate.

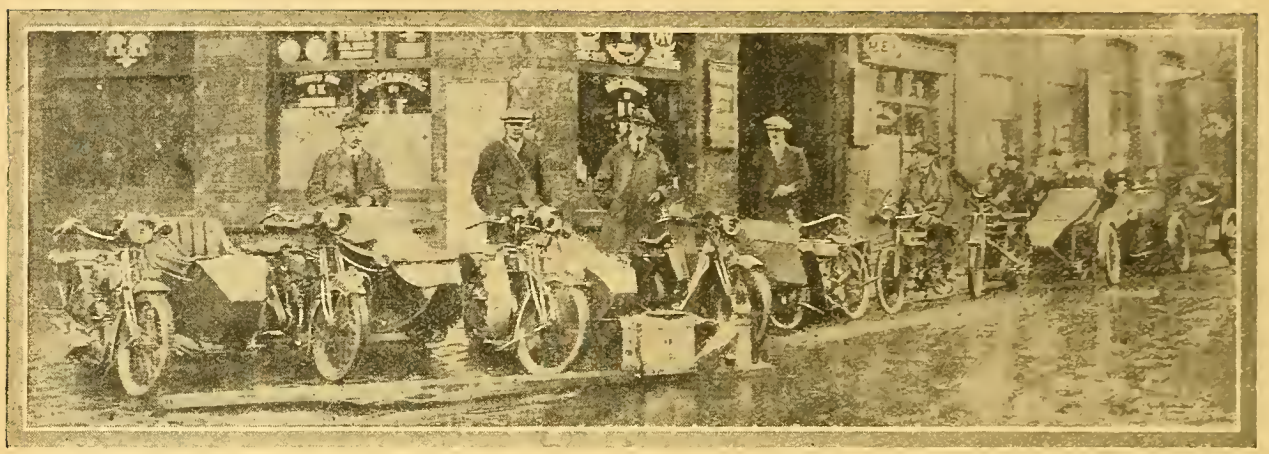
The Matchless behaved well, but the A.J.S. was out of condition after two years of hard use. We would omit the entry were the merits of the A.J.S. less generally known, but since the reputation of this machine is established, we give the figures on account of their interest. Here we have a machine in a neglected and flabby condition, but which, with its emergency gear of 16 to 1, is capable of exerting a pull of 250 lb.

Difficulty with Expanding Ring Clutches.

A twin-cylinder Royal Enfield next brought to the test refused to submit to such plebeian treatment, the clutches being too fierce to render a reading possible. Similar results were experienced with the Scott, which would insist on jerking the scales up to and beyond the 400 lb. limit, stopping its engine in the proceeding. Yet anyone who has ridden one of these machines and knows the thrills of a foot-controlled clutch which can be made to grip instantly, together with absence of flywheel weight and an engine that roars off the mark, can testify that the clutch and the engine are an exact combination. The final readings obtained, however, were just, and, considering the gear ratios employed, they are very creditable.

The Edmund Levis and the Edmund J.A.P. were both suffering from the fierce clutch epidemic, but

The P. and M. was the only machine fitted with expanding ring gears that occasioned no difficulty in obtaining a reading.



Some of the machines and riders outside the Headingley Motor Co.'s premises at Leeds, at which the trial of engine and clutch efficiency was made. Note the testing instrument in the foreground.

since the Enfield gear is almost ideal for these small machines when it comes to practical use, the results must not be taken too seriously. It may be mentioned that the clutches engaged much more sweetly on the two-stroke than on the four, probably owing to the more even torque of the engine.

The 4 h.p. Bradbury behaved excellently, and it is interesting to learn that the "big single" really *is* capable of developing slightly more than the popular 3½ h.p. single, a point many of us may have doubted.

The Instrument Kept as a Standard Fitment.

This trial has proved interesting in many ways, and though, of course, the results obtained open up many subtle enquiries to the theoretically minded, the Headingley Motor Co. and their friends are to be congratulated on having carried into practice a most original competition. The instrument has now become a standard fitment in the garage of the above-named company, and any rider who enquires "Is my mount developing its full power?" is in a few moments able to ascertain how his machine pulls in comparison with others of its cubic capacity. If there is any question as to clutch or belt slip, a few seconds on this test is calculated to settle any doubt, though it cannot be pretended that prolonged tests of this kind would prove particularly good for any part of the transmission.

H. MORTIMER BATTEN.

An American Opinion.

THE following are extracts from an interesting letter received from Mr. E. B. Holton, of New Jersey, a member of the "Federation of American Motor Cyclists." His views are particularly instructive as representing the American opinion on the subject of many motor cycling matters. He writes:

"This letter will be rambling because I have a lot to say. First, I want to congratulate you on the efficiency of your paper in covering every phase of motor cycling in every quarter of the globe, also for the way you are so intimately in touch with the riders.

"Our American motor cycle papers lack that get together tone, because they have no 'Letters to the Editor' pages. Whether this is due to the fact that American riders are not great at letter writing I do not know, but the lack of these pages is to be deplored.

"Another thing that interests me is the difference in the slang in the two countries. Motor cycling is a sport that is essentially the same both in England and America; still the language is altogether different in many cases. For instance, your riders 'konk out,' we 'stall'; you use 'petrol,' we 'gas'; you are 'all out,' we 'open wide,' etc.

"We have a growing coterie of lightweight manufacturers, but with the roads of the States none too good I cannot see where the market will be very large. A lightweight will have the touring radius of a bicycle, for the real lightweights have not enough speeds to negotiate steep hills as found in many States.

"From photographs published in recent issues, I should judge your roads are rapidly becoming as bad as ours. American practice is to build a good road, then let it gradually wear out without any effort to save the road surface at all.

"I have just been at work on an article regarding sidecar accessories. We are without many of the refinements that make the sport attractive in wet or cold weather, but have hopes that some keen manufacturer will see the chance and grasp it. We need waders, good ponchos, oil skins, trunk and tyre racks such as the English motor cyclist has.

"I will now pass on to endurance runs. The New Jersey M.C. two days' run was quite a contest; but I have come to the conclusion that the secret check is a thing of the past.

"Our run was over a 435 mile course, with eleven secret checks, and the whole affair became a guessing contest rather than a competitive event in which the machines figured largely. The Indian team out-guessed the Harley-Davidson riders in locating secret check stations; therefore, they won.

"The ideal two-day contest—in our section—is a 450-500 mile course over such abominable roads as to cause the competitors' anxiety over their ability to hold to a 20 m.p.h. schedule. We can find sand and clay roads enough for this type of run, too, but feel that something regarding flexibility and hill-climbing ability should be brought out as well.

"Now, if one of those sneaking German U boats does not attack the ship which carries this letter, I shall expect to see it, or some comments in regard to it.

"At one time I marvelled at the English T.T. handle-bar, but since riding a Harley equipment with a semi-racing bar I agree with 'Ixion' when he favours a bar that causes one to throw some weight on the front wheel. The added sense of security in loose stuff is great.

"Newark, N.J. "ERNEST B. HOLTON."

QUESTIONS AND REPLIES

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Side Play on Connecting Rod.

My machine is a baby two-stroke, and has run about 2,200 miles. On taking down engine for decarbonising, I find there is considerable *lateral* play on both big and little ends of connecting rod. Should this be taken up, or is it immaterial? There is no "up and down" play.—A.O.H.

Side play on either end of a connecting rod does not matter; vertical play is all that matters. Of course, it is just as well not to have an excess of side play, especially at the gudgeon pin end. The idea of allowing slight side play is so that the connecting rod can find its own central position between gudgeon pin and crank pin without any risk of strain through being lined up incorrectly.

Tuning Up.

Will you tell me how to obtain more speed out of my 3 h.p. twin? The exhaust and valve opens 15 mm. from the bottom of the stroke and closes on top. The inlet opens 2 mm. after the exhaust has closed, and closes at the bottom of the stroke. The magneto fires 3 mm. over the compression stroke with the spark retarded and 3 mm. from the top of the compression stroke when advanced. The tappets have 4/1000ths clearance. The engine will only do 30 m.p.h. all out, and slows up on small hills. If I slow down to 6 m.p.h. the engine snatches, and when I try to get away again the same thing happens. When I try to start in high gear (5½ to 1) the front cylinder gets a light straw colour after about five miles running. The front cylinder gets plenty of oil as the piston gets carbonised, but I cannot cure the overheating.—O.W.Y.

The timing of your machine seems to be perfectly correct, and we do not suggest your altering it. Evidently there is loss of power through wear or want of adjustment. Perhaps the valve springs have become too weak and require renewing, or the carbureter requires adjustment. The fact that the engine overheats so badly that the front cylinder gets red hot is a sure enough indication that things are not as they should be. No wonder you cannot get speed if this happens. The engine needs to be taken down and thoroughly examined by an expert. Possibly new piston rings are needed, and the valves require to be ground in. You might also try a slightly smaller jet.

Excessive Vibration.

I have a 2¼ h.p. two-stroke machine which runs very well, with very good mileage per gallon. I can do 100 m.p.g. in level country. What is the cause of excessive vibration on the handle-bars? The spring fork is free, and the tyres are 26×2¼, not pumped too hard. It seems like engine vibration. What can be done to prevent it? The piston is rather heavy, much heavier than the piston of a four-stroke I owned previously. Does your book on "Balancing of Motor Cycle Engines" deal with two-strokes?—Ivy.

The vibration is always rather excessive on two-stroke singles, but nothing can be done except to have the engine re-balanced. The same formula would be used for a single-cylinder two-stroke as for a four-stroke. Thus the book on balancing applies equally to both. You should make sure that the engine is securely bolted into the frame, as, if this were not absolutely tight, it would exaggerate any vibration.

Difficult Starting.

My machine is a 1915 2½ h.p. four-stroke, fitted with two-speed countershaft gear, Senspray carburetter, and fixed ignition, the platinum points being timed to open as the piston reaches the top of its stroke. I run along in bottom gear with exhaust raised to start up. On dropping the exhaust lever nothing happens. On raising it again a moderately loud backfire takes place. This happens two or three times, the backfire getting louder each time, until the machine suddenly starts off. On changing into top gear no explosion takes place until the exhaust lever is raised for an instant, when a loud backfire takes place, and the machine either starts up or else stops. I should be much obliged if you could help me in the matter. The machine runs well once it gets going.—R.B.D.

Probably you flood the carburetter too much before starting, and there is too much petrol, causing the mixture to be so strong that it cannot be ignited. Raising the exhaust admits air into the cylinder, and after this has been done once or twice the excess of spirit is evaporated. With this make of carburetter it is advisable not to flood it at all before starting, or, if it is absolutely necessary, only depress the plunger once or twice.

Magneto for Vertical Twin Engine.

I have a vertical twin engine, 5-6 h.p., with cylinders side by side. I require a magneto for it. Could you advise me what degree magneto is required?—W.H.F.

If the pistons of your engine both rise and fall together, the engine is intended to fire at every revolution of the crank. You will require a magneto similar to those used on machines such as the Douglas, viz., 180°. In this case it should be run at half engine speed. If, however, the cranks are set at 180°, that is, one piston at top of stroke while the other is at the bottom, the explosions will occur in quick succession, with a long interval until the next two explosions. In this case the same magneto will do, but will have to be run at engine speed. It is important to note that two non-effective sparks will occur at the end of each exhaust stroke; this, however, will not affect the running of the engine in any way.

Misfiring.

I have a new 1915 machine fitted with a 1915 B. and B. carburetter and Dixie magneto, which runs very well along level or undulating roads, but as soon as I come to a long hill and open up the throttle, it runs about 500 yards and then misfires itself to a standstill, unless I almost close the throttle again (full air), when it fires regularly, but, of course, without sufficient power on such a small throttle opening. I have tested the sparking plug and the wiring for shorting, but everything seems to be all right. I have cleaned out the carburetter and petrol pipe, so there is no shortage of petrol; it is correctly adjusted, and the slides work properly. I have tried two new plugs, but it makes no difference. Can you tell me from this what the trouble is, or make some suggestions as to the possible cause? I may say that the timing of the valves and spark has been checked by a local expert; also, the valves do not stick in the guides. Could such a trouble be caused by pre-ignition? If so, how could it be prevented?—L.C.F.

The trouble seems to be due to too large a jet, which causes the engine to choke through too strong a mixture. The trouble could be caused by the ignition, but we hardly think the symptoms point to this, especially if you have tried two different makes of plugs.

Lighting from Magneto.

(1.) I have a fairly large single-cylinder Simms magneto, giving a good hot spark. I wish to convert this into a dynamo to light three lamps, also to give a spark for a twin engine. Of course, I shall have to fit a contact breaker for this. Could you enlighten me as to the necessary operation for converting? (2.) My present mount is chain-countershaft driven, and is geared 6 to 1. I wish to gear it 5 to 1. What number of teeth on the engine sprocket would I require, $\frac{3}{8}$in. × $\frac{1}{4}$in. pitch? Countershaft, forty-five teeth on big wheel, seventeen teeth on small wheel; back wheel (26in. diameter), thirty-eight teeth on sprocket.—E.Y.

(1.) We do not think you would be able to light the lights and at the same time use the magneto for ignition purposes on a twin. If you want to use the magneto for lighting purposes only it is possible to do so by connecting the lamps in a circuit formed by a wire from the switch terminal on the contact breaker, and one from the frame of the machine. It is possible to light a small lamp suitable for tail light purposes only by taking the wire from the switch terminal to a choking coil and from that to the tail lamp of about 2 volts. This enables you to draw a small proportion of the current to light the lamp and still leaving sufficient to produce a good high-tension current for ignition purposes. (2.) In order to obtain the gear ratios of a countershaft-driven machine it is necessary to multiply the number of teeth on the driving sprockets together, also the driven, and divide the product of the driven by the product of the drivers; this will give you the gear. The following is the method of working it out for your machine, X being the number of teeth in the unknown sprocket (the engine):

$$\frac{45 \times 38}{X \times 17} = 5$$

$$45 \times 38 = 5\,(X \times 17)$$

$$X = \frac{45 \times 38}{5 \times 17} = \frac{342}{17}$$

$$= 20 \text{ teeth.}$$

Therefore, twenty teeth on the engine sprocket is what is required to give a gear of 5 to 1.

Exhaust Valve Sticking in Guide.

(1.) My exhaust valve keeps sticking up in its guide, and this has happened twice within 300 miles. The first time I cleaned the valve stem and replaced it, but this lasted for roughly 300 miles, when I replaced the valve with a new one. (2.) My compression tap has to be taken off and cleaned after about 100 miles, or after about five or six runs (engine allowed to get quite cold). Unless I clean this tap I cannot inject petrol into the cylinder as it is choked with burnt oil. My machine is a 4 h.p. Triumph. The oil I give is Vacuum T.T., one pumpful every five miles.—R.T.

(1.) The exhaust valve sticks up probably because it is too tight a fit in the guide, or slightly bent. We should recommend you to rub the stem down with emery, and dust a little blacklead round it. See, also, that the guide is quite clear, and that the valve is working freely in it when warm. (2.) You need not trouble to take the compression tap off to clean it. You should push a piece of fine wire down the centre when the tap is open. You can clean it quite well enough to allow you to inject petrol for starting. Half a pumpful of oil every five miles should be enough.

Overheating.

(1.) What is known as overheating, and should the crank case get hot at all? If so, what is the extent to which this may be regarded without alarm? I am rather mixed in regard to this matter generally. (2.) What is a good test for compression, and how is this to be judged, *i.e.*, how am I to know whether the compression is good or bad? (3.) What may be regarded as a fair consumption of petrol, *i.e.*, how many miles per gallon? I am at present using the machine (a 5-6 h.p.) with sidecar on the hills, where I have frequently to climb steeps of varying gradients from 1 in 20 to 1 in 4. But I will shortly be down in the plains again.—M.V.H.C. (Simla, India).

(1.) Overheating occurs when the cylinder reaches such a temperature that the expansion of the gas is so rapid, that a sufficient quantity cannot be drawn in, and so the engine cannot maintain its normal degree of efficiency. The heat also burns up the lubricating oil, and is liable to cause a seizure. The crank case often gets hot through conduction, and there is no great harm in this. (2.) You can tell fairly well by trying to overcome the compression. If there is considerable resistance the compression is good. (3.) The consumption of petrol will be between 50 and 60 m.p.g.

READERS' REPLIES.

A Cracked Crank Case.

Your correspondent "S.H.," in the issue of November 11th, asks for a suggestion for leaking crank case. I fractured mine and had the same trouble, through a slightly twisted frame. I straightened the frame, and then carefully hammered the fracture in crank case both inside and out. This was some years ago, and it is still satisfactory now. —J.H.K.

Difficulty in Starting.

Referring to "W.W." in your issue of November 11th and your reply thereto regarding difficult starting, I at one time experienced the same trouble, and was more than once "held up." I came to the conclusion eventually that it was due to the sparking plug points being too far apart. Correcting this has stopped the trouble. The puzzle is why an explosion should occur upon the release valve being lifted. I am not an electrician, but imagine that under normal pressure a spark can jump a larger gap than if under compression. Would this explain it?—H.C.

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"R.W." (Stirling).—Triumph two-stroke with Everest or Binks carburetter, slow running.

"H.R.B." (East London, S.A.).—A.B.C. Reliability, lubrication, durability, petrol and oil consumption, and smoothness of chain drive.

RECOMMENDED ROUTES.

LIVERPOOL TO BERKHAMPSTED.—J.D.A.

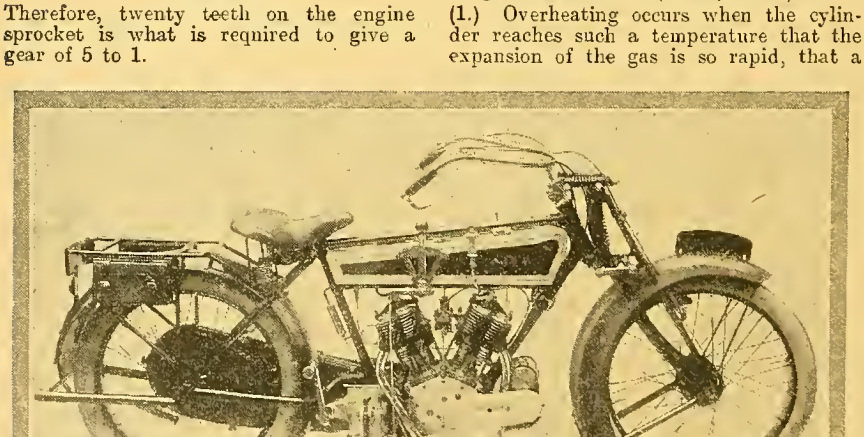
Liverpool, Birkenhead, Chester, Tarporley, Nantwich, Woore, Pipe Gate, Stone, Weston, Rugeley, Lichfield, Weeford, Atherstone, Daventry, Weedon, Towcester, Fenny Stratford, Dunstable, Ivinghoe, Tring, Berkhampsted.

CIRENCESTER TO OSTERLEY PARK.—C.C.M.

Cirencester, Fairford, Lechlade, Faringdon, Wantage, Wallingford, Henley, Maidenhead, Slough, Colnbrook, Hounslow, Heston, Osterley Park.

BEDFORD TO FOLKESTONE.—G.D.D.

Bedford, Shefford, Hitchin, Stevenage, Watton, Ware, Harlow, Ongar, Brentwood, Orsett, Tilbury, by ferry to Gravesend, Meopham, Wrotham Heath, Maidstone, Lenham, Ashford, Hythe, Folkestone.



6 h.p. 1916 model A.J.S.—one of the most representative passenger machines on the market. Detachable wheels, all-enclosed chain drive, and a three-speed gear are features of this mount.

MOTOR CYCLES FOR SALE.

Alldays.

1916 Alldays-Allon, 2-speed and clutch, absolutely in stock; £45.—Julian, Broad St., Reading. Biggest dealer in the South. 'Phone: 1024. [X0802

ALLONS, 2¾h.p., 2-speed models, £38/17; single-speed models, £31/10; best terms for cash, easy terms, or exchange.—Wauchope's, 9, Shoe Lane, London. [X4815

ALLDAYS Matchless, late 1914, 2-stroke, 2½h.p. perfect running order, Millers lamp set, horn, accessories; any trial; approval; photo; £22.—Crow, Brantwood, Lloyd St., Llandudno. [X3071

Antoine.

4h.p. Antoine, low, Chater spring forks, Amac, Hutchinsons, Brooks, new tubes, belt, guaranteed sound. —Briscoe, 1, Eridge Rd., Tunbridge Wells. [6377

Ariel.

ARIEL 1914 3½h.p. Combination; a real bargain, £55; easy payment arranged.

ARIEL 1915 5-6 and 3½h.p. Combinations, actually in stock; easy payments arranged.—Ariel's Special Agent, Jones, The Broadway, Muswell Hill. [6671

ARIEL Late 1915 4h.p. Combination, all accessories done 200 miles; photo sent; £63.—Christie Bros., St. Andrews. (D) [6411

ARIEL, 3½h.p., 1915, 3-speed model, and Millford sidecar, absolutely perfect, lamps, horn, all spares and accessories; £68.—Seen at any time at Heaton's Garage, Six Ways, Aston. [X4608

ARIEL 3½h.p. 1914 Combination, 3-speed, decompressor, kick start, speedometer, lamp, and spares sidecar new 1915, lot equal to new, climb anywhere; bargain, £50.—Lindfield, High St., Crawley, Sussex. [X4602

Arno.

SMART Arno Combination, 1914, 3½h.p., 3-speed, cane sidecar, well upholstered, lamp, horn, Sensspray; 38 gns.—Railway Garage, Staines. [6394

A.S.L.

1914 A.S.L., 4h.p., Sturmey 3-speed, clutch, fully equipped, Lucas lamp set and horn, fast machine, perfect condition; £37/10.—Ray, 10, Elms Buildings, Eastbourne. [6628

Auto-Wheels.

AUTO-WHEEL de Luxe; £15/15; 26/3 monthly.—Seen at 248, Bishopsgate, London. [6641

AUTO Wheel, attached to 3-speed Fleetwood cycle, ready for the road; £12/10; excellent condition; guaranteed.—Wauchope's, 9, Shoe Lane, London. [X4798

AUTO-WHEEL, 1915 model, had little wear, with gent's cycle; £9/9, or nearest offer; owner retiring.—Watson, Burton Rd., Ashby-de-la-Zouch. [X4844

Bat.

BAT, 4½h.p., and sidecar, good order throughout; 7 gns.—Collard, Stretton, Sydney Rd., Muswell Hill. [6428

BAT 5-6h.p. Twin, 1914½, 3 speeds, kick starter cane sidecar; £50, or near.—Write, Bat, 1, Campbell Rd., West Croydon. [X4779

BAT-J.A.P., 1912, 6h.p., 2-speed, grey, coachbuilt sidecar, wind screen; £42; good tyres, Kempshall back.—1, Kenilworth Gardens, Seven Kings. [X4639

BAT, 1914½, 5-6h.p., chain-cum-belt, 3 speeds, and kick starter; any trial given; sporting model; £52, or near offer.—Bat, 1, Campbell Rd., West Croydon [0740

BAT-J.A.P., 1913 Model de Luxe 8h.p. combination, chain drive, new tyres, in fine general condition, with spares; £50 accepted; owner enlisting.—172, Caulfield Rd., East Ham. [6442

8h.p. Bat, 1915 machine, fitted with an handsome underslung sidecar, 3-speed countershaft gear and free engine, complete with all accessories; £65, guaranteed.—Wauchope's, 9, Shoe Lane, London. [X4821

1914½ Bat-Jap, 3½h.p., overhead valves, 90 bore, T.T. model, 3 speeds, hand controlled clutch, Lucas lamps, horn, speedometer, belt and tyres nearly new, first-class condition throughout; £46, or 2-stroke and cash; Triumph free engine wheel, £1.—Blake, 9, St. Michael's Rd., Aldershot. [6392

BATS.—The very latest up-to-date combinations supplied from stock; 6 and 8h.p. twins, and 4h.p. solo twins, immediate delivery, with or without Bat sidecars. Also we have for sale a 1915 second-hand 8h.p. combination, fitted with handsome underslung sidecar, 3-speed countershaft gear, includes speedometer, and all high-class accessories, price £65, guaranteed. — Sole wholesale London agents, Wauchope's, 9, Shoe Lane, London. [X4816

Blackburne.

1914 Blackburne, 3-speed, runs nicely; bargain at £32.—A. J. Young, Newmarket. [5598

Blumfield.

BLUMFIELD 5h.p. Twin; rare bargain. £20; very fast.—21, Tindal St., Chelmsford. [6555

Bradbury.

1911 Bradbury, 3½h.p., in perfect condition, new tyres; £12.—Harland's Garage, Sheerness. [6402

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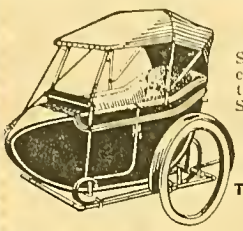

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BRADBURY, 1913, 2-speed, F.E., tyres and belt as new, everything in perfect condition; exceptional bargain, £20.—W. Mulley, Riverside, Upwell, Wisbech. [X4511

1912 3½h.p. Bradbury, 2-speed, wicker sidecar, free engine, accessories; £30, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0732

4h.p. Bradbury and Sporting Sidecar, 2-speed, and F.E., Druids, fast and powerful; owner at the Front; £30.—86, Lawrie Park Rd., Sydenham, S.E. [6596

1915 6h.p. 2-cyl. Bradbury, 3-speed countershaft gear, chain drive, handsome coachbuilt sidecar, almost new; cost £94, price now £70, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0726

BRADBURY, 1912, 2-speed, coachbuilt sidecar, engine recently overhauled, 3 lamps, 2 generators, spare valve, belt, 2 tubes, heavy Kempshalle, enamel and plating good; £32, or exchange Morgan and cash.—Stephen, Royal Arcade, Cardiff. [X4503

FOR Sale, 1913 4h.p. Bradbury and sidecar, condition as new, all chain drive, F.E., 2 speeds, clutch, kick start, lamps, and horn, wheels and gear box new this year, new Dunlops, extra heavy tyres, spare Kempshall and tube, spare chains, links, etc.; £38; tip-top condition; owner buying Ford.—Anderton, Grocer, Billinge, Wigan. [X4576

Brough.

BROUGH, 1915 engine, 2-speed countershaft; £45. —Coles, 78, High St., Hampstead. [6616

Brown.

BROWN, 2¾h.p., Bosch, B. and B., good running order; £12, or offer.—Walters, 86, Lawrie Park Rd., Sydenham, S.E. [6597

3½h.p. 2-speed Brown and Coachbuilt Sidecar, new tyres, perfect; bargain, £25; easy payments arranged.—Jones, The Broadway, Muswell Hill. [6672

B.S.A.

B.S.A., 1913, 2-speed, in splendid condition; 30 gns., very great bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X2345

B.S.A., 1914, 4h.p., model H, coachbuilt Burbury sidecar, good condition; 55 gns.—Edwards, Penrhos, Kington. [X4863

1914-15 B.S.A., 4¼h.p., 3-speed, chain drive, kick starter, etc., run 2,000 miles; £47/10, complete. —Plastow, Grimsby. [X4666

3½h.p. B.S.A., free engine, clutch model, 1912, nice condition; a bargain at £29.—Wauchope's, 9, Shoe Lane, London. [X4799

B.S.A., 1915½, model K, and £13/13 coachbuilt sidecar, equal to new; £63.—Harris, 327, Wellingborough Rd., Northampton. [X4719

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1915½ 4¼h.p. B.S.A., 1916 3-speed gear box, chain drive, lamps, horns, tools, splendid condition; £55.—Marshall, Coningsby, Lincoln. [6649

1913 B.S.A., 3½h.p., 2-speed, and sidecar; cheap, £37/10; perfect; easy payments arranged.—Jones, The Broadway, Muswell Hill. [4825

B.S.A., late 1913, coachbuilt sidecar, 2-speed, free engine, Cowey speedometer, lamp, horn, perfect order; £39.—Bicknell, 14, Harrington Sq., N.W. [6634

B.S.A., 3½h.p., late 1912, 2 speeds, h.b.c., speedometer, lamp, horn, good tyres, new belt and tools; £30.—A. Frost, 68, Vant Rd., Tooting, S.W. [6852

B.S.A. Model K, late 1915, condition and appearance good as new, mileage under 700; owner joined colours; £55.—Wilkinson, 43, Washington St., Workington. [X4743

B.S.A., 1916, 4¼h.p., model K, just delivered, chain-cum-belt, 3 speeds, kick-starter; £62; exchange or deferred payments.—Eagles and Co., High St., Acton, London. [X4726

B.S.A., 1915, 4¼h.p., model K, Burbury 15 gn. coachbuilt sidecar, Watford speedometer, large Miller lamp, and rear light, lot of tools; £62.—Gardner, 20, Duke St., Reading. [5549

B.S.A., 1913½, 3½h.p. combination, 2-speed, all accessories, excellent condition, any trial, owner joining Army; sacrifice £36/10.—J.M., 23, Wrottesley Rd., Harlesden, N.W. [6623

B.S.A., 1915 model K, Grosvenor (B.S.A.) coachbuilt sidecar, Lucas horn, 3 lamps, excellent condition, £3/15 insurance policy to August, 1916; £67.—Chaston, Estcourt Rd., Gt. Yarmouth. [X4509

1913 B.S.A. 3½h.p. Combination, 4-point attachment, clutch, 2-speed, lamp, horn, speedometer, tools, spares, luggage and petrol carrier, just overhauled; £47; any trial.—Lieutenant Steggall, Royal Engineers, Luton. [X4428

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B.S.A. 1916 Model K actually in stock, also 1914 3-speed combination, carefully used, all accessories, £59/10; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [6431

1915 B.S.A., 4¼h.p., 3-speed, clutch, Millford coach sidecar, Palmer cords, under 1,000 miles, in new condition, 2 head lights, Cowey, horn, mirror, and spares; cost over £75, accept £63.—A.H.H., 175, Stapleton Hall Rd., Stroud Green, London, N. [6633

B.S.A., 1916, 4¼h.p., 3-speed countershaft, all chains, K.S., P. and H., horn, rear lamp, with Phœnix latest cigar sidecar, 2½ Palmer cord covers, only done 100 miles; nearest to £73; excellent reasons for selling; particulars, appointment.—J. Boulte, 12, Albion Place, Winchfield, Hants. [6525

B.S.A., new models K and H, 4¼h.p., chain-cum-belt drive, £62; all chain drive, £64. These are 1916 models, just delivered from works, all the very latest improvements; tuition free; delivery free 50 miles, crating free. B.S.A. in stock if required; immediate delivery of the sidecar combination or single machine; exchange arranged, or easy terms.—Wauchope's, 9, Shoe Lane, London. [X4795

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Calthorpe.

LONGMAN Bros., 1, King St., Acton. 'Phone: 1578 Chiswick.

LONGMAN Bros.—Calthorpe-Jap, 1915, 2 months old, cost £40, 2-speed, 3½h.p., magnificently equipped; £28. [6481

CALTHORPE Junior, 1914, 2-speed, spares, good condition; £20.—62, Stondon Park, Honor Oak Park. [6538

CALTHORPE, 1914, 2h.p., 2 speeds, lamp, horn; £16/16.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [6589

1915 Calthorpe-Jap, 2-speed, shop-soiled; 30 gns.; very great bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X4886

CALTHORPE 2-stroke, 2½h.p., latest model, new, with special mag.; £28/16.—Seen at 243, Bishopsgate, London. [6642

CALTHORPE, latest 2-speed lightweight models in stock; cash or exchange; no waiting.—Eagles and Co., High St., Acton, W. [X4725

CALTHORPES, 2-stroke and J.A.P. models all in stock here. Scottish trade supplied.—Alexander's, 115 Lothian Rd., Edinburgh. [5140

CALTHORPE, 1915 model, 2h.p., 2 speeds, footboards, horn, etc., fine condition; £23.—Samson, Temple St., Darvel, Ayrshire. (D) [X4706

CALTHORPE Junior, 1914, in excellent condition throughout, horn, speedometer, etc.; £14.—G. N. Higgs, 31, Vauxhall Bridge Rd., S.W. [6549

CALTHORPE-J.A.P., 2¾h.p., 1915, Enfield 2-speed, free engine, Lucas lamp, horn, little and carefully used; £28.—Rev. H. Pinck, Woodvill, Norwich Av., Bournemouth. [X4843

CALTHORPES for 1916 include lady's and combinations. Send your name for new catalogue, ready shortly; easy payments arranged.—Storey's, 118, Gt. Portland St., W. [0647

CALTHORPES, all models actually in stock, from £27/14 to 35 gns.; deferred payments if desired; special terms for short period.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [6436

CALTHORPES, latest models, just delivered from works, 2¾h.p. J.A.P. engine models, fitted with Enfield 2-speed gear, 35 gns.; 2-stroke 2-speed models, 36 gns.; extended payments arranged; exchange.—Wauchope's, 9, Shoe Lane, London. [X4800

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CAMPION-J.A.P. Combination, 1913¾, 8h.p., 2-speed, chain drive, handle start, coachbuilt sidecar, glass screen, and hood, 3 lamps, new tyres and spare, Pilot jet, splendid condition; £55; exchange 2-stroke and cash.—Pilkington, Cottesmore, Oakham. [X4708

Chater-Lea.

CHATER-LEA, 8h.p., and sidecar, 1912, 2 speeds; £38.—Buckingham, Tiodal St., Chelmsford. [6559

CHATER-LEA, late 1913, 8h.p., 3 speeds, clutch, handle starter, coachbuilt sidecar, 2 large head lamps, Lucas horn, condition as new; £47/10.—697, Old Kent Rd., S.E. [6683

CHATER-LEA 1915 8h.p. Sidecar Combination, 2-seated cane body, Lucas dynamo set, all accessories, perfect condition; £80. — Seen, Stag Motor Works, East Finchley. [6581

Chater-Lea-Jap.

6h.p. Chater-Jap, 2-speed countershaft, chain drive, ano sidecar; £12/10.—Johnson, 52, Solon New Rd., Clapham. [6594

Chater-Precision.

1914 6h.p. Chater-Lea-Precision, 4-speed countershaft Jardine gear, Klaxon, Bramble de Luxe sidecar, all accessories; £65, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0723

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CONNAUGHT. 2¾h.p., 2-stroke, 2-speed gear box, latest model, brand new never been used, owner unexpectedly called to Front, price, with all accessories, £40, no offers.—Write, T.M., 2124, Sells Advertising Offices Fleet St., E.C. [6454

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DOUGLAS, 1914, 2¾h.p., 2-speed, as new; £38.—54, Rathfern Rd., Catford [6521

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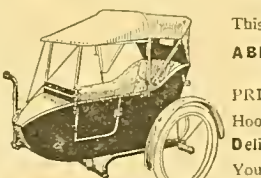

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ROVER, 3½ h.p., 3-speed, and Rover Sidecar	£46 10
15 h.p. 4-cylinder **RENO** 5-seated Car	£65 0
1913 7-9 h.p. Twin **QUADRANT** and Quadrant coach-built Sidecar	£49 10
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P. & M., 3½ h.p., 2-speed, grand condition ..	£29 10
1912 (Nov.) **SCOTT** and Sidecar	£38 10
1910 3½ h.p. 2-speed **REX** and Sidecar	£24 10
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V.S., 6 h.p., twin, P. & M. 2-speed, F.E., and coach Sidecar	£27 10
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F.N., 4-cylinder, magneto, spring forks	£12 10
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REX, 5¼ h.p., twin, magneto, tourist	£15 10
REX, 3½ h.p., magneto, spring forks	£14 10
5½ h.p. F.E. Twin **REX,** specially good	£17 10
N.S.U., 3½ h.p., 2-speed, and Sidecar	£21 10

£58 10 0

7-9 h.p. 2-seater PREMIER Light Car, chain drive, light, fast, and good hill-climber, hood, screen, horn, and lamps. Any trial or examination.

Lists on application. Trade enquiries welcomed.

WE ARE CASH BUYERS OF UP-TO-DATE MORGANS AND LIGHT CARS.

MOTOR CYCLES FOR SALE.

Enfield.

ENFIELD 1916 Combination, Lucas horn, head and rear lamps, only just taken delivery; selling solely because doctor forbids riding; cost over £92, receipts shown; sacrifice £88, or near offer.—Davies, 196, Caledonian Rd., London, N. [6365

ENFIELD Combination (1914), done 3,800, perfect, every accessory, Lucas lamps, only lit twice, loog horn, speedometer; expert examination invited; £65, spot cash.—Seen at Bafeco, 10, North Mews, Gray's Inn, W.C. 'Phone: Central 2366. [6368

1913 Enfield 6h.p. Combination, Lucas sets, Klaxon and bulb horns; the whole turnout is in new condition, and has been very little used; mileage under 3,000; price £50, or nearest.—Bromley Motor Works, Mason's Hill, Bromley, Kent. 'Phone 961. [6507

ENFIELD Newest 1916 Combination, delivered from stock, also 1915, electrically equipped, hood and screen; £90, bargain; deferred payments arranged; strictest privacy observed.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [6432

ENFIELD 1914-5 6-8h.p. Passenger Combination, Lucas dynamo lighting set, Palmer tyres, new spare tube, lot of spares, exceptionally powerful machine, splendid order and condition; £70; seen by appointment.—Bishop, 2, Victoria Rd., Oxford. [X4829

1914 Enfield Combination, complete with lamps, horn, speedometer, mirror, watch, sidecar complete with hood and screen, machine in splendid condition; this belonged to an officer, and has not been used since the commencement of the war, except for 7 days; £65.—Juban, Broad St., Reading. 'Phone: 1024. [X2347

Excelsior.

EXCELSIOR (American), 7-9h.p., 1915, standard model; £62.—Box L95, *The Motor Cycle* Offices, 20, Tudor St., E.C. [6458

1914 Excelsior (Coventry) Coach Combination, 4½ h.p., 3-speed, kick starter, speedometer, good condition, accessories; £50.—Pipler, Poole. [6576

AMERICAN Excelsior, 7-9h.p., 3 speeds, electric equipment, and coachbuilt sidecar, as new, perfect; 50 gns. to clear.—Percy and Co., 337, Euston Rd., London. [6486

EXCELSIOR (American), standard 7h.p. model, £80; De Luxe, £90; very liberal exchanges quoted; we can surprise you.—Sole Yorkshire Distributers, Halifax Motor Exchange, Horton St., Halifax. [0360

AMERICAN Excelsior 1914½ Coach Combination, 7 h.p., mag., 2 speeds (countershaft), lamp, horn, speedometer, beautiful order; any trial; 49 gns.; exchange lightweight.—1, Ebner St., Wandsworth, London. [X4713

EXCELSIOR (British) 2-stroke!—Latest 2¼h.p. model in stock, £30/16, the famous hill-climber. Wire and secure one of these famed Coventry machines.—Alexander's, 115, Lothian Rd., Edinburgh. T.A.: Motocycles. [5144

Forward.

2¾h.p. Twin-cyl. Forward, 3-speed gear model, a real little gem, economical and fast; £29, guaranteed.—Wauchope's, 9, Shoe Lane, London. [X4819

F.N.

F.N., with sidecar, 1912, 5-6h.p., mag., Multi clutch; £25/10.—1, Ebner St., Wandsworth. [X4715

1911 F.N. Motor and sidecar, in first-class condition; cash wanted, £13/10.—F.N., 1, St. Mary's Mansions, Newington Butts, S.E. [6427

F.N., 5-6h.p., 4-cyl., Bosch mag., 2½ tyres, B. and B., h.b.c.; any trial; carefully used machine, and a gift for £12/12, or very near offer.—J. Boulter, 12, Albion Place, Winchfield, Hants. [6526

F.N., 1912-13, 2¾h.p., 2-speed, hand clutch, shaft drive, new Dunlop tyres, P. and H. head lamps, generator, fully equipped, easy starter; seen by appointment; £28.—Baxter, Chislehurst. [6607

5-6h.p. 4-cyl. F.N., fitted with 2-speed gear and handsome coachbuilt sidecar, the combination complete with all accessories; 40 gns.; any severe trial given; tuition free; guaranteed.—Wauchope's, 9, Shoe Lane, London. [X4803

Grandex.

2¾h.p. Grandex, fitted with 3-speed gear and free engine, superior lightweight; £20; guaranteed.—Wauchope's 9, Shoe Lane, London. [X4804

Harley-Davidson.

HARLEY-DAVIDSONS in Stock.—Premier Motor Co., Birmingham. [4734

BARGAIN.—Nearly new Harley-Davidson, 4h.p., 11C model, 2-speed, in absolutely perfect order; 45 gns.—Railway Garage, Staines. 'Phone: 46. [6395

HARLEY-DAVIDSON, 7-9h.p., 11J model, electrically equipped, new, also Harley-Davidson 20 gn. sidecar; bargain, £89.—Eldridge, Fordingbridge. [6662

HARLEY-DAVIDSON Combination, electric model, new August, 1915, will cost £100 to-day, tyres unpunctured, little used, perfect; £80.—Shackleton, Jeweller, Sowerby Bridge. [X4848

HARLEY-DAVIDSON, 7-9h.p., 3-speed, September, 1915, done 500, tyres unpunctured, Canoelet coachbuilt sidecar, spares, guaranteed perfect; best over £70 cash.—Lieut. Farrington, M.M.G.S., Bisley, Surrey. [6600

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Aluminium Pistons.

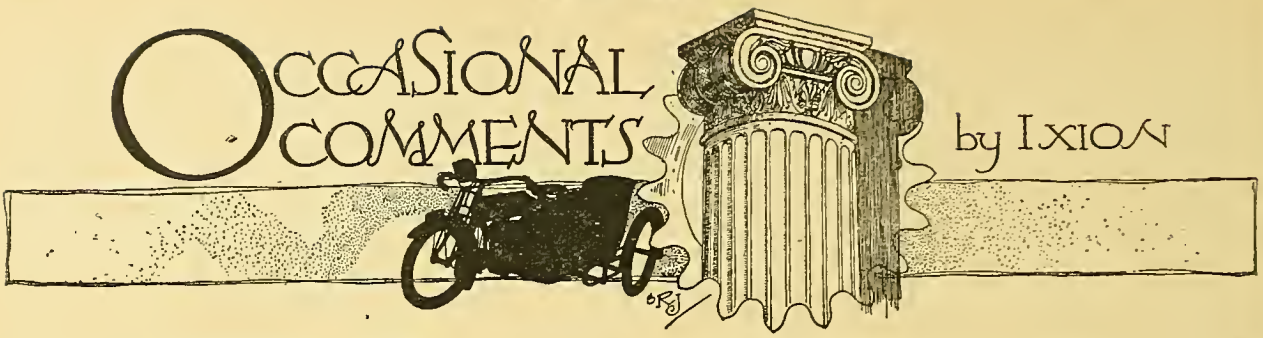
IN this issue we publish an authoritative article on a little known subject, viz., the employment of aluminium—or, rather, aluminium alloy—pistons in internal combustion engines. This material was adopted originally on account of its remarkable lightness, but the tests to which it has been put have brought to light a number of other inherent advantages which render an aluminium alloy piston peculiarly suitable for the requirements of an air-cooled petrol engine. Though the use of aluminium alloy for pistons is at the moment confined to car and aeroplane engines, it is very clear from the facts enumerated by our contributor that before long the aluminium piston will figure largely in motor cycle engines—possessing, as it seems to do, just those peculiarities which commend themselves to the notice of air-cooled engine makers. The fact that an aluminium piston has no tendency to seize, even if on the tight side, but instead conveniently laps itself in, is a particularly attractive point in the case of an air-cooled engine running at high temperature. Again, the fact of aluminium being such a light material enables a design to be employed embodying a good deal of metal. Now aluminium is a fine heat conductor, and consequently the increased thickness over the usual cast iron piston assists in conducting the heat from that important yet most vulnerable point, the piston head. By this means the heat in the head is quickly reduced, and consequently the oil which reaches the top of the comparatively cool piston is not nearly so likely to be carbonised on to the head. The question of carbonisation is still a difficult one with all types of motor cycle engines, particularly two-strokes, for carbon—caused by oil finding its way past the rings and being burnt on to the piston—leads to knocking, and the only way to get rid of it is to dismount the cylinder frequently in order to remove all traces of carbon. There are still other advantages to be derived from the use of aluminium, but those already enumerated would in themselves be sufficient to warrant enterprising manufacturers devoting their attention to the matter, and after careful study of the subject we are of opinion that aluminium pistons will figure largely in motor cycle engines.

A Standard for Reduced Lighting Required.

FOR many months past motorists have badly needed information on the question of reduced lighting. It has been impossible to obtain an official definition of a powerful light, yet motorists have been summoned and mulcted in fines for innocently using lamps which are considered powerful in the official eye. The curious part is that lights which are sanctioned in one district are not approved in another. We, personally, were requested to reduce our lights in a certain district, though the same electric lights had been in regular use for six months all over the country. After all, it is most unfair to leave the important decision as to whether a light is powerful or not to the average constable, and the personal factor should be eliminated, or, at any rate, motorists should be given some definite standard upon which to work. This we believe, from a hint which has reached us, is about to be done, and we should now like to urge that the whole matter be cleared up at one operation, and the position made clearer as to when lights must be reduced on approaching a town, and also when they can be raised on leaving the outskirts of that town. The latter point is not so necessary as the first, except that, in some populated districts, street lights continue from one town or village to the next, and even for miles on end; so that those who go by the fairly common rule of switching on their head lights immediately they have left the street lamps behind are sometimes unduly inconvenienced. We do hope the authorities will this time appreciate the position in its entirety and settle the question once and for all.

An index to the advertisements in this issue will be found on the page facing the back cover

Occasional Comments by Ixion



Combination Treads.

Two members of *The Autocar* staff inform me that I am quite wrong in supposing that the rubber bars rip off combination treads under the stresses of heavy car work. This fact is hardly germane to these columns, but, as I dragged it in before, I must drag in a correction. It is curious that these combination covers are comparatively uncommon on large cars, when they are so emphatically the goods for real grease on two-wheelers; and I had been led to adopt the above—apparently incorrect—explanation. Expense is possibly a factor in the matter.

Wire Control for Rear Brakes.

Anent my remark on the probabilities of Bowden wire gaining a greater vogue in brake control gear for rear sprung frames, the Bowden wire people remind me that the A.J.S. and Zenith machines both already employ this mode of operation. The incipient demand has led the makers to increase their range of fittings and to manufacture adjusters with a suitable margin for such purposes; when the big demand comes, as the result of the spring frame movement, they will be quite ready to cope with it.

The Sporting Single.

One and the same post brought me a mournful wail from a twin enthusiast ("Why have the J.A.P. people stopped making their divine 90 × 77½ mm. twin—nothing but dreams of it sustain me through the dolours of active service!"), and also a glowing letter from an officer employing the pseudonym "Raving Maniac No. 2," whose message may comfort the bereaved J.A.P. owner. This officer drove a 3½ h.p. T.T. Norton down from Scotland for the All-khaki Meeting last August; and ran it against the clock along the railway straight at Brooklands in the teeth of wind and rain. It was started just as it came off the road, untuned, with a 4½ gear, horn, lamps, tools, and Philipson pulley, yet it did 31 seconds for the half-mile. He offers to wallop any twin I can produce up Dashwood as soon as the war is over. Well, I don't know when the war will be over, so I cannot guarantee what machines will adorn my stable when my sportsman is at liberty.

In Winter Kit.

All the winter riders must have gone to the Front; for the other week I covered several hundred miles without meeting a single solo rider, barring one or two local potterers gingerly going brief business rounds on two-strokes. I was a pretty sight—gumboots, oilies, three jackets, two pairs of socks, two pairs of gloves, a scarf, and ear sausages. Halfway round the trip I broke my mudshield, and finished without it. Its absence appeared to make no difference to the temperature of my nether limbs, and I believe the real value of these fittings is that they prevent wet mud from sloshing on to one's leggings. By the way, I don't think I ever suffered before from serious belt slip in the last half of a countershaft drive, but I got it in the neck on this occasion. But the machine in question is so thoughtlessly designed that the countershaft pulley has no bigger diameter than the average direct drive engine pulley. What fools men be! It is plain that one great merit of the combined drive is the facility it affords for a bread-trencher pulley.

A Catch?

Mr. F. G. L. Evans has written challenging me to a twenty-mile speed contest on the road, in which I am to ride "my four-cylinder Henderson" solo, and he a 7 h.p. F.N. with sidecar and three up; he further offers me half-a-mile start. There are two obstacles to my acceptance, one being that I haven't got a four-cylinder Henderson, the other that my identity is purposely kept pseudonymous. I do not know whether there is some catch about this obviously absurd "dare," or whether Mr. Evans happens to know that I personally cannot accept it, and wishes to boast that the Henderson cannot face the F.N.; or whether Mr. Evans is so ignorant of Henderson quality that he expects its engine to seize up at the pace he hopes to set. Possibly some Henderson rider who has a freer hand in such matters will take on Mr. Evans, and convince him that whatever may be the comparative merits of the two four-cylinders, the Henderson can certainly knock spots off any machine ever made in such a ridiculously unequal contest as he proposes. Mr. Evans seems to be a little hurt that I have not yet published a panegyric of the F.N. The explanation is perfectly simple. I cannot purchase a sample of all the machines on the market, and it so happens that I have not had a chance of straddling an F.N. "four" for several years past. However, I am quite ready to take Mr. Evans's word for the excellences of the latest F.N., and I will make a point of sampling its paces at the first opportunity. The Editor has Mr. Evans's address, if any Henderson enthusiast desires to explore his curious challenge. I should suggest a dual venue for the running off, as such scraps are naturally illegal on the open road. Brooklands would afford a chance of showing Mr. Evans's exaggerated partiality up on the straight, and one of the private manufacturer's tracks in the Midlands would prove whether the sidecar outfit is handier round a continuous stream of corners. I doubt whether Mr. Evans would ever catch up a yard of his proffered half-mile start, even on a music hall trick rider's stage "saucer."

SOME NEW SIDECAR ATTACHMENTS.

The sidecar, in spite of its theoretical disadvantages and lopsided appearance, has, in practice, proved itself to be a very satisfactory little vehicle, as well as the most economical passenger machine on the road. When attached to a suitable bicycle it is capable of a speed of 40 m.p.h. or more, and can travel as much as seventy or eighty miles on a single gallon of petrol. What wonder then that, with all its disabilities, it is popular, and likely to remain so. We illustrate below the latest products of some well-known manufacturers of sidecar attachments.

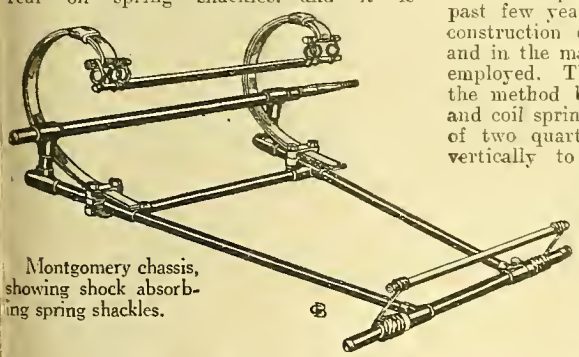
A NEW MONTGOMERY SIDECAR.

FEW sidecar manufacturers have achieved such uniformly good results from their goods as W. Montgomery and Co., of Coventry, who have been making sidecars for thirteen years. The productions of such a firm command interest, and we are glad to be in a position to publish details of a new Montgomery model for 1916, to be known as the Lounge.

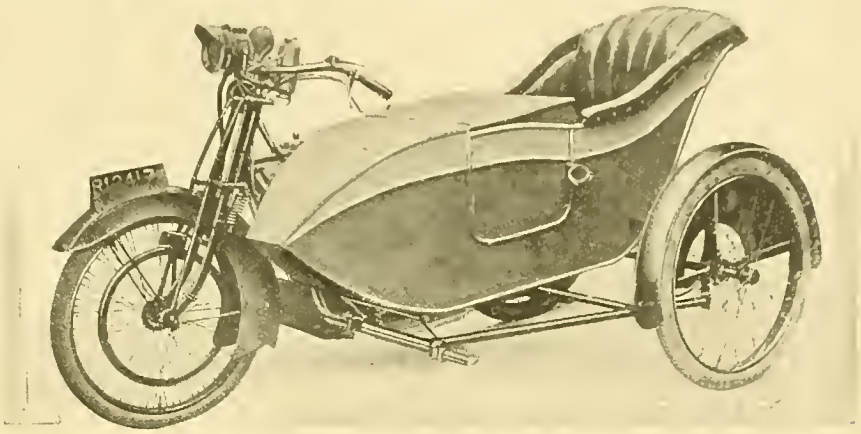
The new model has a substantial coachbuilt body, the feature of which is the high back and sides. Two lockers are provided, one under the toe and the other under the seat. The upholstery is well carried out, and the car, which is extremely roomy, should be very comfortable to ride in.

The chassis will not be altered, as under all conditions it has proved most satisfactory. The two side members are triangulated; this gives great strength, and also allows of the sidecar being attached close up to the motor cycle, the side member being well out of the way of the footrest. It will be noticed that the sidecar is slung at the rear on spring shackles, and it is claimed that these damp the shock. Other commendable points of the Montgomery chassis are its extreme lightness, simplicity, and strength.

Needless to say, Messrs. Montgomery have a complete range of sidecars in addition to the above model.



Montgomery chassis, showing shock absorbing spring shackles.



New design Montgomery sidecar to be known as the "Lounge."

HENDERSON SIDECARS FOR 1916.

THESE sidecars are now made in several different models, though the main features of the chassis remain much the same as those that have proved so satisfactory for the past few years. All tubes used in the construction of the chassis are straight, and in the main frame only four lugs are employed. The springing is quite novel, the method being a combination of leaf and coil springs. The rear springs consist of two quarter-elliptic springs, attached vertically to the rear portion of the chassis in such a way that they can be adjusted to suit the passenger's weight, and the back of the body can also be elevated or lowered to suit the different heights of attachment for various machines. The body is then suspended on coil springs which, at the same time, act as shackles. The body is sprung at the front also on a combination of leaf and coil springs. The attachment clips have been modified, and are now adjustable to any chain stay without alteration.

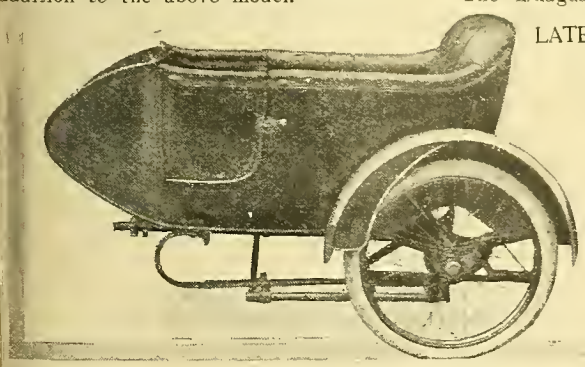
The mudguard is attached by three substantial stays, and is fitted with deep side valances.

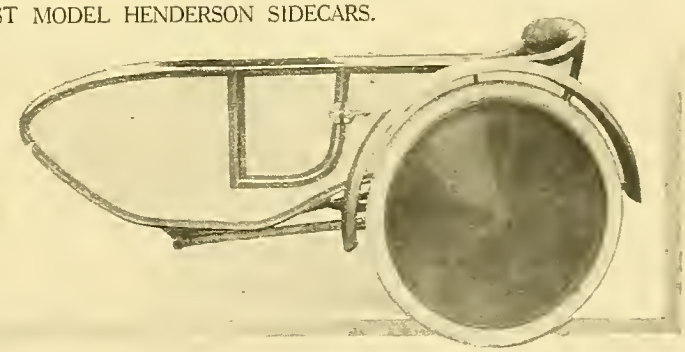
Disc wheels can be supplied with all models. A special model is also made to suit Indian and similar spring frames.

Another new Henderson sidecar, showing quarter elliptic springs placed vertically with the body attached on spiral springs, which act as shackles. The tool locker will be noticed.

A number of different pattern bodies are obtainable coachbuilt, cane, or wicker, with and without lockers.

LATEST MODEL HENDERSON SIDECARS.





The one on the right weighs 48 lb. complete, and with disc wheels is well suited for fast work.

A BATH-CHAIR SIDECAR.

AT the termination of this war a problem will arise to which few people have given any attention, namely, the disabled soldier, who once was an enthusiastic motor cyclist, but now is debarred from this pleasure. For his especial use Messrs. S. A. Newman, Ltd., have designed and built a sidecar unlike all other sidecars, in that it can be transformed into a bath-chair with very little expenditure of time and labour.

The chassis and springing used for this model are exactly similar to the firm's standard model, the body being mounted on long C springs with interposed coil springs at the back, while there is a platform carrier for luggage, and a screen with a fabric cover for the fore end of the car. In detail, however, the design is much altered, as at the forward end of the chassis is mounted a motor cycle head wherein is a pair of small forks holding a solid-tyred wheel, the whole giving a caster action when the sidecar is being pushed as a bath chair. A second wheel with pneumatic tyre is attached to the frame, together with an extra mudguard, both wheel and guard being detachable when a few nuts have been unscrewed, and when detached that part of the frame which acts as the wheel spindle becomes one point of attachment for the motor cycle. Permanently in position is the forward attachment tube, but when the motor cycle is detached this tube can be swivelled out of harm's way. The small caster wheel at the front comes off when one bolt is undone, while there are lugs for the remaining two supporting tubes between the sidecar frame and the motor cycle.

An Adjustable Back.

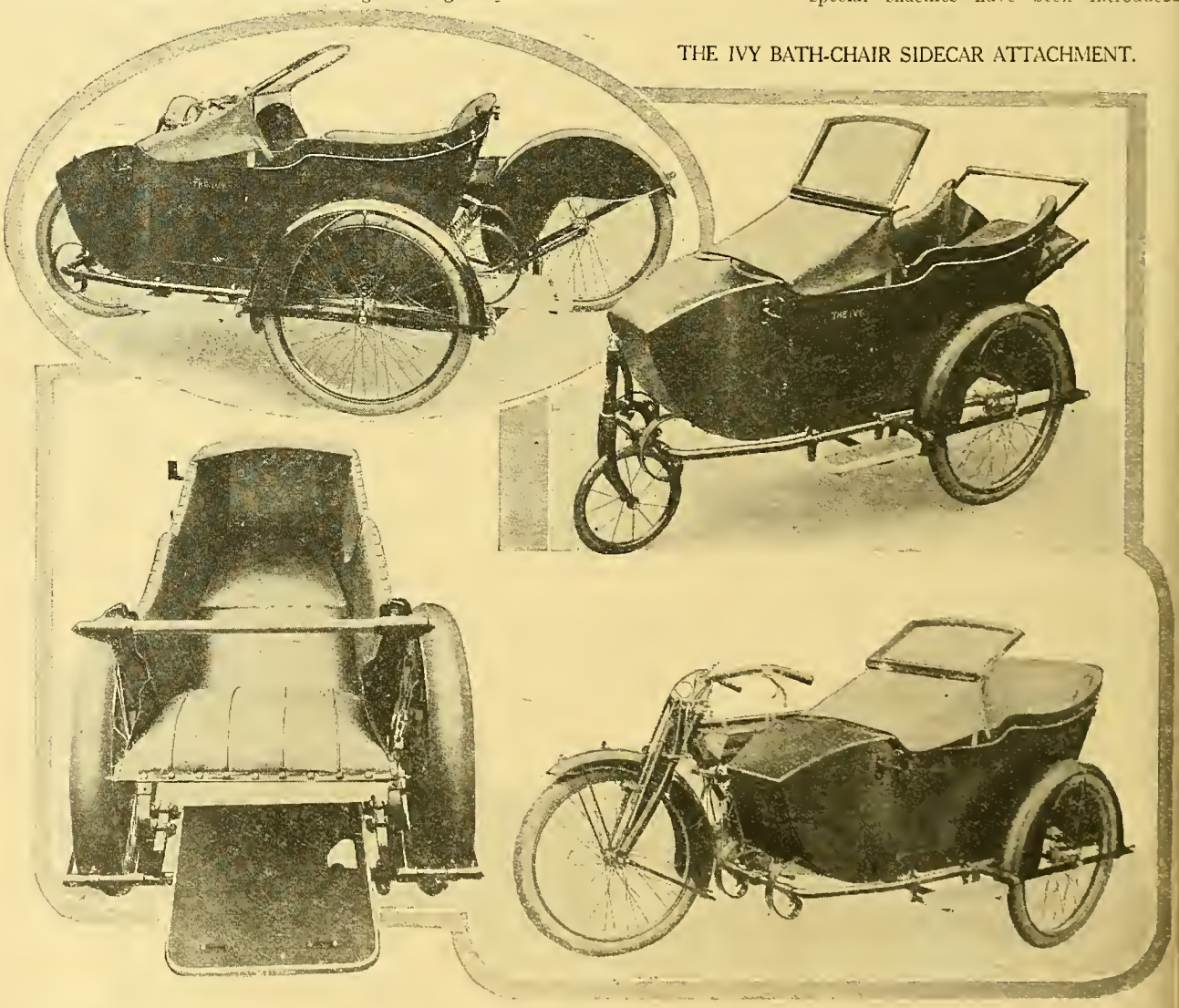
As a patient may not always be in a condition to sit upright, the rear panel can fall over at a large angle, but can be supported by a strap at any point over this angle, thus allowing the occupant of the sidecar to assume a prone position, while the foot space can be raised by fitting a special cushion.

Attached to each side panel is an arm to take the handle by which the machine is pushed, and as the arms are attached by butterfly nuts, both can be removed in a moment. Thus, we have a machine which can be driven as a sidecar, and, if necessary, converted to a bath-chair in a very short time. Obviously, the advantages of this dual purpose machine do not appeal to everyone. Nevertheless, there are many cases where some such arrangement would be an inestimable boon.

SOUND SIDECAR CHASSIS CONSTRUCTION.

THE new Britannic model brought out by J. Harrison and Sons has several interesting details. For instance, the body is slung from a long double C spring having the smaller C at the front, where the spring ends are fastened to a bar running below the body. At the back is the larger C, and special shackles have been introduced

THE IVY BATH-CHAIR SIDECAR ATTACHMENT.



The novel Ivy sidecar, which can be converted into a bath chair by a few simple adjustments. The top right and bottom left hand pictures show how the back is adjustable to give a reclining position for an invalid who is unable to sit upright.

Some New Sidecar Attachments.—

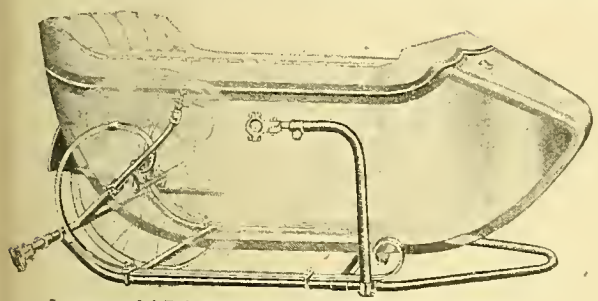
as connecting links between springs and body, thus allowing a more free movement to the body and adding to the rider's comfort. The chassis is triangular in shape, with the base of the horizontal triangle formed by the axle of the sidecar and the apex projecting below the nose of the body. There are two cross tubes, one a specially strengthened tube just in front of the axle, while the other is placed below that point where the body sweeps upwards to the nose.

The sides of the triangle are used as rests whereupon the long double C springs are clipped by two shackles apiece, while the attachment tubes are adjustable in every direction and secured to lugs on the motor cycle in such a manner that the sidecar can be removed with ease, it being necessary to unde one belt only for each of the three attachments.

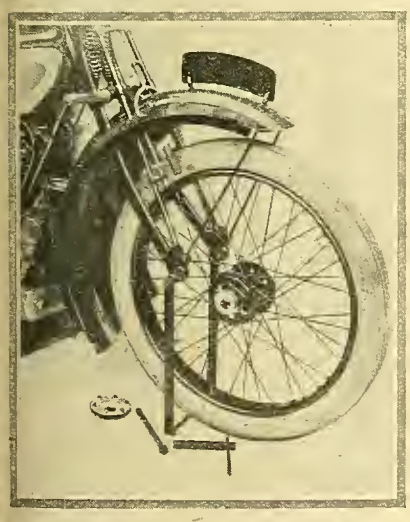
Coachwork Details.

As to the body, this is of the same shape as the 1915 model, has well-padded comfortable upholstery, and a small but neat side door on the off side of the body. A stout mudguard, with a deep extension on the body side, is supported from the axle by three flat steel strips, and should protect the varnish adequately while being a rigid fixing, and with its black enamel forms a pleasing contrast to the body. Standard finish is dark green or grey.

The makers, J. Harrisen and Sons, Ltd., Constitution Hill, Birmingham, have several other models, including a sidecarrier.



Latest model Britannic sidecar showing new design chassis.



The A.J.S. detachable wheel. To remove the front wheel it is only necessary to unscrew the centre pin (shown on the floor in the illustration) and withdraw it with a distance piece. To the left is the dust cap for protecting the driving face of hub when used as the front wheel.

INDEPENDENT OF RAILWAYS. Most motor cycle manufacturing firms use sidecarriers for quick delivery, and our illustration shows a couple of B.S.A.'s, which are continually running between the manufacturers' Redditch and Small Heath works. The first one, it will be noticed, is fitted with a sidecar brake and a dynamo lighting set.

THE INSTITUTION OF AUTOMOBILE ENGINEERS.

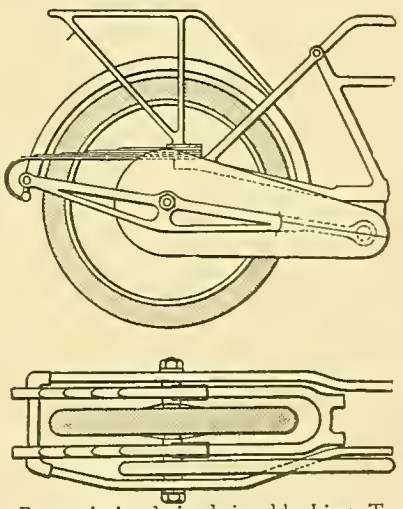
The next general meeting of the Institution of Automobile Engineers will be held on December 15th (not December 8th as previously announced) in the Hall of the Surveyors' Institution, 12, Great George Street, Westminster, S.W., at 8 p.m., when Mr. F. W. Lanchester, M.Inst.C.E., will read a paper entitled "The Cylinder Cooling of Internal Combustion Engines, more especially as concerning Automobile Practice."

FURTHER LIGHTING REGULATIONS.

The Commissioner of Police states that from December 1st all vehicles and bicycles in London must after dark carry a back red light, as well as a white light in front. For horse-drawn vehicles it is sufficient if lamps are carried on each side at the front, showing white lights forward and red lights behind. If only one lamp is carried in front (on the off side) there must be a separate red lamp on the off side at the back. This is indeed a sensible regulation, and we only wish we were at liberty to say that it was to be in force over the whole country, but we should like to see a rear light at the back of the cart, or load, always compulsory.

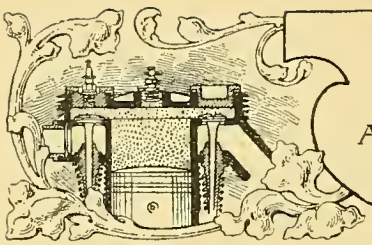
MORE REAR SPRINGING.

STILL another spring frame has been brought to our notice; it is the design of Lieut. T. S. Vaughan Phillips, R.N. A moving chain stay is pivoted at the driving centre of the countershaft by means of a large ball bearing. This chain stay is carried right round the back wheel to ensure rigidity; it is also strengthened in girder form. The springs, which are leaf springs, are secured to a casting formed on the end of a rear member of the frame, their extremities being attached by means of shackles to the end of the moving chain stays.



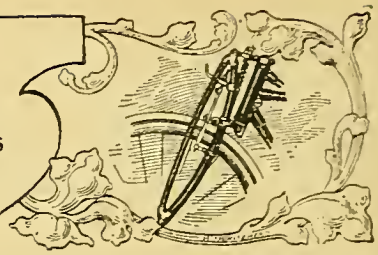
Rear springing device designed by Lieut. T. S. V. Phillips, R.N., described on this page.

It will be seen that the only unsprung weight is the rear wheel, stays, and mudguard, the carrier being attached to the rigid portion of the frame. It is suggested to carry the rear chain case on the right-hand of the machine and secure it to the moving member, and, obviously, there will be no variation in the distance between the chain centres.



Aluminium Alloy Pistons.

A Metal Giving Several Advantages besides Light Weight



LATELY there has been a great deal said on the subject of employing light aluminium alloys in the construction of high-speed highly efficient internal combustion engines as used in car, aero, and motor cycle work. One of the most striking novelties in this respect is its introduction as a metal for pistons. When used for this purpose the selection of the metals and the proportions in which they form the alloy is of the highest importance, and makes just the difference between success and failure. Pure aluminium is quite out of the question for several reasons, the chief being its brittleness, which prevents it standing up to the strain imposed on it at the high temperatures under which a piston has to work, especially in an air-cooled engine. Beside this the melting point, friction, wearing qualities, expansion, etc., are all points which have to be carefully considered, and in most of which pure aluminium proves unsuitable. There are a number of different aluminium alloys which have proved quite satisfactory, though it is extremely difficult to make a satisfactory job of casting these alloys, and each maker specialising in this work has some secret process.

Light Weight the Original Object.

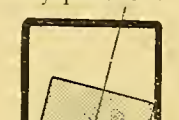
The original object of using aluminium or aluminium alloys for pistons was that owing to its apparent lightness, combined with the fact that its material strength was very little under that of cast iron, bulk for bulk, the fitting of these pistons would save a considerable amount of weight in the reciprocating parts, a point much sought after by designers of high speed motors. It is still the general belief that lightness is the sole object of this type of piston. It was, however, found after much experimenting that these alloy pistons proved to be little lighter, if any, than the light steel pistons used on racing engines. This extra weight was due to the fact that owing to the greater expansion and softer nature of the aluminium alloy it became necessary to fit a considerably larger gudgeon pin in order to overcome the tendency of the pin working loose, the result being that the total weight was very nearly that of a steel piston, and it would appear that there was little left in favour of the light alloy piston. However, during these experiments it was gradually discovered that there were other and far greater advantages in the alloy piston than the mere saving of weight, which would justify the use of aluminium even if the weight had to be exactly the same as that of either cast iron or steel pistons.

Reduction of Carbon Deposit.

Perhaps one of the most noteworthy of these advantages is the fact that aluminium is one of the finest conductors of heat, and is roughly three times better in this respect than either cast iron or steel. It will, therefore, be seen that the heat generated by the explosions on the piston head is very quickly carried off to the piston skirt, where it can be more rapidly transmitted to the cylinder walls owing to the greater amount of surface in contact. For this reason the piston will never reach such a high temperature, with the result that the carbonisation of oil on the top of the piston is very greatly diminished, and, in fact, in the case of water-cooled engines with these pistons, carbon on the piston top is almost non-existent. Provided a piston of sufficient thickness is used, this point might prove to be of the very greatest advantage in the construction of lightweight two-strokes, where one of the greatest troubles is the rapid carbonisation of the piston head and top piston ring, which is apparently due almost entirely to the extra amount of heat generated in this type of engine, and the inability of the cast iron piston to carry the excess of heat off quickly enough. In order to obtain to the full the advantage of this rapid cooling it is even advisable to make the piston thicker than is really necessary for the sake of strength, for the thicker the material the quicker the heat can be carried away, on the principle that a thick cable is capable of carrying, in the same time, more electricity at the same pressure, than a thin one. This point is, of course, more important when the engine is air-cooled, and where the effect of carbon deposit is more noticeable.

Little Tendency to Seize.

Another point very much in favour of aluminium alloy pistons is that the liability to seize is very small, and even if they do seize the consequences are, as a rule, not serious. Should the pistons be too tightly fitted they will lap themselves in without any evil effect being noticed. These conditions are due to the softer nature of the metal which enables the high parts to be smoothed down easily in running without the usual liability of seizure. Here, again, the greater conductivity of the metal enables the extra heat caused by the friction to be conducted rapidly away, thus also reducing the liability to seize.



F.g. 1.

How the Aluminium Wears.

The question as to whether the two metals, the cast iron of the cylinder and aluminium alloy of the piston, work together satisfactorily is a matter to be considered, and the best illustration in its favour is the satisfactory results obtained by the use of white metal for bearing surfaces where very similar conditions prevail, viz., a soft and a hard metal working together. It is a well-known fact that in most cases white metal bearings give far superior results to those obtained with, say, even phosphor bronze, and here

Aluminium Alloy Pistons. —

again the tendency to seize is small, while in the event of such an accident happening the damage resulting is also considerably less than when harder metals are used.

A point which would appear to be a great drawback to the use of aluminium alloy pistons is the fact that the expansion of this metal upon being heated is very considerable, with the result that in order to obtain satisfactory running when the engine is hot, a very much greater clearance between cylinder and piston has to be given, so that when starting from cold the piston is inclined to tilt, which, of course, causes a slight rattle. However, after running a short while (a few seconds in the case of an air-cooled engine), the piston becomes warm and expands, after which it will run as sweetly as a piston made of any other material. This trouble may be greatly reduced by making the piston longer in the skirt than is usual; as will be seen from the exaggerated sketches (figs. 1 and 2), with the long piston the tilting effect is greatly reduced. The longer piston also has the advantage of being able to conduct more heat as previously mentioned. Another advantage of having the piston extra long is that, if it is of sufficient length to overlap the stroke travel, the oil is not able to work past the rings so easily, and this condition assists in reducing the carbonisation caused by burnt oil.

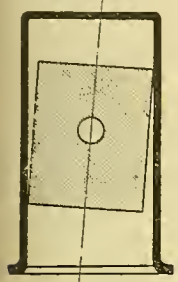


Fig. 2.

A Satisfactory Gudgeon Pin Fixing.

The method of securing the gudgeon pin illustrated in fig. 3 is a method used largely in connection with American engines, but is particularly suitable for use with aluminium pistons. The pin is secured in the small end of the connecting rod by means of a split small end and clamping bolt. It works in the bosses of the piston, which are bushed with phosphor bronze forced into place under pressure. This method of fixing overcomes the necessity of the larger gudgeon pin previously mentioned, as the bronze expands much more evenly with the aluminium than steel does. It is, therefore, not necessary to make the gudgeon pin so large, and for that reason weight is reduced.

Finally, although apparently lightness was the primary object for attempting to discover an aluminium alloy suitable for making pistons, it would seem that advantages have been brought to light in favour of these metals that are of even greater value than the saving of weight. As a matter of fact, pistons which will work quite satisfactorily for a short time can be made of steel much lighter than at present can be produced in aluminium, but the fact that they are of so fragile a nature renders them, for any purpose other than a short sprint race, quite unsatisfactory. In the case of aluminium alloys, although the weight may be rather more than the very lightest workable steel pistons, they are considerably lighter, strength for strength, than the lightest cast iron pistons. The fact that greater bulk can be employed for the same weight renders the alloy pistons more suitable for all-round purposes than the light steel ones, and, again, the fact that the alloys work better in conjunction with the cast iron of the cylinder is another point greatly in their favour. There is little doubt but that in the future we may expect great things from alloy pistons in connection with motor cycle engine construction.

G. FUNCK.

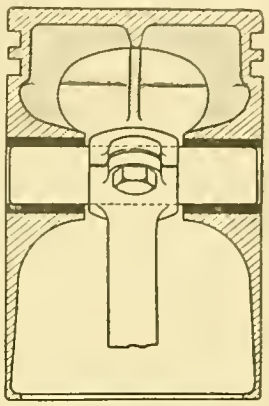


Fig. 3.

Opening of the New Zealand Competition Programme.

SUMMER is now in full swing on the other side of the Equator, and the last communication, published below, from our Auckland (N.Z.) correspondent, shows that the various clubs in that part of the world are recommencing outdoor activities.

We do not think that some New Zealanders can realise the effective manner in which the British Navy has stopped the so-called submarine blockade of the Germans. We are led to make this remark by reason of the fact that our Christchurch correspondent goes to the trouble of sending duplicate reports by following mail boats in case the first one should be torpedoed

Latest club activities are reported in the following paragraphs:

Napier Motor Cycle Club.

The opening run of this club was held on September 4th, when a large number of members journeyed to Hastings, where they were entertained at afternoon tea by the club captain, Mr. J. Taylor. The annual reliability trial and sidecar trial will have been held by now.

Pioneer Club, Christchurch.

During the winter months the Pioneer Club has held no competitions, but the racing season was to be opened a month ago with beach races. An opening run was held to Waihora Park on September 26th, when many members had an enjoyable outing.

Wellington Motor Cycling Club.

The above club held a fast hill-climb at Wellington on September 25th, the entries being fair. The hill selected was 500 yards long, steep, and rejoiced in four sharp corners. The climb was won by R. Keene, 3½ h.p. Triumph.

Otago Motor Club.

The annual meeting of the Otago Motor Club was held at Dunedin on September 18th, when there was a large attendance. Many important affairs were discussed, and it was decided to continue putting before local bodies the question of better roads. It was stated that the club had collected sums of money for the different patriotic funds, and had paid over £300 towards providing motor ambulances for the New Zealand Expeditionary Forces.

OVER THE SNOW-BOUND PENNINES

WITH THE DESPATCH RIDERS.

The five despatch riders on the crest of the Pennines at Dent Head. From left to right—Troopers W. J. Skurr, J. T. Frankland, H. L. Roberts, T. Walker, and G. Wightman.

By GEORGE D. ABRAHAM,
Author of "Motor Ways in Lakeland," "The Complete Mountaineer," "Mountain Adventures at Home and Abroad," etc.

"COME over for a sporting day with the 'despatchers' on the Pennines!" Thus, on a dull November morning of cheerless promise came the welcome message from Kendal. However, fair weather or foul, it was impossible to refuse the privileged invitation, for George Braithwaite, the well-known competition rider of that town, had spent weeks organising the training of the despatch riders, and now was the chance to see the results. Kendal, as the eastern gateway of Lakeland, had afforded a starting point for many splendid runs, and aided by keen instruction from Lieut. Parker and Corporal Wraighte, the despatch riders had been trained under conditions strikingly similar to those at the Front. This northern mountain land had afforded ample practice in following a fixed but devious route in quickest time over the roughest and most trying of roads. These north country methods may lead to further developments, for the authorities are learning that flat country riders are at a disadvantage amongst mountain regions where campaigning is now in progress.

Teams and the Route.

It was pleasing to note the workmanlike steadiness of the men who were sent forth at two-minute intervals from the Kendal Drill Hall on a characteristic competition route. All were as keen as the early morning air which swept down the Valley of the Kent and from the fog-hidden Pennine heights. There were three teams of riders. The Duke of Lancaster's Own Yeomanry were represented by Lance-corporal Wightman and Troopers Fletcher, Kendall, Biddle, and Sydbury. For the Lancashire Hussars there started Corporal Wiggalle with Troopers Watkins, Roberts, Lind, Eccleston, Seddon, and Viall, whilst for the Westmorland and Cumberland Yeomanry Lieut. Grierson, Troopers Watson, Frankland, Rigg, Skurr, and Walker were sent first away. The machines were mostly Douglases and B.S.A.'s, but it was noticed that Trooper J. Kendall rode the Norton on which he recently performed so successfully at Brooklands.

The route lay over the Greyhound Hill to Sedbergh, thence to Dent and up the long Dent Valley to Dent Head Hill, by which Newby Head and Hawes would be reached. Buttertubs Pass gave access to Keld, Tan Hill, and Bowes, whence the homeward way was planned by Tebay. Probably no finer test could be proposed, but alas! man proposes and the weather disposes.

The writer followed the cheerful crowd of riders on a standard 6 h.p. A.J.S. sidecar outfit driven by Mr.

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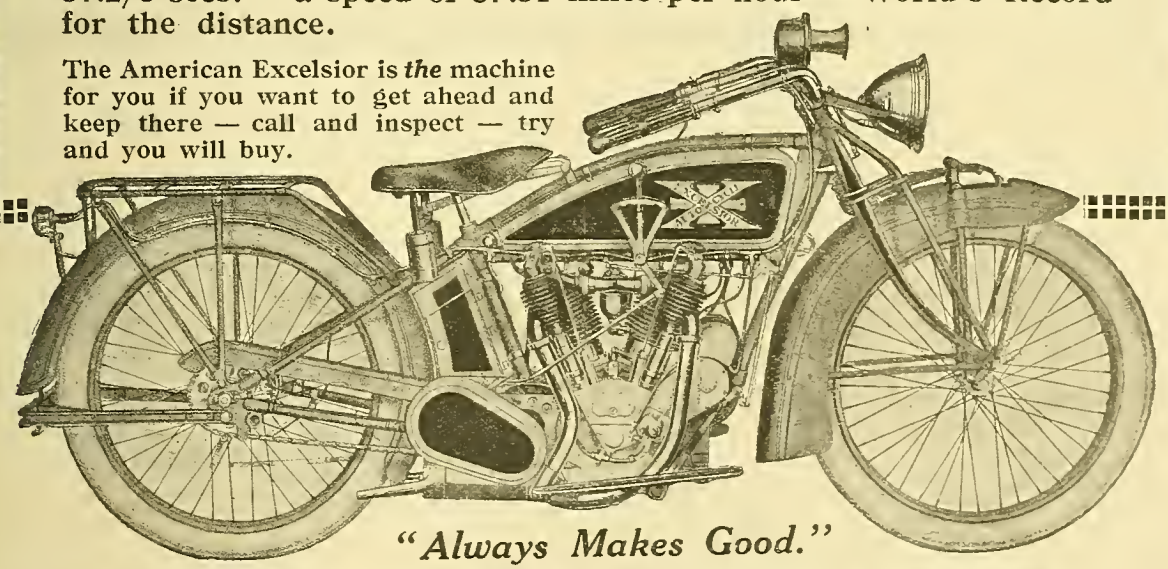

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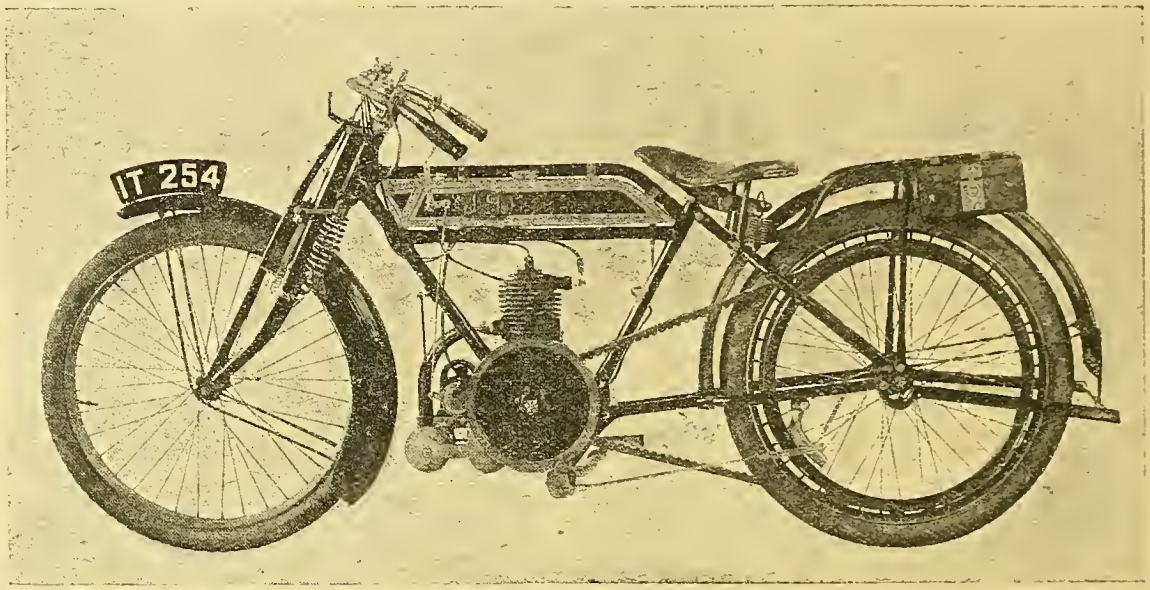

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Over the Snowbound Pennines with the Despatch Riders.— Harry Whinnerah, whose sporting performances, especially with the despatch riders, have become famous in the North. For a one-armed driver to have driven a standard machine over 16,000 miles of difficult country since July is remarkable. At any rate, in the writer's mind, that day on the Pennines settled the recently much-discussed question—should a one-armed motorist drive?—most effectually.

Soon the steep gradients of the Greyhound lifted us above the morning mists which hung over Kendal. It was a perfect winter's morning. Dry, clean roads, even near the 800 foot level, showed little signs of the icy blizzard that had swept over the heights only two days previously. Close to the crest of the hill there was a glorious backward prospect over a sea of snow-tipped mountains, with the Lakeland heights o'ertopping all. But two riders were quite oblivious to the wonderful scene. They were more concerned with the wonders of the American magnetos which, as it happened, were fitted to their faltering engines. They were not the only sufferers on that account, and it is pleasing to learn that this defect, the only one revealed during the day's run, is likely to be remedied by fitting an English pattern to the despatch riders' mounts.

Climbing Dent Head Hill—a snowy, slippery gradient.

Dentdale.

Then there was a magnificent run over the uplands, and thence, after a descent of Black Horse Brow, an excellent test-hill, Sedbergh was reached. This much-maligned section of the route was found in excellent surface condition. A keen crowd of boys from the famous old school gave cheerful greetings as we swung off to the right and on towards Dentdale. 'Midst showers of late autumn leaves we threaded the curly intricacies and rushed the gravelly gradients of the dale. Dent village, with its narrow paved lanes and timbered dwellings so reminiscent of many an Alpine hamlet, would have well repaid a long halt. There was just time to notice the country smells and a curious village fountain gushing forth from a huge rock monolith, and out we dashed again into the narrowing dale with snowy heights creeping nearer and nearer ahead.

Up into the Snow.

Away up on the right there were two splendid hills of much merit and interest. The former of these, Flinter's Hill, seemed to spring straight above the village of Dent, and local repute avers that no motor vehicle has ever climbed it. The other hill, Deepdale Head, curled up to the snowy skyline farther to the south-west, and this had already yielded to a former attack by the despatch riders. It was the sight of the snowy scarp, with the alabaster crest of Whernside towering two thousand feet aloft, that first roused serious misgivings regarding the possibility of the day's run. Moreover, as our road climbed gradually up into the narrow dale between Longshaw Pike and Wold Fell, the splendid dry road-surface changed gradually to an icy slope and eventually we were ploughing through the thickening snow on middle gear. The slower progress did, however, allow time to note the prettiness of the rocky glen alongside, where the turbulent Dee leapt down from ledge to ledge with scarce a boulder to break its dash over the curious limestone slabs.

Battling with the Snow.

At last the road led straight up the mountain front. On low gear we dashed round the first turn and into a mixed mass of despatch riders and followers. So serious was the block and so solemn their mien that there might have been a German machine gun raking them round the corner. The noise was certainly there, for one machine with open exhaust was struggling on the steep gradient, its back wheel spinning helplessly on the snowy incline.

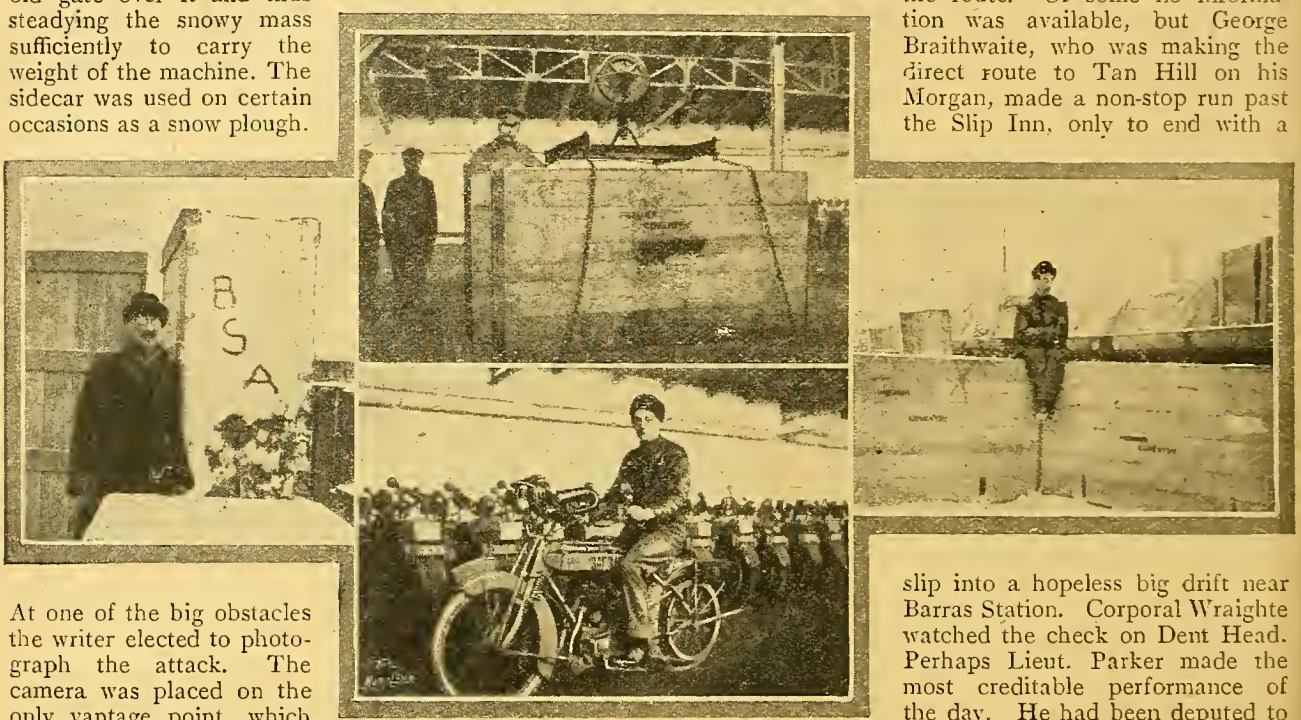
Winter reigned here with a vengeance, and this first part of Dent Hill marked the end of several riders' efforts. About a dozen enthusiasts managed to mount halfway up the mile-long gradient, which, in normal condition, would have been nothing more than a stiff climb. There were many adventures here. More than one over-dashing rider bit the dust, or rather the snow, for anything but slow speed seemed prone to produce severe side-slip. The superiority of the chain-driven machines on this class of work was very noticeable. The B.S.A.'s were specially successful. Eventually seven machines reached the top of Dent Head Hill, but only one entirely under its own power. The last of them arrived minus the tread of the rear cover, and with the engine hot enough to burn a large hole in the rider's overcoat. It was amusing to stand upon the snowy crest and note that the first sign of an up-coming machine was the smell, and this long before sight or sound revealed any living thing.

Thanks to help from Lieut. Grierson, the A.J.S. sidecar reached the summit. Then we followed five of the despatch riders, Troopers J. T. Frankland, H. L. Roberts, W. J. Skurr, G. Wightman, and T. Walker, steadily upwards over the white wastes to

Over the Snowbound Pennines with the Despatch Riders.—

near the 1,600 feet level. At this point there came more than an hour's struggle with many deep drifts. All ideas of competitive riding had long ago vanished; all efforts were concentrated on helping each other through and over the difficulties. Sometimes there were spaces between the drifts where the storm had swept the road surface comparatively clear. From these vantage points the despatch riders dashed wildly at the opposing drifts, gradually forcing a way through or over. One solid mass about five feet high was surmounted by placing an old gate over it and thus steadying the snowy mass sufficiently to carry the weight of the machine. The sidecar was used on certain occasions as a snow plough.

BRITISH MOTOR CYCLES FOR THE RUSSIAN GOVERNMENT.



Large consignments of British-built motor cycles, such as B.S.A., Sunbeam, Rudge, P. and M., and Premier, have been despatched to Russia for our Russian Allies. The photographs reproduced above were taken at the port of disembarkment, and show British representatives of the firms in question supervising delivery of the machines in boxes. The B.S.A. man evidently does not believe in losing an opportunity of advertising his machines. The row on the right are 3½ h.p. Premiers.

At one of the big obstacles the writer elected to photograph the attack. The camera was placed on the only vantage point, which was the middle of the road beyond the drift, and directly in the track of the oncoming "'bus." With two uproarious despatch riders aboard, they crashed madly into the white, soft mass, while the writer "pressed the button" and disappeared into the snowdrift on the roadside almost simultaneously. However, "all's well that ends well," as one of the accompanying photographs show.

"The Law is a Hass."

Then, eventually, every obstacle on these Pennine heights was vanquished, and we sped skiddingly onwards and downwards to the only sign of civilisation in these mountain wilds. This was Newby Head Inn, 1,450 feet above sea level, and one of the many highest inhabited houses in England. Wet through, weary, and much the worse for wear, we at last hoped for refreshment. Alas! it was past two o'clock, and the men who serve their country could not be served. The landlord was obdurate until the civilian of the party arrived and found that he could "do his bit" for once, for it seemed that half-past two was the civilian closing time. On such an occasion this seemed a strange anomaly.

The waning afternoon light showed that further continuance of the competition would be useless. Thus a way was made to Hawes, and on roads entirely free from snow Kendal was reached as the first moonlight gleam spread over the icy crests of the distant Pennines. It was interesting and amusing to learn what had become of the various officials who had been appointed to observe and check upon some sections of the route. Of some no information was available, but George Braithwaite, who was making the direct route to Tan Hill on his Morgan, made a non-stop run past the Slip Inn, only to end with a slip into a hopeless big drift near Barras Station. Corporal Wraighte watched the check on Dent Head. Perhaps Lieut. Parker made the most creditable performance of the day. He had been deputed to check on Buttertubs Pass, and he actually succeeded in climbing the snowy heights. No competitors disturbed his chill vigil, and the kind help he gave the flockmasters in the rescue of their sheep from the great drifts was much appreciated. In the expressive official words of the despatch service, the competition was pronounced a "wash-out," and certainly the snowy Pennines had wiped us out completely. They had had the best of the argument that day. Yet ere long we hope to renew the battle and ride to victory with the despatch riders of the North, than whom no finer sportsmen can be found, though one wander the wide world o'er.

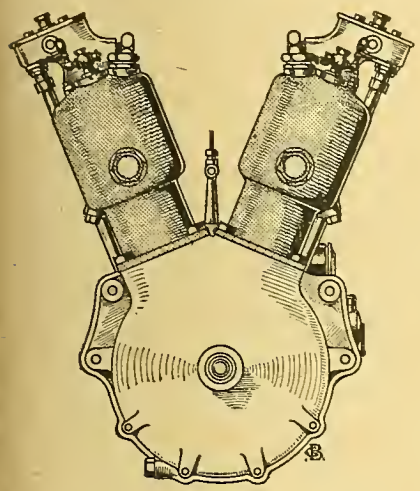
Last month complaints were received by the Automobile Association from members regarding a cross-road sign in the West of England, which has for several years been fixed right on the cross-roads, instead of some distance back. The Association's local manager brought this matter before the notice of the authorities, and the sign will be refixed in a more suitable position.

NEW MODELS

· MANUFACTURERS' PROGRAMMES FOR 1916 ·

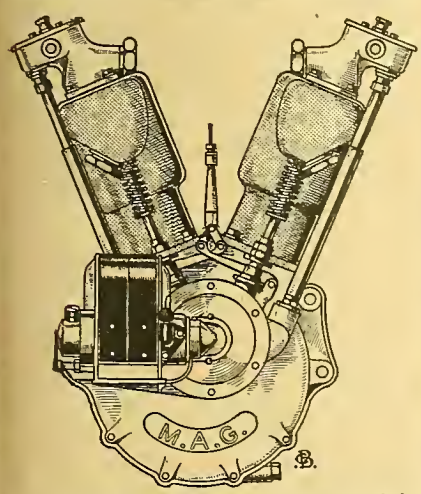
M.A.G. WATER-COOLED ENGINE.

THE accompanying line drawing shows the 8 h.p. twin-cylinder water-cooled M.A.G. engine, the bore and stroke of which are 82 × 103.5 mm. respectively (1,093 c.c.),



M.A.G. twin-cylinder (45°) water-cooled engine.

which is now being supplied to the Morgan Motor Co. This engine closely follows the excellent practice embodied in the 6 and 8 h.p. air-cooled models, and differs only in the fact that it is provided with water-cooled cylinders, that the magneto is carried on a special platform in front, and is bevel driven, and that both exhaust ports face outwards, the last two features being specially introduced for the benefit of the Morgan Motor Co. It will be noticed that the engine preserves the well-known M.A.G. features, such as overhead mechanically operated inlet valves, the controlling mechanism of which is entirely enclosed in a dustproof casing, and works continuously in oil.



Timing side of M.A.G. water-cooled engine, showing position of magneto and overhead inlet valves.

NEW HUDSON LIGHT-WEIGHTS.

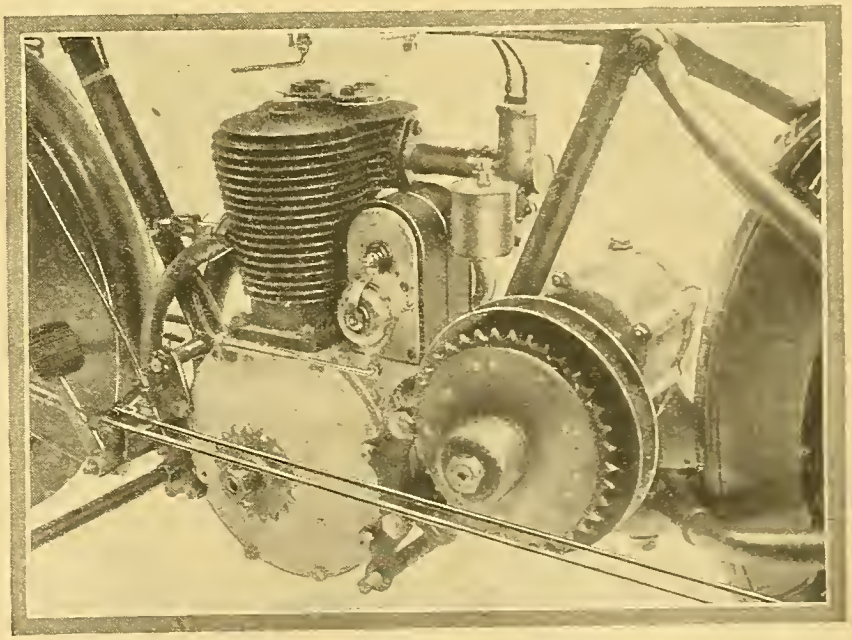
SUPPLEMENTING the particulars of the 1916 New Hudsons given in our last issue, it may be mentioned that there will be two editions of the 2½ h.p. two-stroke lightweight model. They differ but slightly as regards details, and one may be regarded as a de luxe model, whereas the other is built within a certain price limit. Although this means that the de luxe model priced at £42 is fitted with all the luxuries which go to make modern motor cycling so enjoyable, yet there is nothing essential lacking either of material or mechanism in the £38 model.

As an instance of the detail difference between the machines, one has hand pump lubrication, the other hand pump with a visible drip feed. Moreover, there is a slight, but noticeable, difference between the external finish of the two models. As before, the cylinders are heavily ribbed, the ribs flattening to allow the plug to be screwed into position with ease, while the compression release, situated in the cylinder crown, discharges through a long pipe, and will have the extension tube to the chain case.

The exhaust pipe is curved gradually until it joins the silencer slung below the magneto platform, the down tube being forked to allow the exhaust pipe to curve straight away from the cylinder. There is a B. and B. carburetter, while lubrication is effected by feeding oil to the crankshaft main bearing, then allowing the escaping oil from this bearing to be caught in a ring and delivered to the crank pin through drilled passages, thus lubricating the big end from within and at pressure due to centrifugal force.

Novel Gudgeon Pin Fixing.

A copper tube is placed within the hollow tapered gudgeon pin, and the projecting ends of this tube are riveted over in recesses machined in the piston, thus



Power unit of the 1916 model 3½ h.p. single-cylinder Premier. The enclosed driving chain from crank case to countershaft gear box was removed when the photograph was taken. The auxiliary exhaust port and latest design cylinder will be noted.

New Models.—

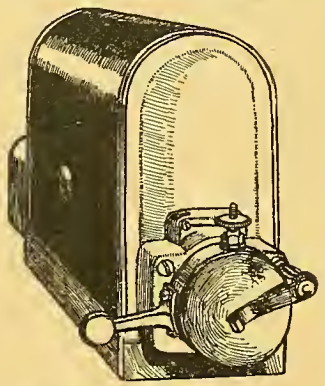
the taper pin, being a driving fit, cannot move round while the tube ends effectually stop endwise motion. This year the chain case between the flywheel and crank case is complete and holds sufficient oil to keep the chain lubricated, further supplies of lubricant coming from the compression release tube. On the gear box the oiler used last year now is replaced by a square-headed plug in a more accessible position, but the box itself is unaltered.

As to prices, the "single" is listed at £65, or with sidecar at £78 10s.; while the big twin is £75 12s. as a solo and £92 8s. with the sidecar.

THE THOMSON-BENNETT MAGNETOS.

Features of a British-made Instrument.

FOR 1916 the energies of Messrs. Thomson-Bennett, Ltd., are centred on production, as, owing to the tremendous demand for motor cycle magnetos at the present moment, it is practically impossible to think of redesigning, or of bringing out a model with any great alterations. The 1915 machines have, however, been altered in a few respects, and now are much improved in appearance since die castings took the place of sand castings for the end plates. Five types are manufactured, three being for lightweight, and two for heavyweight machines.



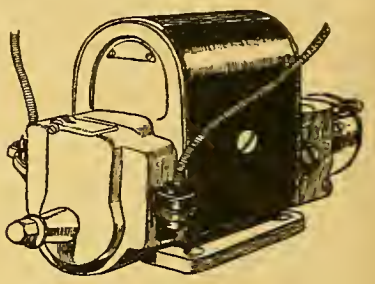
The Thomson-Bennett magneto for single-cylinder machines. It is known as the type A.C. 1.

We take as an example the A.C. 1 single-cylinder magneto, for, except in detail, it is exactly the same as the other machines, as the end plate holding the contact maker has been so designed that either one or two high-tension collector brushes can be fitted. The contact maker is remarkable for the extremely solid rocking arm, this being quite three times the size of that usually employed, while the fibre bush on which this arm rocks is larger, and therefore gives greater bearing surface than hitherto. We understand that certain minor alterations may be carried out to this portion of the machine as soon as the pressure of work allows of redesigning, but these alterations in no way affect the running of the machine and are refinements, not corrections of previous trouble. The contact maker is secured as usual by a taper and a small key, cast as part of the contact maker, the whole being held rigidly in position by a central hexagon-headed screw. Behind the contact maker is a carbon brush, the holder for which is riveted on to the contact maker disc. At a later date this may be altered, and the brush holder will be a solid part cast with the contact maker itself, while the brush may be of larger diameter and held up to its work by a spiral coil spring. The H-shaped armature has at one end what may be best described as a distributer, in place of the collector ring more often employed. In most magnetos there is at the high-tension brush end of the armature a vulcanite or composition double ring, in shape very like a motor cycle pulley. At the bottom of the groove of this ring is a strip of brass connected to the high-tension winding of the armature, and the carbon brush is held down against the ring by a coil spring, thus collecting the current and delivering it to the plug as the disc revolves.

Thoroughly Waterproof.

The Thomson-Bennett ring has some interesting details of design. In the first place, there is no continuous brass ring round the bottom of the groove, but a single small strip which registers with the collector brush at the moment that the current is required for the plug, while in the two cylinder machines it registers in turn with each of the brushes fitted on opposite sides of the end plate. High-tension current has to be insulated very thoroughly, else it will short to earth and not travel along the high-tension wire. Therefore, the greatest care has to be taken with the distributer disc, as at the slightest pretext the current will creep along the "flanges" of the distributer and short on to the casing of the magneto. To overcome this two grooves are cut concentric with the edge of the disc, and as these grooves make the surface of the flange much greater the current is forced to do more work before it can creep along the face of the flange, and this, therefore, makes it more difficult for shorting to occur. Ball bearings are employed for the armature, which bearings are lubricated through small troughs as usual, while there are holes drilled below the bearings to drain off an excess quantity of oil, because should any oil creep along to the armature during the time that the machinery is stationary it would soak through the insulation and cause internal shorting. Those people who have had occasion to inspect the armature of so-called "waterproof" magnetos probably know that it is usual to find a quantity of dirt within the machine itself, and that this dirt is a result of the exposed position of the magneto on motor cycles. To make the instrument really waterproof, Messrs. Thomson-Bennett, Ltd., have one field magnet only, not two or four magnets as is more usual. Thus, there is no gap in the centre of the machine between the two magnets.

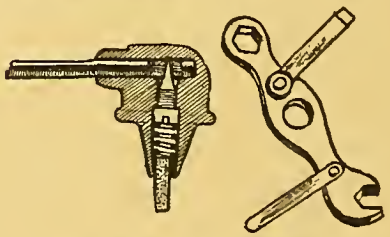
Again, both ends of the magnets are closed by die cast aluminium plates, and these plates are provided with felt washers pressing hard against the ends of the magnets and making it impossible for wet or dirt to find an entry at this point. As the contact maker has its cover, while the brush holders fit down tight upon cone seatings, there is very little likelihood of any foreign matter entering the machine at all.



The A.M. V-type Thomson-Bennett magneto for 60° V engines.

The brush holder is held down on its cone seating by a double flat spring. As the small screw which holds the high-tension wire in place is awkwardly placed for that type of screwdriver likely to be found in a motor cycle kit, the contact maker spanner provided with the machine is fitted with a small screwdriver as well as the gap gauge. This screwdriver can be seen just above the central hole of the spanner in the sketch.

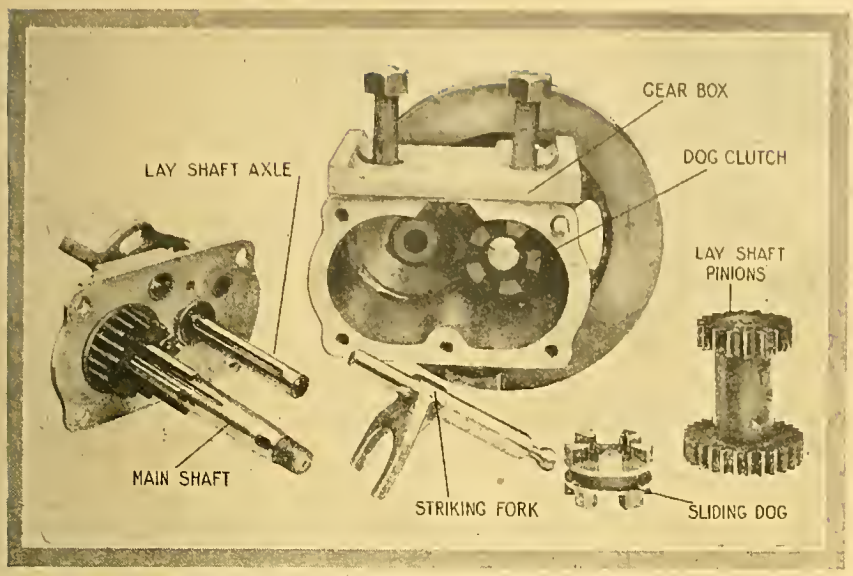
The A.C. 2 machine is similar to the A.C. 1, but, of course, slightly altered for a two-cylinder machine, while the A.M. 1 is a lightweight instrument for single-cylinder machines, and a replica of the A.C. 1 on a smaller scale. The A.M. 2 is a small scale model for horizontally opposed cylinder engines, while the A.M.V is for sixty degree engines and is also a lightweight model. Partly owing to the single magnet, and as a result of the improved die castings, the new machine has a very serviceable and neat appearance, while the fact that the output is very large, and yet insufficient for the orders in hand, is in itself a testimonial to the reliability of the Thomson-Bennett magneto.



(Left) Method adopted to fasten H.T. wire in brush holder. (Right) Magneto spanner, showing the gap gauge and special screwdriver.

A SUN GEAR BOX.

In the early part of 1916 the Sun Cycle and Fittings Co. hope to have a gear box with clutch and kick-starter ready for the different lightweights of the company's manufacture. This gear is already well in hand. The demand for quieter motor cycles has received the careful attention of the designers of the Sun motor cycles. In 1916 the exhaust will be rendered much quieter than in previous models by the addition of an extension pipe from the silencer.



The simple two-speed countershaft gear showing component parts

WILLIAMSONS FOR 1916

Output Limited Owing to War.

THE war has affected the Williamson Motor Co. in much the same way as all other motor firms, and as the result of the difficulty in obtaining materials, etc., their output for the present is extremely limited. The Williamson sidecar outfit, as most of our readers know, is a high-powered, luxurious mount, fitted with a horizontally-opposed water-cooled twin engine. A two-speed gear has been fitted up to now, but in future, when supplies are procurable, a gear box of the three-speed type will be standard practice. The sidecars are fitted with several types of bodies.

Just previous to the outbreak of war the new Williamson three-wheel cycle car was being tested. In this design the Williamson horizontal water-cooled engine is again used, placed lengthwise in the chassis, which is of channel steel, and driving by chain to an ordinary Douglas three-speed motor cycle type gear box, and then by another chain to the single rear wheel. An interesting point in the design is the fitting of torque tubes to all wheels. The back wheel is fitted in a separate framework, which is hinged to the chassis on a substantial bearing. This is sprung in the usual manner of three-wheelers on two quarter-elliptic springs. The front is sprung on threequarter-elliptic springs, while the axle is kept from whipping by two substantial torque rods, which are hinged in a similar manner to those fitted to the rear wheel.

THE TWO-SPEED COUNTER-SHAFT GEAR.

A TYPE of gear commonly used on two-stroke lightweights is the two-speed gear box in which the wheels are always in mesh and the change is obtained by means of a sliding dog clutch. From the illustration the simple construction and small number of component parts will be noticed. The layshaft pinions, which are made in one piece, are mounted on the shorter shaft, and mesh with the two pinions which revolve freely on the main shaft. These two pinions are provided with dog teeth, while the one seen within the gear box is attached to the driving pulley. The sliding dog is mounted on the main shaft, and is prevented from revolving independently by the long feathers. This dog is brought to engage either of the two gear wheels, so as to revolve them with the main shaft, and so produce the variation of ratios by means of the striking fork. Whether on top or low gear the wheels always revolve.

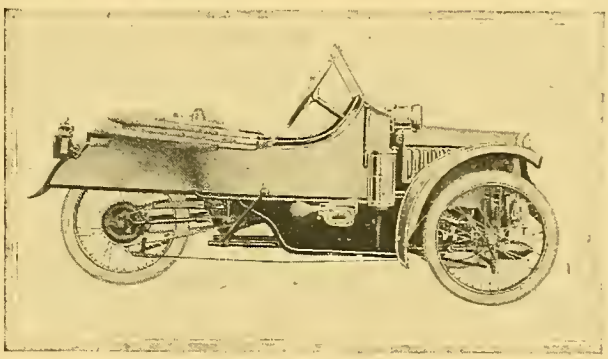
BUYERS' GUIDE ERRATA.

Unfortunately, a few errors have crept into the mass of information given in last week's issue. The price of the Enfield sidecar combination is now 85 guineas, or 100 guineas with Lucas dynamo lighting outfit.

It may not have been quite clear from our last issue that the New Imperial lightweight is supplied with two-speed gear but no clutch or kick starter at 35 guineas, as well as at 41 guineas including these fitments.

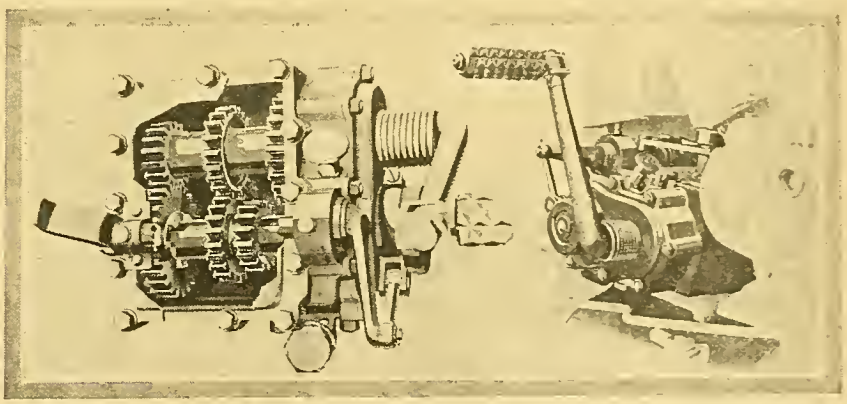
In the Royal Ruby lightweight models a two-speed machine costs £7 more than the same machine single-geared.

MORGANS IN 1916.



One of the standard Morgans for 1916.

THE Morgan runabout will be continued in three models for 1916. The first is the J.A.P.-engined model, the cylinder dimensions of which are 85 mm. × 85 mm. (980 c.c.); the next is the same chassis with an M.A.G. 1,100 c.c. engine; and the third is the Grand Prix model. The last-named has a wheelbase of 7ft., as compared with 6ft. of the first two models. It is an extremely fast machine, and one that has an established reputation, though this is a remark applying to all Morgan models. Features common to all three are Splitdorf magnetos, B. and B. carburetters, two-speed gears, and chain drive.



(Left) Kick-starter on 1916 Harley-Davidson. All the mechanism is enclosed, and the pedal is made to fold back when not in use. (Right) Three-speed gear and clutch-operating mechanism. (See pages 526-7 last week.)

A MODERN SYSTEM OF TYRE REPAIR.

By ROAD RIDER.

IT has always been a puzzle to me that the ordinary flat patch method of repairing inner tubes has proved as satisfactory as it has. The patch clings to the tube by means of a purely superficial contact, and the modern solutions show colossal tenacity in adhering at all, for they are subject to two permanent stresses, acting in different directions. On the one hand, there is a partly horizontal strain, seeing that the tube expands laterally under inflation, and the patch must expand with it if applied to a deflated tube; on the other hand, there is something of a vertical strain even in a pinhole repair, as the adhesion may be regarded as vertical between each square millimetre of the tube and the patch, not to speak of the blow-off strain when the hole is large enough for the air pressure inside the tube to exert a lifting strain on any appreciable area of the patch. The adhesion and tenacity of the patch rise superior to much careless and imperfect application, and to the great heat generated in the tyres of a fast machine driven at speed for miles together.

The strains on a patch are shown above in an exaggerated form.

(Top) Semi-horizontal, as tube expands under inflation.

(Middle) Vertical or lifting strain, as air pressure inside tube increases under inflation.

(Bottom) Mustikon stud in position. An almost air-tight seal secured, even before cup-head (corresponding to an ordinary flat patch) has been solutioned down.

If we get good repairs by this system, it is obvious that we should get better repairs from a system which employs a similar patch and similar solution, in conjunction with additional qualities; and for this reason I was much interested in a Mustikon repair outfit which I began to employ last season. The process has been described in these columns, and need only be summed up very briefly. Its basic principle is the substitution of a double patch, the two flaps being joined by a thick rubber neck for the ordinary flat patch; the plug resembles an indiarubber collar stud with large flat head and base. The plug is held in tweezers, dipped in solution, and its base is pushed through the puncture, which is trimmed to an even contour by a small drill in the case of tiny holes, or by a pair of scissors in the case of a large patch. When the repair is complete it compares with an ordinary flat patch repair as follows:

(1.) The head of the plug remains outside the tube, and is solutioned thereto after the fashion of a normal flat patch, to which it exactly corresponds in every detail, except that two special advantages are secured.

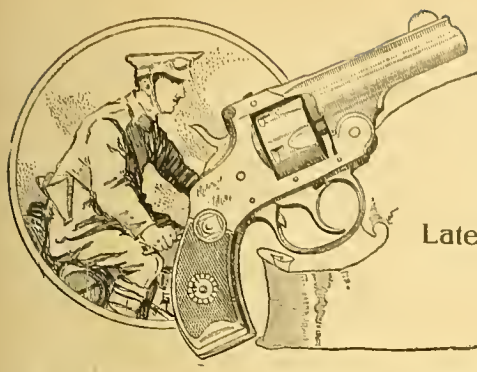
(2.) This head—otherwise equivalent to an ordinary flat patch—cannot "creep" or shift its location on the exterior of the tube, because it is rigidly locked into the puncture by the neck of the stud.

(3.) This head cannot "blow out," *i.e.*, is not subject to any lifting strain whatsoever, because the puncture—through which the air pressure in the tube normally blows at the patch—is plugged by the neck of the stud. For this reason the stud system effects reliable repairs to really large holes (even up to 2½in. in diameter); these are practically unrepairable by the flat-patch system, as in such cases only the edges of a flat patch possess adhesive contact, and so the flat patch cannot long resist the lifting air pressure on its centre.

(4.) With a flat patch repair, there is always a column of air pressure pushing up through the puncture, and seeking to find or make a path through the film of solution which joins the tube and the patch. With a stud repair, the puncture is plugged by the neck of the stud, which is fractionally larger than the puncture. I have more than once found a tube to be airtight after a stud was inserted before any solutioning has been done, showing how efficiently the stud seals the hole, supposing its neck really fits the hole, and supposing that the hole has been trimmed or drilled into a true circle.

(5.) In addition, the base of the stud adds a further safeguard. Its rubber is so moulded that it springs up against the inside of the tube as soon as the stud is in place. The solution in which the stud is dipped as a lubricant prior to insertions helps this spring-base to cling firmly to the inner wall of the tube; and when the tube is inflated, the air pressure further assists the contact.

I submitted the process to a long trial before writing about it, as I fancied it might be possible for an amateur to mismanage it in use; but it now strikes me as a sounder and simpler process than the normal method. As most motor cyclists cannot employ vulcanisation, seeing that they do not carry spare wheels and cannot readily insert spare tubes, the Mustikon method deserves their best attention.



MILITARY NOTES.

Latest Recruits in the M.M.G.S. A Useful Tip from the Front.

THE RECRUITING SECTION.

AS we stated in our last issue, recruiting for the Motor Machine Gun Service ceased on Wednesday, the 24th ult., when the following men were examined and passed on that date by Mr. Geoffrey Smith, Inspecting Officer for the M.M.G.S.:

E. L. Appleby (Castle Cary).
A. R. Ashby (Sheffield).
D. M. Birkbeck (Hull).
P. Boult (Stoke).
G. B. Collins (Yeovil).
J. W. Crofton (Grimsby).
B. Crossley (Kendal).
E. Cutts (Coventry).
E. J. Edwards (Newhaven).
D. Foster (Oxford).
R. R. Garlick (Cape Town).
L. C. Groutage (Erdington).
C. N. Harrison (Putney).
A. E. Hemington (Sheffield).
D. Hill (Edgbaston).
W. Illingworth (Middlesbrough).
C. Jones (Coventry).
F. Lewis (Watford).
R. MacDonald (Ely).
J. W. Makin (Bolton).
A. U. Malcolm (Edinburgh).
C. B. Mason (Acocks Green).
L. H. McAdam (Toronto).
J. Milliken (Liverpool).
A. Nichol (Hull).
A. Parkinson (Longridge).
C. F. Phillips (New Malden).
F. R. Pickworth (Bingham).
R. Reiffer (Sydenham).
H. Savage (Hunslet).
A. G. Selby (London).
A. Sims (Derby).
J. Stagg (Yeovil).
S. J. Sulston (Worcester).
H. E. Teft (Gainsborough).
H. J. Tiffin (Kirkoswald).
A. Till (Boreham Wood).
F. Turner (Matlock).
V. Ursell (Coventry).
W. Walker (Loftus).
T. F. Wilson (Grasmere).
A. Wood (London)

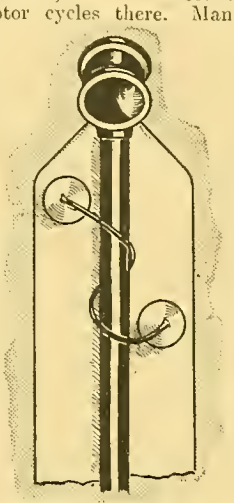
R. R. Garlick, who enlisted in the Motor Machine Gun Service last week, is a son of the proprietor of Garlick's Stores, well known to Cape Town and district motor cyclists.

PROMOTIONS.

FROM the *London Gazette:* Corporal (motor cyclist) G. G. Boynton, from R.E. to be temporary 2nd Lieut. (September 28th); Corporal (motor cyclist) G. Price, from R.E. to be temporary 2nd Lieut.

SECURING TANK FILLER CAPS.

THE other day we had the pleasure of meeting Lieut. S. A. Rowlandson, who is home on leave from the Front. Mr. Rowlandson is attached to General Headquarters, and is officer in command of motor cycles there. Many other well-known motor cyclists are with him, such as Sec.-Lieuts. C. S. Burney, "Rover" Newsome, and Dudley Noble. Rowlandson told us that the motor cycles generally have behaved remarkably well, considering the severe work to which they are put. A common trouble which he mentioned to us, but which we do not remember having seen in print before, was the continual loss of tank filler caps, due to the excessive vibration caused by the wretched *pavé*. The continual call for filler caps led to a shortage, and consequently a useful tip has now been adopted, at Mr. Rowlandson's suggestion, to prevent filler caps being lost in future. The idea is illustrated. It simply means taking a short length of Bowden wire cable, giving it one turn round the top tube, and soldering each end to the tank filler caps. Thus if they are caused to jump out of place due to excessive vibration, they are anchored securely, whilst it is a great convenience when replenishing tanks, for the caps cannot drop to the ground and roll away into some inaccessible place after the aggravating manner of such things.



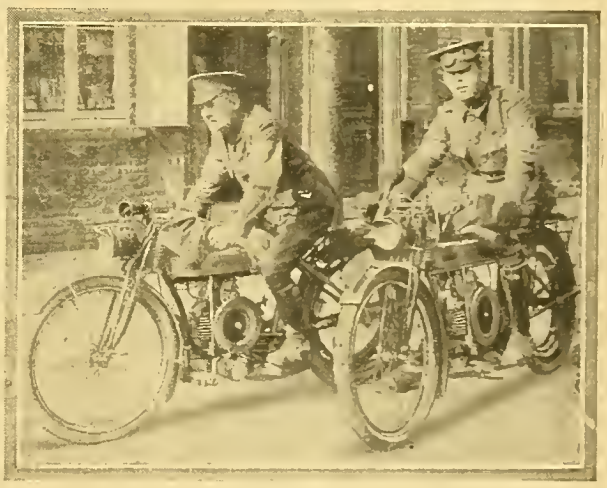
Method of securing filler caps described on this page.

"A SEA OF MUD."

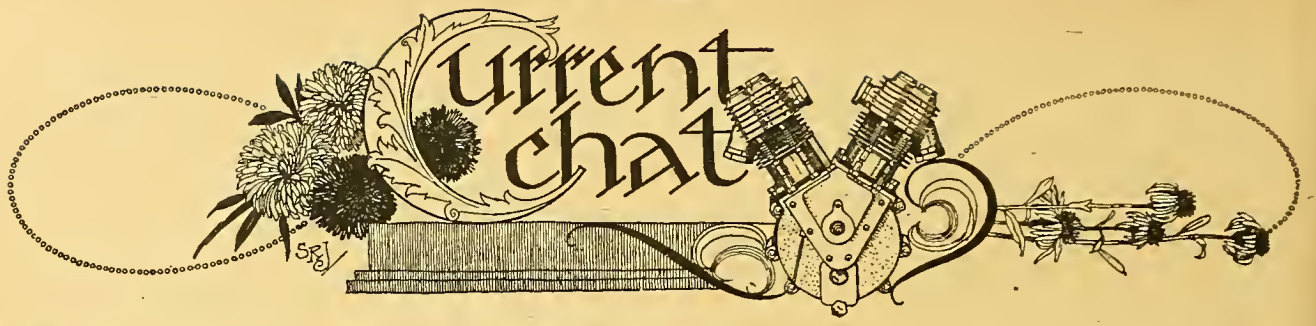
THE above is the description applied to the present state of the roads in that part of France in which a reader, Motor Cyclist T. G. Chatwin, is stationed. His Triumph, he continues, gives great satisfaction in spite of it all.

THE STRAIN OF ACTIVE SERVICE ON MOTOR CYCLES.

CORPORAL ALFRED B. WADE, the former Zenith rider, has sent us a most interesting letter from the No. 1 Battery M.M.G.S. As mechanic in charge of the machines in this battery he has many opportunities of studying their behaviour under service conditions and noting the development of weak spots in design and construction. One of the toughest propositions to be tackled is that caused by the constant "hammering" vibration set up by *pavé*, which must be borne in mind when designing any type of vehicle for active service in France. It is far more destructive, says Corporal Wade, than any other form of vibration and stress he has previously encountered. One result is that the constant hammering very quickly causes "fatigue" of the tubes In conclusion, Corporal Wade mentions the great desirability of stands for sidecar wheels.



Two Douglas mounted despatch riders, Corporals G. W. Baker and Leeds, attached to one of the Signal Companies in France. The former, we regret to say, died a few days ago as a result of a fall from his machine.



TIMES TO LIGHT LAMPS

GREENWICH TIME.

Dec. 2nd	... ...	4.53 p.m.
,, 4th	... ..	4.52 ,,
,, 6th	... ...	4.51 ,,
,, 8th	... ...	4.51 ,,

In London half an hour earlier

Motor Cycles for the Italian War Office.

Before being finally passed over to the military authorities each Indian sidecar outfit that is supplied to our Italian Allies undergoes a forty miles road test. On specially severe routes, which are easily found in Italy, forty miles at speed with three people up will soon find out any weaknesses.

A New Metal.

A correspondent sends us a cutting from *Machinery*, which describes a new metal which has been produced in the United States, and is intended to fill the gap between iron and aluminium. It is named Krauselium, and is prepared in four grades possessing the following physical properties :

Grade	Specific gravity	Tensile strength lb. per sq. in.
1 ..	1.92 ..	35,000 and over
2 ..	2.04 ...	29,000 ,, ,,
3 ..	2.12 ...	23,000 ,, ,,
4 ...	2.16 ...	21,640 ,, ,,

This metal is the product of the Polyphone Motor and Manufacturing Co., St. Louis; it is, we imagine, an alloy containing aluminium as its principal constituent, and should be most useful in the motor trade.

Reduced Lighting Prosecutions at Banbury.

All motorists convicted at the Banbury Police Court in respect of infringements of the reduced lighting Order at Banbury, occurring since April 9th, are requested to communicate with the secretary of the Automobile Association and Motor Union, 66, Whitcomb Street, London, W.C. In a recent appeal to Quarter Sessions, it transpired that this Order was revoked on the date above mentioned, and the Association proposes taking the necessary legal steps to secure the annulment of all such convictions, and the remission of the penalties imposed.

Military Motor Cycles for Russia.

Two thousand Indian motor cycles have been supplied to the Russian Government. In addition to these, it is common knowledge that several well-known British manufacturers continue to send regular consignments to the same country, so that by now our Ally must have a very considerable fleet of motor cycles.

Bad Road North of Carlisle

We have received information that the road to Scotland from Carlisle is in a terrible condition just north of that city. Drains of some kind have been laid down, and frost has set in before the surface could be levelled over. Our informant says that it is almost impossible for the average machine to negotiate it. He rides a 7 h.p. twin, which has a large ground clearance, and he writes, "I do not know how I escaped without a broken crank case. As it was the drain tap was broken clean off, and I badly bent one of the sidecar arms."

Lantern Slides as an Aid to Recruiting.

As showing the value of lantern slides as an aid to recruiting, we may cite the experiences of Mr. S. W. Phillpot in his capacity as secretary of the Motor Cyclists' Reserve Committee, West Lancs. Divisional Area. Perhaps the best slide from the point of view of attracting prospective despatch riders was from a striking photograph of motor cyclists in the Dardanelles that appeared in *The Motor Cycle* of August 19th. The result has been so satisfactory that Mr. Phillpot has had to stop temporarily the exhibition of the slides, but they will shortly be going the rounds of cinemas and music halls in Manchester and the West Lancashire Area.

The Biter Bit.

A young R.E. officer, who is not unknown in the motor cycle world, recently came home on five days leave. Hearing that recruiting was very active in London, he slipped into *mufti* and promenaded the streets, hoping that some unsuspecting sergeant would recruit him. He meandered round Piccadilly Circus, drifted into Trafalgar Square, mingled with the crowd at the recruiting meeting, and planted himself under the nose of every sergeant who was wearing the national colours, but all to no effect. History relates that he was so disgusted that he went home and went early to bed. The next morning he was determined to be-told that his "King and Country" needed him, so he followed more or less the same route and the same procedure, but still had no luck. Getting desperate, he walked down to the Central Recruiting Office in Whitehall, and sauntered up and down before the sergeant outside. Still no luck. Driven to desperation, he walked up to the sergeant and said, "Well, sergeant, and how's the recruiting?" "Fine, sir," responded the sergeant; "we are hoping to send you out a very big draft shortly!" Collapse of officer.

SPECIAL FEATURES.

OVER THE SNOWBOUND PENNINES
Striking Photographs.
ALUMINIUM ALLOY PISTONS.
STANDARDISING REDUCED LIGHTING.

Tail Light for Policemen.

We mentioned a fortnight ago that City police had been seen with red lights arranged at the back of their belts, and it is now announced that as a safeguard against being run down whilst on traffic duty at night Brixton policemen will be similarly equipped.

Average Prices.

We give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model, the average for the past week is quoted. If there were not at least two advertisements, then the last occasion on which they were quoted is given.

Make.	Year.	H.P.	Average for last week.	Latest weekly average obtainable
A.J.S.	1915	6 3-sp. sidecar ..	—	£90
,, ...	1914	6 3-sp. sidecar ..	£77	—
,, ...	1913	6 3-sp. sidecar ..	£55	—
,, ...	1915	2¾ 3-speed	—	£48
Allon	1915	2¾ 2-speed	£36	—
Ariel	1914	3½ 3-sp. sidecar ..	£53	—
,, ...	1913	3½ 3-sp. sidecar ..	—	£41
Bat	1914	6 3-sp. sidecar ..	—	£55
Bradbury ..	1914	4 3-sp. sidecar ..	—	£47
B.S.A.	1915	4¼ 3-sp. sidecar ..	£64	—
,, ...	1914	4¼ 3-sp. sidecar ..	—	£56
,, ...	1913	3½ 2-sp. sidecar ..	£40	—
Calthorpe ..	1914	2 2-speedc.....	£19	—
Clyno	1914	6 3-sp. sidecar ..	£63	—
,, ...	1913	6 3-sp. sidecar ..	—	£50
,, ...	1914	2½ 2-speed	—	£40
Douglas ...	1914	2¾ 2-speed T.T. ..	£41	—
,, ...	1914	2¾ 2-sp. kick start	£41	—
Enfield	1915	6 2-sp .sidecar ..	£79	—
,, ...	1914	6 2-sp. sidecar ..	£64	—
,, ...	1913	6 2-sp. sidecar ..	£51	—
,, ...	1915	3 2-speed	£45	—
H.-Davidson	1915	7 3-sp. sidecar ..	£80	—
Humber ...	1913	3½ 3-sp. sidecar ..	—	£52
Indian	1915	7 3-sp. sidecar ..	£75	—
,, ...	1914	7 2-sp. sidecar ..	£60	—
,, ...	1914	7 T.T., free eng.	—	£44
James	1915	4½ 3 sp. sidecar ..	—	£65
New Hudson	1914	6 3-sp. sidecar ..	—	£61
New Imperial	1915	2½ 2-speed	£30	—
,,	1914	2½ 2-speed	—	£26
O.K.	1915	2 2-speed	£22	—
P. & M.	1914	3½ 2-sp. sidecar ..	—	£52
,, ...	1913	3½ 2-sp. sidecar ..	—	£43
Premier	1914	3½ 3-sp. sidecar ..	£49	—
,, ...	1913	3½ 3-sp. sidecar ..	—	£44
Rover	1915	3½ 3-sp. sidecar ..	£56	—
,, ...	1914	3½ 3-sp. sidecar ..	—	£45
,, ...	1913	3½ 3-sp. sidecar ..	£44	—
Scott	1914	3¾ 2-sp. sidecar ..	—	£53
,, ...	1913	3¾ 2-sp. sidecar ..	—	£44
Sunbeam ..	1914	6 3-sp. sidecar ..	—	£80
,, ..	1914	3½ 3-sp. sidecar ..	—	£61
,, ..	1914	3½ 3-speed	£52	—
,, ..	1915	3½ 3-speed	£65	—
Triumph ...	1914	4 3-sp. sidecar ..	£52	—
,, ...	1914	4 3-speed	£44	—
,, ...	1913	3½ 3-sp. sidecar ..	£46	—
,, ..	1913	3½ 3-speed	—	£38
Williamson	1914	8 2-sp. sidecar ..	—	£65
Zenith	1914	8 Gradua sidecar	—	£68
,, ...	1914	6 Gradua sidecar	—	£54

More Illuminated Policemen.

We are glad to see that the illuminated policeman scheme is spreading. Leeds has gone one better than parts of London, for not only will the policemen have red lights behind, but also white lights in front. Of course, only police on traffic duty will be so equipped.

Captain Noel E. Drury

A few weeks ago we mentioned that Noel Drury, whose name is almost as familiar to English competition riders as to those in Ireland, was on the Gallipoli Peninsula. We now hear that he has been promoted from lieutenant to captain in his regiment, the 6th Battalion Royal Dublin Fusiliers.

Police Activity in Bromley.

We have received information of a police trap in the Bromley ten-mile limit, there being a measured furlong from the Market Square in the direction of the railway station on the new wood paving. A twenty-mile limit measured furlong is also being worked regularly at week-ends between the Catford Town Hall and the A.S.C. Depot on the Bromley Road.

A General Lighting Order.

Some weeks ago we referred to the possibility of there being a general lighting order to be in force throughout the United Kingdom. This, we understand, will come into operation in the very near future. It is especially gratifying to note that what practically amounts to a definite standard of lighting has been decided upon. As things are at present it is difficult to imagine a more ludicrous, or rather annoying, state of affairs than the existing regulations in which nearly every town and county almost has a different set of lighting rules from its neighbour.

Good to look at.

One of the impressions gained by a perusal of the complete Buyers' Guide that appeared in the last issue of *The Motor Cycle* is that a distinct improvement is to be observed in the general appearance of 1916 machines. True, there are still some rather ugly ones, but the average motor cycle, especially the twin-cylinder, is generally of very pleasing appearance.

While on the subject of the complete Buyers' Guide, we should like to thank those readers who have written complimenting us upon the last issue.

Dark Streets worse than Zeppelins?

Last Sunday's *Weekly Despatch* contained some interesting information under the above heading. Figures are given which show that the number of people killed by vehicles in London has enormously increased since the new darkening regulations came into force. For the same period of the year (October 11th-November 22nd) the number of road fatalities in 1913, 1914, and 1915 were as follow: 59, 85, and 121. Since September 7th 162 people have been killed by Zeppelin bombs, and since October 11th 121 people have been killed by vehicles. These figures confirm the remarks we made some months ago, when we stated our belief that, as a result of the new lighting regulations in London, more people would be killed by vehicles than by bombs from hostile aircraft.

A.J.S. Dividend.

A. J. Stevens and Co., Ltd., manufacturers of the A.J.S. motor cycles, have declared a dividend of 10%. The profit for the year ending August 31st was £5,956.

Government Orders for Cars.

At the annual meeting of the Swift Cycle Co., Ltd., last week, the Chairman expressed the surprise and regret of the directorate at the failure of their attempts to obtain orders from the Government for their cars, despite the fact that thousands of American cars were being used. Here is a case when gold *could* have been kept in this country.

Juggling with a Motor Cycle.

Interest has been aroused by the illustrations of trick riding published in *The Motor Cycle* of a fortnight ago, and in particular by the fact that the machine used is an old one. It is a 2 h.p. Minerva which has been modernised by the rider, Arthur Bryden (not G. A. Roberts, as originally stated), of New Wortley, Leeds. Bryden is only 17 years old, and has already shown himself a successful competition rider in addition to being a clever exponent of trick riding.

D.C.M. for Motor Cyclist.

The latest list of men awarded the D.C.M. contains the name of a despatch rider, Corporal H. G. Cooper. The official notice reads: "(Motor Cyclist) H. G. Cooper, 9, Southern Provinces Mounted R. (Madras). For conspicuous gallantry on July 14th, at Mbuyuni (East Africa), when he carried messages on foot under a very heavy fire to and from the firing line, and, though severely wounded, with great coolness and bravery continued his work, and delivered all his messages safely. His devotion to duty was most marked."

Motor Cyclists and Recruiting.

We have received quite a number of letters from readers expressing their regret that recruiting for the Motor Machine Gun Service is closed. It appears that some readers were settling their affairs in the hope of joining this branch later, and were not expecting to see the announcement in our last issue.

Second-hand Machine for a War Fund.

A 1912 clutch model 3½ h.p. Triumph has been presented to the National Cyclists' Union to be sold on behalf of the Union's prisoners of war fund. The machine has been well overhauled and is said to be well worth £20, and the highest offer above that figure received by December 15th will be accepted. The N.C.U. offices are at Lonsdale Chambers, 27, Chancery Lane, W.C.

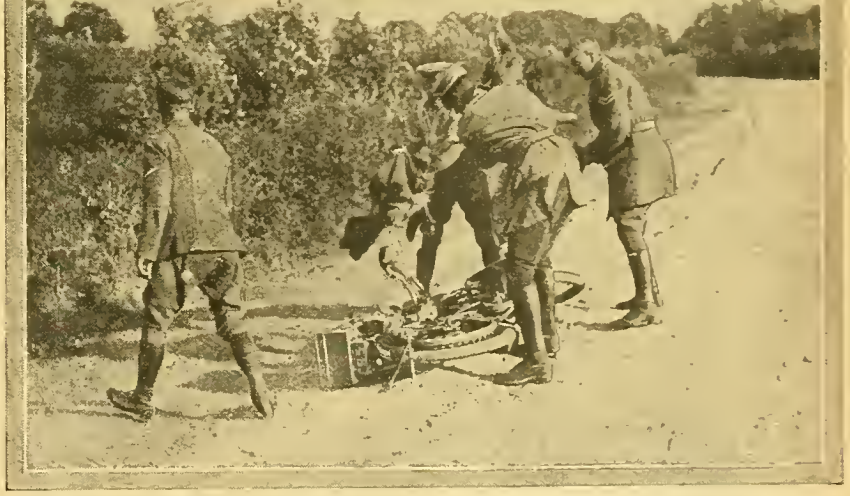
Proposed Bicycle Tax.

The following resolution is being passed by rural district councils in Norfolk: "That in view of the heavy cost of maintenance of roads and parish highways, the burden of which falls entirely upon local rates, the Chancellor of the Exchequer be asked to consider the probability of imposing a small tax on all users of bicycles, the revenue from the same to be applied in aid of local taxation."

The National War Funds.

At the week-end the principal funds stood as follows:

The Prince of Wales' National Relief Fund (£2,673,000 distributed)	£5,622,609	0	0
The Times Fund for the Sick and Wounded	2,333,298	0	0
The *Weekly Dispatch* Tobacco Fund	90,248	1	4
The Queen's Work for Women Fund	167,127	2	5
The Belgian Relief Fund	1,180,000	0	0
Daily News Xmas Pudding Fund	19,191	0	0
Daily Chronicle Xmas Gift Fund	15,044	7	5



QUICK WORK IN AN EMERGENCY. A despatch rider's machine catches fire following a fall. The photograph was taken near a D.R. training centre, and shows what to do in the case of a fire. Flames can be beaten out with caps and coats assisted by gravel.

OVER
SNOW-B
PENN
WITH
DESPATCH

(See Pages

(1) Going well on the crest of the icy Pennines—Lieut. Grierson seated in the sidecar of the 6 h.p. A.J.S. outfit which followed the despatch riders.

(4) Using a sidecar outfit as a snow plough on Newby Head.

(5) Despatc

THE
BOUND
INES
H
RIDERS

552-554.)

) A sidecar outfit held up temporarily in a Pennine snowdrift.

h riders at Newby Head Inn—1,450 feet above sea level, and one of the highest inhabited houses in England.

(3) The "sergeant major" bites the dust (or the snow)—a spill on Dent Head Hill.

Motor Cycle Clothing for Both Sexes.

WITH the approach of winter the question of warm clothing is again present in the minds of most motor cyclists. In this connection we recently had an opportunity of inspecting at the Euston Road premises of Messrs. Alfred Dunhill, Ltd., a tan leather motor cycle suit. This, we may point out, is in no respect like the old leather suits which were in vogue when the pastime first came into prominence. It is made of the best quality tan chrome dressed skins, and lined with camel fleece. The coat is double-breasted, and is provided with a belt, and there are also wind cuffs. It is somewhat of a novelty to have leg overalls with a coat of this kind, but Messrs. Dunhills have satisfactorily solved the problem, and, as will be seen by the accompanying sketch, have produced an excellent pair of overalls, provided with straps at the bottom, so that their lower extremities may be tightly fastened round the ankles. The leather is beautifully soft, and, of course, exceedingly warm, and, moreover, should stand a considerable amount of rain.

An ideal suit for winter riding. It is a tan leather jacket and overalls made by Dunhills.

Messrs. Dunhills have also not lost sight of the fact that motor cycle riding is becoming more and more popular with ladies, and they have designed a special skirt which the wearer may use on either a gentleman's or lady's machine, while in walking it has the appearance of an ordinary skirt, as is seen by the smaller sketch in the second illustration. The coat is made in the tunic style, with a wind flap in front, and ample pockets, while it is provided with a strap collar and cuffs, which fasten closely at the neck and wrists, keeping the rider warm. It may be had in Dunwear waterproof cloth, in proofed covert coating or Lovat tweed, or in Drencherproof tweed. In view of recent correspondence in *The Motor Cycle*, the Dunhills lady's costu is very interesting, as it shows, we c sider, that a woman motor cyclist n not be unsuitably dressed.

The Dunhill motor cycling costume for lady riders

A.A. Special Constables.

The rifle shooting competition h in the range of the A.A. between t various squads of motor cycling spec constables came to a conclusion a f days ago. The winning team was unc Sub-Inspector Ernest Frasetti.

WAR WASTAGE OF MOTOR VEHICLES.

A large batch of Army motor cycles, with a few lorries in the background, waiting at a repair base, where many of them will be put in good repair and ready for renewed active service. In this connection we are reminded of a matter we brought forward in "The Motor Cycle" some months ago, *i.e.*, the scrapping of motor cycles which could at small expense be put in thorough running order and sold to dealers with a view to relieving the second-hand market.

The Automobile Association Se tion of the Special Constabula still has a few vacancies for mot cyclists and motor car owners wh are prepared to give up a portic of their time to the duties unde taken by the section.

The Lancashire Avoiding Route.

Confirmation of Our Opinions. Use Direct Route Except in Very Bad Weather.

ON September 16th we published a paragraph referring to the main Warrington-Wigan-Preston road and the avoiding route suggested and signposted by the R.A.C. In this paragraph we suggested that if the R.A.C. could spare a representative to again inspect both routes a benefit would be conferred upon the motoring community. This has now been done, and we append the R.A.C. representative's report, forwarded to us by Mr. J. W. Orde, secretary of the R.A.C.

ALTERNATIVE ROADS BETWEEN WARRINGTON AND PRESTON.

In accordance with instructions, I inspected the alternative roads between Warrington and Preston on October 20th and 21st, and report as follows :

1. Direct road viâ Wigan.—From Warrington to Ashton-in-Makerfield, road fairly good; tramlines run for two miles out of Warrington and for a short distance into Ashton.

From Ashton-in-Makerfield through Wigan to Standish tramways run the whole distance, and the road surface is built of granite setts either the whole width of the road or the width of the tramway track. In places the setts present a bad and uneven surface. There is no difficulty encountered in driving over this part of the road in dry weather, but the surface is obviously treacherous in damp weather. The roads throughout Wigan and the traffic thereon are by no means difficult. A finger-post is required at one point on the south of Wigan showing the way to Warrington.

From Standish to Preston the road is fair to good the whole distance, and runs through a rural district.

The distance is twenty-nine miles, of which about ten miles carry tramlines.

2. Viâ Knowsley and Ormskirk.—Between Warrington and Prescot the road generally runs through an industrial district, with tramlines both on leaving Warrington and entering Prescot, but neither road nor traffic conditions present any difficulty. The road generally is distinctly good. Sankey Bridge, although not finished, is available for traffic the full width.

From Prescot to Ormskirk the district is generally rural in character, and the road is fair to good the whole way, although, like many other roads in the district, half the surface is in places laid with old stone setts.

From Ormskirk to Preston one has a good main road throughout, traversing, except at Burscough, a rural district.

Penwortham Bridge is now open for traffic.

The distance is forty and a half miles.

Our signposting is undoubtedly perfectly efficient, and any driver looking for the guidance of the signs should have no difficulty in following them. Signs all require repainting badly, and I will take steps to have this done.

3. Viâ Prescot and Rainford. This road throughout is of much the same character as that *viâ* Ormskirk, which it leaves either in Prescot or Knowsley and rejoins at Burscough. The distance is practically the same, but it is a little difficult to follow at some points, and reference to the map is necessary. If this road is followed it appears to me to be unnecessary to make the *détour viâ* Knowsley, as one can go straight from Prescot on the eastern side of Knowsley Park.

Conclusion.—The direct road *viâ* Wigan gives a saving in distance of eleven and a half miles, and presents no real difficulty, at least during dry weather, but for half its distance passes through a sombre industrial district. Where time and distance are important, I would recommend this road, but for the touring motorist having no desire to traverse roads of this character the alternative road *viâ* Knowsley and Ormskirk, which we have already signposted, should still be recommended. The alternative is to be preferred in wet weather.

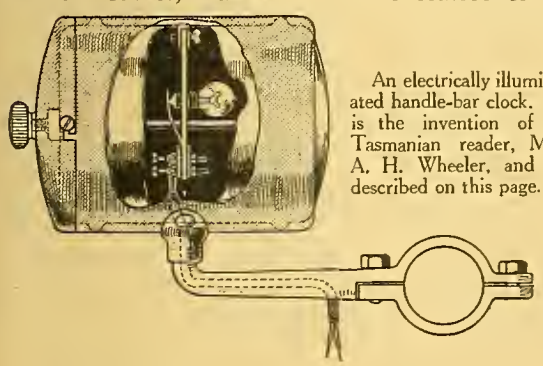
The third alternative, by way of Rainford, is not valuable, and offers no advantages over the other either in point of distance or ease of travelling. H.W.N.

November 24th, 1915.

Some members of the No. 6 Battery M.M.G.S. now on active service. Mr. F. K. Bolton, father of the second man from the right on the back row, kindly sent us the original photograph and says the copy of *The Motor Cycle* he sends out to them is read from cover to cover every week

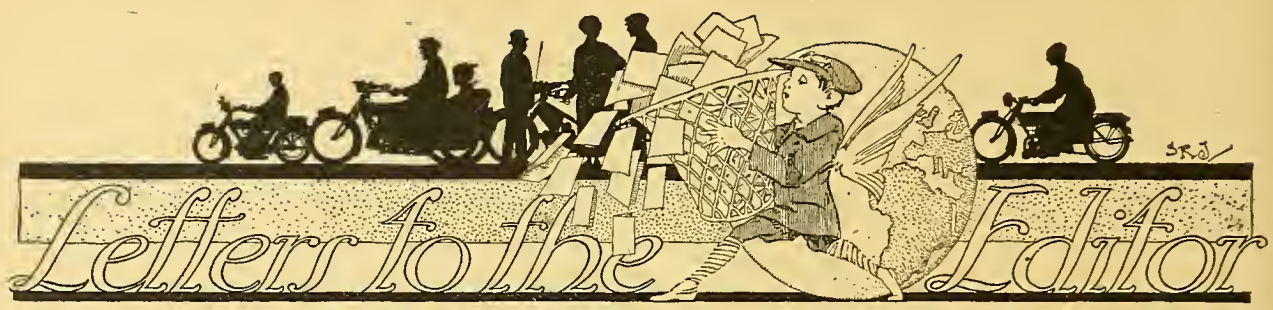
AN ILLUMINATED MOTOR CYCLE CLOCK.

AN interesting motor cycle or car clock has been designed and patented by Mr A. H. Wheeler, of Hobart, Tasmania. The feature of this instrument is that by pressing a button the face of the clock is illuminated and the time easily read on the darkest of nights. The clock mechanism is contained in the rear portion of the body, and the hands are driven by means of an extended shaft. In the space between the works and the face a small four-volt flash lamp bulb is arranged and coupled by means of a flexible cable to a small dry battery, which can be carried in any convenient position, such as the tool bag or a specially made case on the handle-bars.



An electrically illuminated handle-bar clock. It is the invention of a Tasmanian reader, Mr. A. H. Wheeler, and is described on this page.

The dial is made of ground glass with bold figures and hands, making it readable from a considerable distance. A fitting of this kind would undoubtedly be greatly appreciated by many riders, and especially in times of peace by competitors in such events as the London-Edinburgh and Exeter trials, and other all night rides.



The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

A Sidecar Windscreen.

Sir,—With reference to Miss May Walker's article on the wind shield, I should be pleased to hear if she has used the screen during the summer. I fitted one very near to the passenger, and found that an eddy of wind was brought up from the back of the sidecar and covered the passenger's head and shoulders with dust, and this was cured by putting the screen nearer the front.

Wishing your journal continued success,

A NINE-YEAR-OLD READER.

Dangers of Darkened Streets.

Sir,—The "Member of the Illuminating Engineering Society" writes a long and interesting letter, but he surely forgets that his letter does not get to the right people, as the majority of readers appreciate from their own experience his troubles. He is writing to fellow sufferers. His letter should be sent to the dailies and evening papers. I think the main point and basis of the trouble is the utter imbecility of the present lighting laws (*sic*), for over a year we have suffered like fools this lighting absurdity. It never prevented Zeppelins from reaching London, nor had any effect on their dastardly work when they did. Now we are told no more will ever reach the Metropolis, so for Heaven's sake let us kick and kick till the lights are restored, and our lives and limbs safe from our own people. If it did any good no one would object, but time has proved that the remedy is useless, and is worse than the disease.

SOLE MEMBER FOR THE SOCIETY FOR ILLUMINATING LONDON.

Freemasonry of the Road.

Sir,—We have heard so much recently concerning the "road sponger" that it might be of interest to your readers to hear the other side of the question.

I am possessed of a certain 1915 4 h.p. machine, which, although its behaviour in other ways has been exemplary, has, in the course of 10,000 miles, broken four countershaft pulleys. I will relate the circumstances regarding the incidents separately.

First pulley. Cornwall, ten miles from a town. Dark. Seven motorists in a four-seater found room for me unasked, and conveyed me to the town.

Second pulley. Kingston Hill. Driver of a Singer light car asked to give me a lift to Putney. Drove me to my bank in town, waited, and finally deposited me at my destination.

Third pulley. Orpington. Given a five-mile lift on the carrier of a sidecar combination.

Fourth pulley. Near Henley, on November 9th last. Pelting rain. A motor cyclist stopped, and, although I was a total stranger, offered to lend me his own motor cycle to return to Henley, saying he had only a little way further to go, and would walk it. Whilst we were talking a lady in a car approached, and gave me a lift into Henley.

In view of the above facts, who can say that the freemasonry of the road is dead? The above are the only times I have been stranded this year, and three times out of the four it was a car driver who rescued me.

I should like once more to express my gratitude to these various good Samaritans, and to hope that the day may come when I shall be able to repay a part of my debt.

E. RIDER TROWARD.

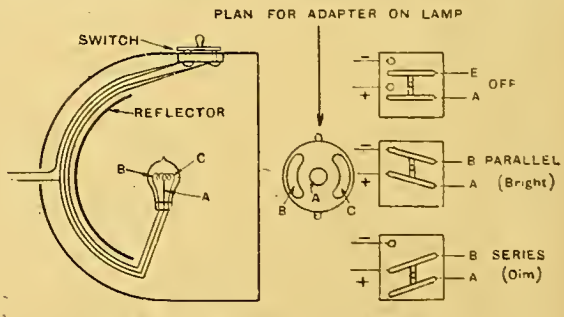
Winter Riding.

Sir,—To keep a machine clean in winter the easiest way is to remove as many fittings as possible which can be dispensed with for the time being. Then polish every part with Johnson's prepared wax. This imparts a hard brilliant gloss almost like varnish, and when the mud dries it will brush off as easily as dust. Greasy substances, such as vaseline, collect the dirt and make it very difficult to remove, besides giving a most unsightly appearance to the machine. C.E.B.

Sir,—Regarding keeping dry, I certainly think oilskins far the best, as Mr. H. M. Batten suggests. I find the following very good. Sew a piece of oilskin to the bottom of overall like the front of a spat, and at the side put a button and a broad piece of elastic 18in. long with a hole at the end. When on, fold the overall as you would trousers for a clip, and wind the elastic once round the leg, cross over, and once under the foot, and over the spat like a figure 8, and fix the end on the button. Of course, the fold will end where the button is. This arrangement gives room to put on easily, and keeps out wind and wet. Hundreds may use it for all I know, but it may be new. (Rev.) L. GREGORY.

Variable Electric Lights.

Sir,—Having seen in recent issues of *The Motor Cycle* articles on the new lighting rule for motor cars and motor cycles, I should like to suggest the following idea: None of the ideas you have yet published deal with a solution of this difficulty with regard to electric lamps. The theoretical solution is surely to have two lamps, which can be used either in series or parallel at will. Assuming the e.m.f. to be constant, the theoretical result would be a quarter of the light on series using a quarter of the power. Of course, this would not be procured in practice, but the results should be good enough to satisfy even the most fastidious purchaser.



Wiring diagram of electrical lamp to meet lighting regulations. (See letter from H. E. I. Palairet on this page.)

As a motor cyclist, when riding solo, requires one lamp only the two lamps have to be run into one. This can be done by means of an ordinary lamp with an idle lead A tapping the middle coil, and suitable leads.

In parallel the current flows on at the + terminal, through the switch to the lead A, and divides at the lamp through the coils B and C. From C it goes straight to the terminal, from B through the switch to the terminal. In series the lead A is cut out. H. E. H. PALAIRET.

Help on the Road.

Sir,—The more I am on the road the more I feel what a comfort it would be if there were some simple and recognised signs between the apparently stranded motor cyclist and the one who is willing to help him.

In the present state of things, both parties yell out some unintelligible words, and by the time the driver has made up his mind whether he is wanted or not, and has pulled up, he is a good way past. On going all the way back, in nine cases out of ten, he is told, in a very curt manner, that he is not wanted, with the result that he is not so keen to look into other people's troubles in the future.

Are there any objections to the following suggestion: The driver who is willing to assist holds out his hand (fairly low down) on the side that the man is in trouble, who, if he wants help, holds his hand above his head, so that even if the driver is a good way past he can see it over his shoulder.

ANY HELP?

A Curious Incident.

Sir,—About two months ago I fitted my Triumph with a vaporiser in the form of a spiral spring over the jet. The other day I had occasion to take down the carburetter, and, to my surprise, the vaporiser had disappeared. A careful search on the floor failed to find it and on consulting an expert friend, he suggested that the vaporiser might have got loose and been sucked up the air chamber and through the induction pipe into the engine. It seemed scarcely credible, but on taking off the valve caps the vaporiser was found lying in the combustion chamber in the groove which runs round the chamber under the level of the inlet valve.

Not only that, but another similar vaporiser was found lying beside it, and I then remembered that last July I had occasion to take down my carburetter by the roadside for a choked jet, and the spiral spring vaporiser went mysteriously amissing there also, but I thought it had fallen out as I took down the carburetter and had rolled among the grass at the roadside. Both vaporisers seemed a fairly tight fit for the jet when put on.

Lying as they did in the engine they made no apparent difference to the running of the machine. Is such an occurrence an unusual one? JOHN F. FERGUS, M.D.

Petrol Consumption on Two-strokes.

Sir,—I have been much interested in the correspondence about petrol consumption on two-strokes, and, being the rider of a T.D.C. Wolf, I am writing to you to know if any of your correspondents would be so good as to help me in my small difficulty.

My petrol consumption is heavy, 70-80 miles to the gallon, and I find that, although I never flood the carburetter, even when starting, there is always a pool of petroil on the plate I have fixed under the carburetter to catch these drainings and prevent their getting into the contact breaker. I cannot account for them. The level is true; I have tested it carefully, and the carburetter is not tilted The only thing I can think of is that there is a back rush of mixture when the port closes; and, as there is no induction pipe, and the carburetter is a Senspray, it comes straight through into the air inlet. I am running on a jet equal to about 32 B. and B. (I don't know Senspray numbers), and the machine climbs magnificently, and will travel at 27-32 m.p.h. uphill and down dale for as long as you like. It pulls like a three-horse twin, and I have nothing but praise for it. M. P. SARGENT.

The Lady Motor Cyclist—A Protest.

Sir,—Regarding the opinions expressed in your paper on the question of the lady cyclist's dress: although I do not think it right that anyone should dictate to another what they—he or she—should wear, I would like to put the matter in a logical way.

First of all, man and woman are designed almost alike in general outline; woman is now taking her place beside man in work and play as an equal, and as she becomes more practical in her ideas she will very soon see that it is silly to handicap herself by clothing which immensely restricts her movements. The days of the simpering maid have gone with the crinoline, and the sooner the woman discards the skirt, the high heel, and the stays, the quicker will be her progress.

The practical woman aspires to be more the chum of man than his idol, and she is wise; for his friendship is likely to last longer than his "worship." Mary Reid wants to "sit her steed with gracefulness," and she thus unconsciously discloses her desire for man's good opinions; but no person with any powers of reasoning could say that a hobble skirt is graceful. If Mary Reid has conformed to the fashions she is wearing one, and breeches could by no possibility be worse looking. To get the maximum of gracefulness she should wear an "Empire gown"; the flowing draperies would be extremely pretty when travelling at speed.

The lady's frame may be strong enough, but it is mechanically impossible for it to be as strong as a diamond frame, and if a woman has the courage (and the money) to become the user of a "mo-bike," then she is silly as well as inconsistent in her ideas if she buys anything but a man's model, which she can again dispose of, if she wants to, much more easily than a lady's.

I shall welcome the day when women adopt a rational dress, but the pioneers of the movement must expect to hear that they are "slightly touched," etc., to quote your correspondent again. Before she dies she will probably have to get into breeches every morning or be out of the "fashion."

LOGISTES.

Sir,—Writing as a medical man, and also as a motorist of considerable experience of many types of machines, may I suggest that one aspect of the question has not received attention in the correspondence which has hitherto appeared in *The Motor Cycle* on the best type of machine for lady riders. It is this. The open frame, in addition to, and because of, its inherent structural weakness, has the effect of magnifying the vibrations from the engine, so that at anything over, say, 20 m.p.h., it is, on many types, almost impossible to hold the handle-bars firmly. Moreover, this "dither" is most distressing on a long run, and tends to produce a nervous tremor which lasts for some time.

Furthermore, as is recognised by the manufacture of rubber tank pads, many riders like to grip the tank with their knees, and find additional steadiness and safety in so doing. This is abolished with the open frame.

Now, sir, is it right to expect the weaker sex, constitutionally more nervous and highly strung than the male, to ride a machine possessing these inherent disadvantages? With a wide ordinary skirt, or, better still, with one of the admirable double skirts on the market, it is possible for a lady to ride a diamond frame without loss of dignity or grace, and would it not be well to relegate the open frame to the limbo which is in the act of absorbing that similar product of perverted prudity, the side-saddle for horsewomen? MEDICO.

A SPORTING LIGHTWEIGHT PASSENGER OUTFIT.
A two-stroke Allon owned by Mr. A. O. Goncalves, of South Woodford.

Water on the Knee.

Sir,—Although not a medical man, but a pharmacist, I am taking the liberty of replying to the enquiry of "Medically Unfit," and my reason is a rather long and bitter experience of a similar trouble. I should say that motoring has nothing to do with his indisposition: there must be some other cause, for which only a medical man knowing all the history of the case could account. From my own personal experience, the only remedy is *absolute* rest for the joints for a somewhat prolonged period; in my own case, in plaster of Paris bandages. For a promised quicker relief I tried practically every other method suggested by one and another professional man, and spent much money and time, which I think I might have saved had I accepted the first advice, but which necessitated my lying up for three months at least. I regret I did not take this advice, but after twelve months of treatment, some of it very severe, I was very glad to adopt the sound proposals of the first medical man I consulted, and after every appearance of being somewhat of a cripple for the rest of my days, a complete cure was effected, and I am once again able to enjoy the pleasures of motor cycling. It would be no good to the majority of your readers to go into any details, but the Editor has my address, and if "Medically Unfit" cares to write me, I can perhaps help him. PHARMACIST.

Engine Rattle in Two-strokes.

Sir,—I have had the same experience as your correspondent "Scud" on a single-geared two-stroke. When travelling at about twenty-five miles per hour the engine seems to be working, as he says, with difficulty, and when the compression release valve is opened a loud hammering sound is emitted, which increases to an alarming extent if the machine gains speed down hill.

The fact that the noise is non-existent for some time after cleaning points to carbon deposit being the cause. A ring of carbon is formed about one inch from the top of the cylinder, and it is my opinion that when the piston is hot and expanded it knocks against this. Two things lead me to think this. Firstly, when I dismantled my engine, I found the sides of the raised portion of the piston head were well polished, as if they had been coming into contact with something. Secondly, on one occasion I was running slowly down hill, with the compression release valve open to the accompaniment of the usual clatter, when something seemed to snap inside the engine. I could, however, find nothing amiss, but was surprised immediately afterwards to find that the noise had almost entirely ceased. For the next hundred miles or so this state of thing continued, but after that the noise gradually increased again. My theory is that the snapping sound I heard was the breaking away of part of the aforesaid carbon ring, which would account for the subsequent absence of rattle. I may be entirely wrong in thinking this, but at any rate I believe carbon deposit is primarily the cause of engine rattle.

LL 9026.

Reversing a Scott.

Sir,—I have been interested in the two recent letters calling attention to the fact that a Scott two-stroke occasionally, or even frequently, reverses when starting up. I have a 1915 Scott fitted with Splitdorf magneto and a B. and B. 1915 carburetter, and the same thing often occurs. Sometimes it is a nuisance, but I have occasionally turned it to good advantage to back out of a yard. I can usually make the engine run in the right direction by slowing it down with the throttle and slightly braking the engine with the clutch and foot brake.

Some of your readers may probably be interested in the results I am obtaining with the machine. I have attached a Millford family sidecar to it. This is fitted with a windscreen, and has seating accommodation for an adult and a child. The whole outfit runs splendidly, and will climb most ordinary hills on the top gear of 5 to 1. The machine has run a distance of 2,400 miles, about 1,900 of which have been with the sidecar attached, and although the cylinder and pistons have not been down at all it shows no signs of knocking or loss of power. In fact, the petrol consumption is better than ever it has been, largely due to more careful driving with the extra air lever, together with trial adjustments to the needle of the carburetter and with the ignition rather more advanced than usual. I am getting 75 m.p.g. with the sidecar, whilst on a recent out and home journey of 200 miles, using the machine solo, I obtained 105 m.p.g. on No. 2 petrol.

A tour this summer in lieu of the usual summer holiday, with two passengers and heavy luggage, included Leicestershire, Gloucestershire, Monmouth, Oxfordshire, Buckinghamshire, etc., a total distance of over 700 miles, without a single hitch of any description, notwithstanding the fact that I had then only had the outfit three weeks and had had no previous experience with motors or motor cycles.

W. HOCKNEY.

Clutch Operation and Transmission

Sir,—With reference to "Ixion's" "Occasional Comments" in last week's issue of your paper, I must take exception to his remark, "Up to date it has not proved possible to design a handle-bar clutch control which does not require a lot of hauling out." Has "Ixion" felt the clutch lever of a 1915 3½ h.p. Sunbeam? A perfect clutch action is provided, and the lever is as easily raised as the exhaust valve lifter.

Then, again, I see he advocates foot control of the clutch. Personally, I do not consider foot control can compare with hand. I always *slightly* slip my clutch in cornering, or even in accelerating, and I am sure that these finer touches cannot be given by the foot. Again, it is quite possible for the handle-bar muff to be fitted over the handle-bar clutch lever, and thus the chances are very slight of the fingers becoming so cold as to cause handling impossible.

How difficult it must be to "gently insinuate the clutch" (*vide* a well-known manufacturer's handbook) with cold feet under boots and Hutchinson waders. Also, what about when one has to declutch and brake, when riding in grease, for, in my opinion, declutching greatly reduces the likelihood to skid? (I am not mentioning the well-known point of both legs being required to recover balance when skidding.)

I should like to say a word or so with regard to the article "Chain-cum-belt Drive on Big Twins." I cannot believe it possible for a chain-cum-belt driven 5-7 h.p. twin to give a greater mileage per rear cover than the 3½ chain-driven single. I regularly get, by speedometer, 6-7,000 miles from a cover on the back wheels, and from one Dunlop I obtained 8,000 on back, 6,000 on front (14,000 in all), and this tyre was still in good condition when I disposed of that machine (it has done several thousands since and is still on). All this, please note, on a "harsh" chain-driven single (2¾ h.p. Sunbeam).

Then, again, the petrol consumption on my present mount (3½ h.p. Sunbeam) is a full 115 m.p.g.; this over muddy roads.

Then, with regard to cleanliness, I know which machine I would prefer to have for all the year round riding. The mud can remain on the chain case, but not so on the belt.

In 23,000 miles on Sunbeams I have only once had chain trouble (rear chain broke after 13,000 miles), and I have only renewed one chain (front one after 9,000 miles, at a cost of 7s.) in the whole mileage. I have nothing to complain of with regard to harshness of drive. My advice is, use your clutch as much as you like, but keep it clean and oiled. Never have I had clutch trouble.

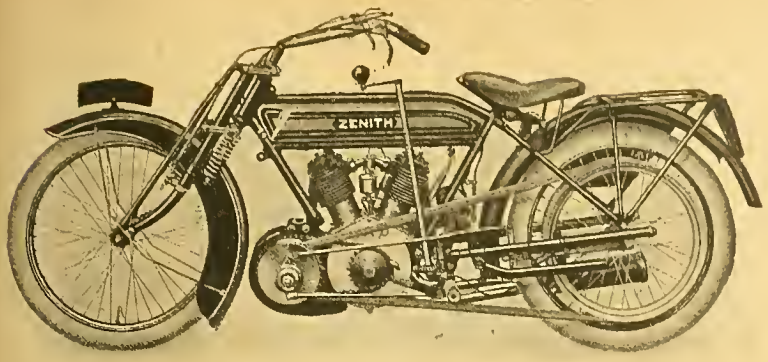
Also, what about the spares one has to carry with chain-cum-belt drive? I only carry a couple of detachable links, and it is a big advantage to be able to travel light on greasy roads, and not loaded with spares.

I see Mr. Batten admits that he is troubled with belt slip. This is a real bogey for any all-weather rider, and what disadvantage of equal importance can he cite with enclosed chain drive?

I frankly admit I am very keen on Sunbeams. You see in 23,000 miles one gets to know a good thing. I have ridden most machines on the market, but—well, my next machine will be a Sunbeam, too.

Surely if a chain drive is successful with single-cylinder machines, its success should not be questioned with the twin's more equal torque, and I should expect that with greater power and weight the disadvantages of chain-cum-belt would be increased.

I must apologise for the length of this letter, and must say, with sorrow, that I have no interest in the firm whose goods I mention. A. I. DOWLER.



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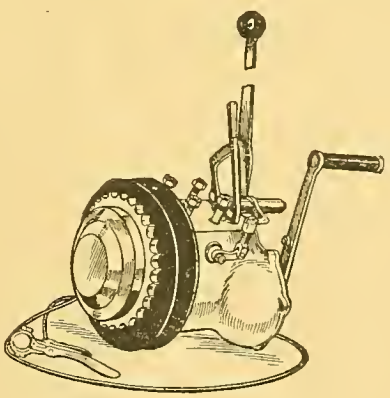

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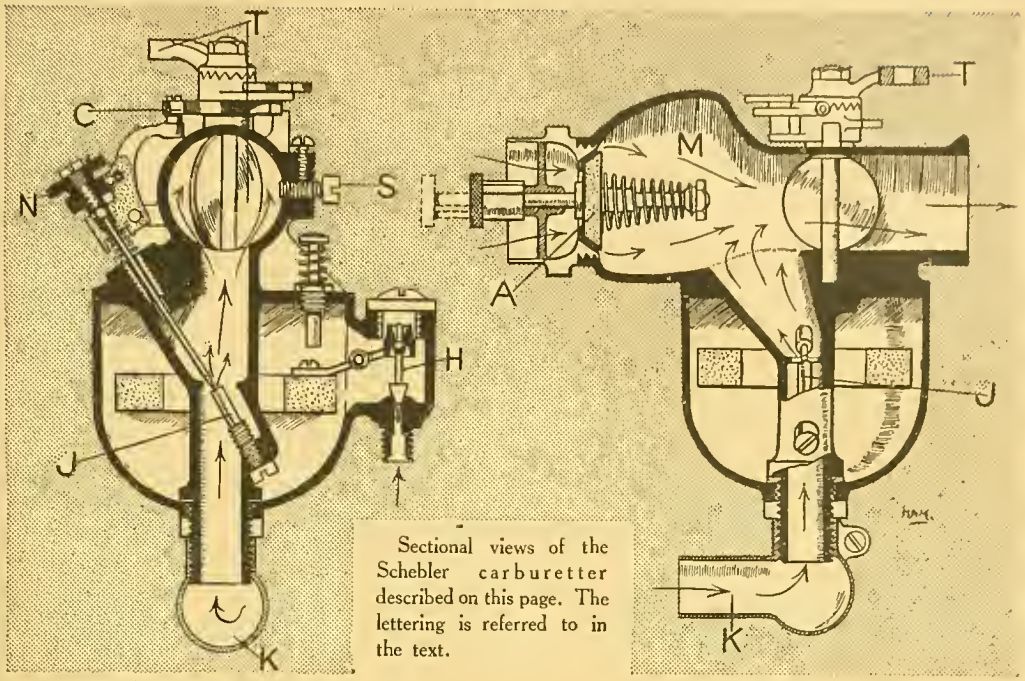
The Schebler Automatic Carburetter.

THE Schebler automatic carburetter is very popular in the United States, and it is found on many of the American machines imported to this country. Anyone who has ridden an American motor cycle so fitted for the first time will be struck by the extraordinarily smooth running and rapid acceleration. Moreover, he will be pleasantly surprised to find that when it is throttled down the engine will run slowly and regularly without missing fire. Many British machines, both twin and single-cylinder, suffer from this lack of flexibility, which is almost always due to an inefficiently designed carburetter. Thus we think that a description of the working of the Schebler and some hints on its adjustment will be appreciated by our readers. Outwardly the carburetter appears to be somewhat complicated, but a glance at the accompanying drawings will show that it is not really so. The method of working is quite simple, but there are numerous adjusting screws which allow the carburetter to be adjusted to any make of engine.



Sectional views of the Schebler carburetter described on this page. The lettering is referred to in the text.

Fig. 1. Fig. 2.

The float chamber works on the usual principle, but is rather peculiar in shape. It is shaped like a cup, and contains the annular varnished cork float, the needle valve H being in a separate chamber. The main air enters through the inlet K and rushes past the jet J, carrying the mixture into the mixing chamber M (fig. 2), where it receives an additional air supply through the automatic valve A. It will be seen, therefore, that there are very few moving parts.

The chief ingenuity of the carburetter lies in the control. As the throttle T is opened, the needle valve N is lifted up from the jet by means of the cam C, so that more petrol is allowed to exude at high speeds. Delicate adjustment is provided by means of the screw, which permits the throw of the needle valve to be altered. The contour of the cam operating the jet needle may be altered by turning a pointer on the throttle mechanism from the figures 1 to 3. This has the effect of lowering the cam and reducing the petrol supply. Adjustment is also provided for controlling the pull on the spring of the extra air valve A by turning the knurled screw, clearly seen in fig. 2, while in the same figure the dotted line shows the position of the knurled screw when it is pulled out and turned round. This tightens the spring and prevents the valve from opening at low speeds, and thus gives a sufficiently strong mixture to render starting easy.

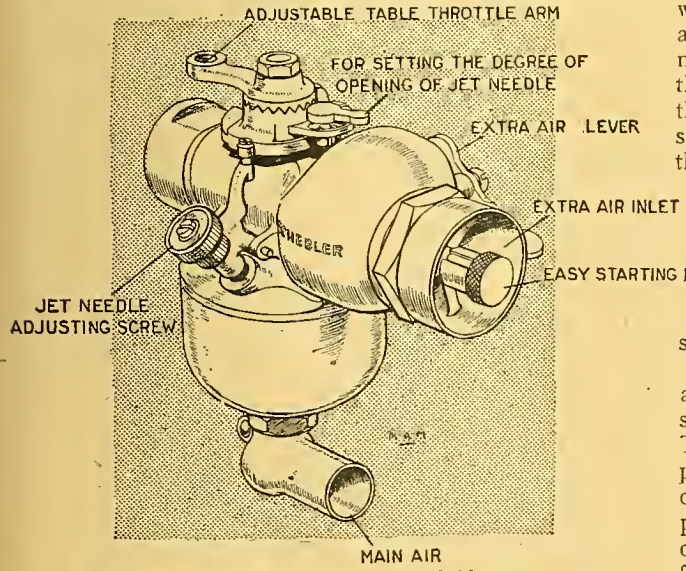
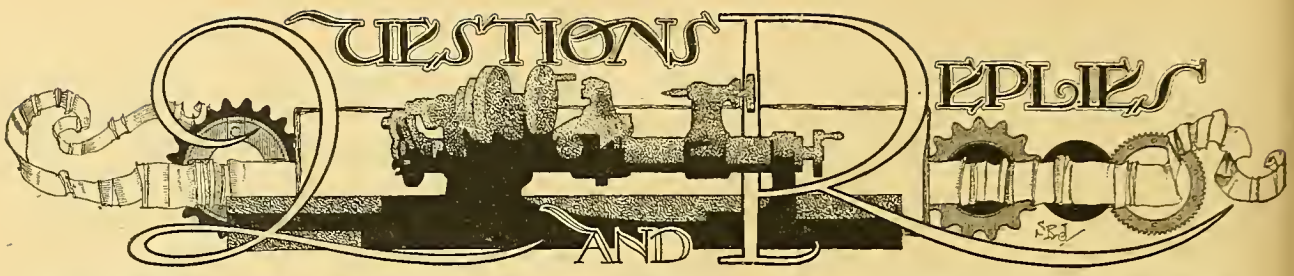

ADJUSTABLE TABLE THROTTLE ARM
FOR SETTING THE DEGREE OF OPENING OF JET NEEDLE
EXTRA AIR LEVER
EXTRA AIR INLET
EASY STARTING BUTTON
JET NEEDLE ADJUSTING SCREW
MAIN AIR

Fig. 3.—External view of the American Schebler carburetter.

It will be noticed that the throttle arm T is adjustable, so that this may be set at any angle to suit the convenience of the assembler of the machine. The screw S (fig. 1), which, it will be observed, is provided with a locking arrangement, provides a means of leakage past the throttle when closed, thus permitting slow running when the gear is in neutral or the clutch is out. An extra air lever is also fitted for use on very hot days.



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of eovelope, and should be kept distinct from questioos bearing on technical subjects.

Re-magnetising.

I should be much obliged if you would tell me how to re-magnetise the magnets of a magneto. I have a dynamo that is used for lighting purposes.—J.D.

You require a powerful two-pole electro-magnet, and need to wipe the ends of the poles of the magneto magnets across these, being careful to apply similar poles to one another, otherwise, instead of magnetising the magnets, you will de-magnetise them. No special skill is necessary, and, if you draw the poles of the magneto across the poles of the electro-magnet about a dozen times, the magnetism will be improved.

Cover Blowing Off.

(1.) I have fitted a new (extra heavy) tyre on the back wheel of my 3½ h.p. motor cycle, 26in. × 2½in. for a 2¼in. rim. It blows off the rim, and, of course, bursts the tube. If I fit a security bolt opposite the valve, will it prevent it happening again, or will it be still more safe if I fit two security bolts? Up to now I have only used it solo. If I fit two bolts, should I space them out equally around the rim, counting the valve as one bolt? (2.) Is a cover more sure to remain on pumped hard than soft? (3.) Can the makers repair my new tube, which is also a 26in. × 2¼in., by fitting a new length in it, as it has a burst six or seven inches long? Is it worth it?—P.E.

(1.) The trouble may be due to the tyre being badly fitted, causing the tube to be nipped under the beads, which would cause the cover to blow off. If the cover is a fairly tight fit this is very likely to happen. In this case there should be no need for security bolts, though, in any case, you might use a "bolt valve." If, however, the cover is a slack fit, then two security bolts would undoubtedly be useful in addition to the bolt valve, and these should be spaced equally round the rim, taking the bolt valve as one. If the cover is a very slack fit it is possibly faulty, and it would be as well to consult the makers. (2.) It is safer to have the tyre blown fairly hard. (3.) Yes; it is quite satisfactory to have the damaged portion of the tube removed and a section let in. The manufacturers would do it, or any other good firm of tyre repairers. It would cost a matter of a few shilings.

Large versus Small Valves.

I should be much obliged if you would give me your opinion on a point that puzzles me. It is generally admitted that big valves make for efficiency, and many well-known makes have big valves. But one well-known make, on the other hand, is fitted with small valves in comparison with the others, yet it has put up some fine performances and has proved itself to be efficient. This make seems to be able to compete with any of the big valve machines, so where is the advantage of big valves? In theory, the small valve engine ought to be far below the rest in efficiency.—W.F.

The theory is that if large valves were fitted, the valves need not have such a big lift, consequently there is less wear on the valve mechanism. If small valves are fitted, the same results are obtained by giving a higher lift. You see that practically the same degree of efficiency can be obtained in either case.

Incorrect Mixture.

Please can you tell me what is wrong with my motor cycle? It is a 2½ h.p. two-stroke, with Senspray carburetter and Dixie magneto, fixed ignition. I have had it about three months, and have run about 1,300 miles. It has given every satisfaction until recently, when it started to splutter at the carburetter and then stop running, and I had to run with it for about fifty yards before it would start again. It would just run for a hundred yards or so and stop. I examined the jet and it was all right, also tested the plug and looked to the petrol pipe, looked in the tank to see that nothing was floating over the petrol outlet, and also examined the timing and found all correct. I raised the petrol level, and tried three different sized jets, 26, 28, and 30, but with no benefit. I had been running with a 30 jet until the machine stopped.—J.W.R.

The symptoms you mention certainly point to incorrect mixture. Make quite certain there are no obstructions in either the petrol pipe, carburetter passages, or jet. If these are all clear, then the trouble may be due to an air leak. Make sure all joints between the carburetter and engine are quite airtight, and also all the crank case joints, as in a two-stroke this is most important. You might also make sure that the vent in the petrol tank is clear and not causing an air lock. You should also make certain that the timing of the magneto has not slipped; the spark should take place when the piston is about ¼in. to ⅛in. from the top of the stroke. Examine the contact breaker and see that the rocker is not sticking, and that the points separate about ½ mm. Try a new plug; often a plug will spark out of the cylinder, but will not spark under compression.

High Petrol Consumption.

I have a 1911 2 h.p. fixed gear motor cycle fitted with a new Amac carburetter with 25 jet. I have had it a few months and it runs well, and will do all that I require as regards power. I have been told, however, that it ought to do at least 100 m.p.g., whereas I can only get 50 m.p.g. out of it. Would you kindly tell me if it is possible or worth while to get a machine of this age to do better? I am told that my engine is in very good condition, and it certainly pulls splendidly. It has an automatic inlet valve. Will that account for greater petrol consumption? I find that experimenting with the carburetter upsets the running, and I cannot yet get it to do better than 50 m.p.g. If you think it would be labour lost to try any further I will sell it and get a modern one, although I like the machine very well.—W.H.G.

Evidently there is something very wrong with your machine for you to get only 50 miles to the gallon. You should certainly do at least 100. As to where the leakage is taking place we cannot imagine, unless the petrol leaks from the float chamber; the needle valve requires to be ground in; there are leaks at the petrol pipe unions, or through the filler caps when you have the tank too full. Of course, the automatic inlet valve is bad for slow running, unless you have a very weak spring, and if you have a weak spring the petrol consumption would be greater than if you had a fairly strong one. Try fitting a slightly stronger inlet valve spring, and see if this will effect the desired improvement: also, by means of a washer, restrict the opening to about $\frac{3}{32}$ in.

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Misfiring.

[?] I am the possessor of a 1915 7-9 h.p. Harley-Davidson (electrically lighted model), and I want your advice about some trouble I am having. The trouble began with bad misfiring. This only took place when the engine was pulling hard. Then the horn went wrong, and I discovered that the fuse had gone. This was replaced, and now the engine goes with considerably less power than usual. I think there is a short circuit somewhere. The electric equipment is the Remy. Can you give any reason for this misbehaviour?—W.F.C.

When a misfire has been definitely proved to be due neither to the carburetter, valves, nor plug, you should look to the vacuum switch, breaking the circuit between the generator and the battery, which may not close at all speeds. The switch should close at the least suction, and then open as soon as the engine ceases to turn over. It is as important that the vacuum releases promptly, as it is that it closes as soon as the engine starts, and remains closed at all speeds. If this is not the case, the fault lies in the diaphragm, in the vacuum pipe, or in the check valve. The diaphragm leather may be so dry that the vacuum cannot be retained, in which case a few drops of good leather dressing, or castor oil, should be rubbed into the leather surface. The diaphragm should always be soft, pliable, and clean, but any excess of oil must be wiped off with a clean dry cloth. If it becomes oily and dirty the vacuum will not release quickly, and while the platina remain in contact the battery will discharge itself through the generator windings. If the switch is in order the check valve should be next inspected. This is a small tube fitting in the Y. piece connecting the vacuum pipe with the crank case. Disconnect the pipe and unscrew this tube, when it may be found that the ball is rendered inoperative through being gummed up with dirt or oil. The remedy is to squirt petrol through, and test the vacuum by drawing air through the upper end with the mouth. Should the switch and the check valve be in order, then one of the connections between the two may be leaking, a state of affairs easily remedied by drawing up the unions at one or both ends of the controller pipe. Should the trouble not then be found, it is possible that the contact breaker spring on the other side of the unit may have lost some of its tension, in which case the spring will have to be replaced. It should also be noted that the platinum points should be clean and the rocker arm working properly.

Chain Stretch.

[?] (1.) I have just purchased a 1915 3 h.p. twin, and after running only sixty miles I find that the tension of the driving chain varies considerably as the back wheel is rotated. The sprockets are truly central, both on the back wheel and on the countershaft, and are properly lined up. There are no broken bushes on the chain, and, naturally, no appreciable wear on the chain or sprockets. The back wheel is set squarely in its forks. Can you suggest what has caused this, and is it serious? The sag varies from about ¼in. to ⅜in. in the middle of one side of the chain. (2.) Is there any rough test to determine whether the engine is overheating? For example, should a piece of paper held against the cylinder flanges show signs of being charred? By the time "knocking" commences things have usually gone too far. (3.) Is a speedometer designed for a 26in. wheel with 2in. tyres equally suitable for a 26in. × 2¼in.? I have been told that the diameter of the rim is adjusted so as to make the overall diameter of the tyre the same in each case.—C.

(1.) The trouble with your chain appears to be due to uneven stretch, causing the chain to mount the sprockets slightly at intervals. This should not happen in so short a distance, so probably the chain is a faulty one, in which some of the rivets are soft. You should return it to the makers to be tested. The only other possible cause of the trouble would be either worn or eccentric sprockets. You must adjust the chain so that it is not too tight at the tightest point. Unless the chain is so slack that it jumps off no damage will be done by running it in this condition. (2.) There is no method of testing whether an engine is overheated. The temperature which will give bad running on one machine would possibly have little or no effect on another. The only way of knowing is when poor running or knocking occurs. If an engine is running reasonably cool you should not be able to light a safety match by placing it on the cylinder head or valve pockets. It is possible that paper would be scorched if placed on the cylinder of a motor running even reasonably cool. (3.) Yes; a speedometer may be used just the same with either 26in. × 2in. or 2¼in. wheels, there being so slight a difference in the overall diameter as to make very little difference in the accuracy of the instrument. If the 2¼in. tyre were run slightly slack it would probably be sufficient to overcome the difference.

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

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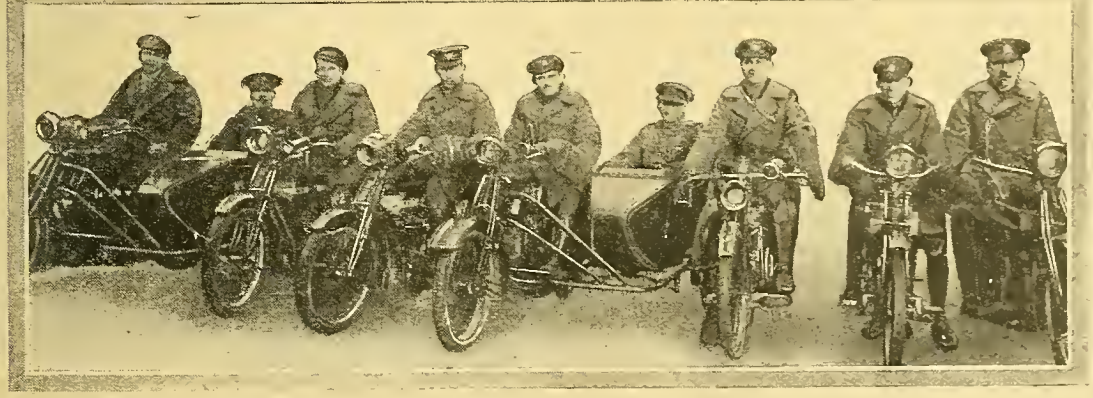
Route avoiding Sheffield.—Ilkley, Bradford, Huddersfield, Lockwood, Holme, Langdon Dale, Glossop, Chapel-en-le-Frith, Buxton, Bakewell, Matlock, Ambergate. Nearest Route.—Huddersfield, Penistone, Sheffield, Bakewell, Matlock, Ambergate.

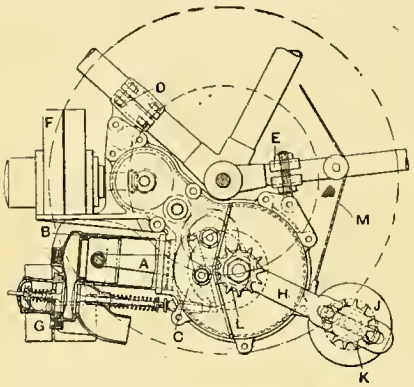
MOTOR CYCLISTS ATTACHED TO AN AMMUNITION PARK IN FRANCE.



Reading from left to right: Pte. J. Blanks and Q.M.S. J. Baxter (Clyno sc.), Lance-Corpl. J. Betts (B.S.A.), Lance-Corpl. H. Thacker (B.S.A.), Pte. F. C. Lander and Sec.-Lieut. R. B. Clark (Clyno sc.), Pte. J. Rice (Douglas), Pte. C. Maidens (B.S.A.), and Pte. J. Cain (Clyno sc.). We have to thank Sec.-Lieut. Clark, a prominent member of the Motor Cycling Club, for the original photograph.

An Auxiliary Driving Set.

The complete driving set is arranged beneath the bottom bracket of a pedal cycle, and is sufficiently narrow not to interfere with the rotation of the pedal cranks. The connecting rod A in the cylinder B drives on to an eccentric C, affording a narrower construction than would be the case an ordinary crank were used. The engine is supported by

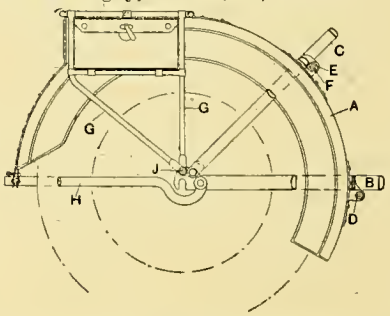


clips D E, whilst the magneto is shown at F and the carburetter at G. Mounted co axially with the eccentric C are arms H, the lower ends of which afford a bearing for a wheel J driven by the chain sprocket K from the engine sprocket L. A cable M is employed to draw the wheel J into contact with the rear wheel tyre for driving purposes.—S. Dorsett and G. M. Brunton, No. 24,485, 1914.

PATENTS by Eric W. Walford

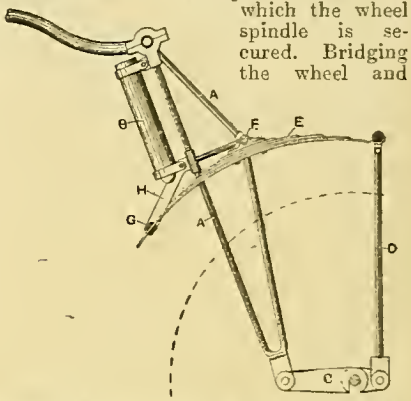
A Detachable Rear Mudguard.

Attachment of the mudguard A to the chain stays B and saddle stays C is effected by lugs D E, which engage brackets on the stays and are secured in position by bolts F. The guard A is further supported by the frame G of the luggage carrier, and a spring clip at the rear end supports the stand H. By removing the bolts F and also the studs J, by which the luggage carrier is attached to the fork ends, the complete guard and carrier can be easily detached. —G. E. Rigby, No. 19,963, 1914.



A Cantilever Spring Fork.

The employment of cantilever springs in the suspension systems of vehicles is increasing in popularity, and their adoption for the front forks of motor cycles is being suggested. In the instance shown, the main girder A is rigidly attached to the steering pillar B, and carries at each side a pivoted link C in which the wheel spindle is secured. Bridging the wheel and



ensuring that the side links C always move in unison is an arch member D, to which the front end of the cantilever spring E is attached. The spring is duplicated on each side of the girder A, and the centre is attached at the point F, whilst the rear end passes through a guide G carried by an arm H. The specification mentions that the links C may, if preferred, extend backwards instead of forwards, as in the drawing.—G. E. Bradshaw, No. 24,191, 1914.

Coro Tyre Repair Outfits.

Among the long and varied list of oil, rubber, and other goods for the motorist sold by the Coro Oil and Rubber Co., Ltd., of Aston, Birmingham, attention is drawn to the tyre repair outfits. Great care has been expended in both manufacturing of the contents and the case itself; for example, the patches are contained in special clip pockets.

Catalogues Received.

Enots Automatic Drip-feed Lubricator with Auxiliary Pump; Messrs. Benton and Stone, Ltd., Birmingham. This booklet gives full information concerning the working of the Enots automatic drip-feed with auxiliary pump, and also particulars of a crank case relief valve.

B.S.A.—The Birmingham Small Arms Co., Ltd., Small Heath, Birmingham. The 1916 catalogue is a fine production, and the three-colour plates of the complete machines are very pleasing. The latter are accompanied by full specifications of the models they illustrate, and other pages are devoted to illustrating and describing the many detail features and refinements possessed by the B.S.A.

The Enfield Cycle Co., Redditch, have issued a new edition of "The Book of the 6 h.p. Enfield." This contains full instructions for the use and care of this popular model, and a complete list of spare parts (with latest prices). We would especially draw attention to the valve timing diagrams on page 22. A copy of this booklet will be sent gratis to any owner of a 6 h.p. Enfield who asks for one, giving the number of his machine.

SPARKLETS

Tyre Repair Outfits for War Office.

We are advised that the Government has recently placed with the County Chemical Co., Ltd., of Birmingham, what is possibly the largest contract for tyre repair outfits to War Office pattern ever given, covering as it does twelve months' supplies.

All-weather Capes.

Some misunderstanding may have been caused in the reference on page 488 of November 18th to the Rogan capes by the address of the makers being given as Mottington, Manchester, and Withington, Manchester. The latter is the correct one.

A.J.S. Machines in London.

Messrs. H. Taylor and Co., Ltd., 21a, Store Street, Tottenham Court Road, W.C., will be showing during the present week a range of all A.J.S. motor cycles, together with sections of working models of the detachable wheel, and showing the methods of lubrication in vogue on these engines. An A.J.S. fitted up with Lucas dynamo set will also be on view. This exhibition will be open each day from 9 a.m. to 8 p.m. until Saturday, December 4th.

Fire at Howes and Burley's Premises.

A portion of the works of Messrs. Howes and Burley, Ltd., lamp manufacturers, of Birmingham, was seriously damaged by fire in the early part of last week.

A Manchester Agency.

Mr. E. Woods has taken over the sole control and management of the W. and H. Motor Co., of 287, Deansgate, Manchester. The firm handle several well-known and important motor cycle agencies.

American Simms Magnetos.

The capital stock of the Simms Magneto Co., of East Orange, New Jersey, has recently been increased. The works have been considerably extended, and the firm is very busy on the production of magnetos, etc.

Buying Inexpensive Tyres.

Motor cyclists are often chary of buying tyres and tyre accessories at greatly reduced figures, and we may say that in most cases they have good reason. The Elite Rubber Co., Ltd., 260, Vauxhall Bridge Road, Victoria, S.W., however, inform us that the goods they offer are quite new and in perfect condition. They also point out that they have purchased Continental tyres under the supervision of the Board of Trade, and the money paid for them is held in trust by the Board of Trade authority. It is, therefore, not unpatriotic to purchase these German covers, as it is obviously more beneficial for the Government to hold money in trust than goods of a more or less perishable nature.

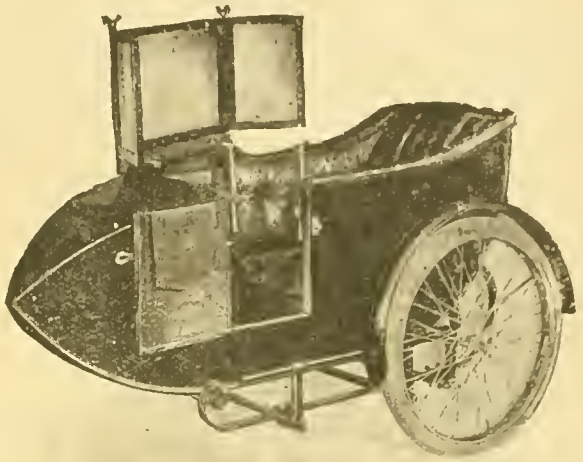
DUNHILLS PATENT TRIPLE WINDSCREEN

Provides extreme comfort for WINTER RIDING.

AN ideal windscreen—keeps the passenger always snug and cosy in the coldest weather, and free from draughts.

The side wings are detachable, and the screen can be tilted to any angle. It will fit any make of car.

A twist of a wing nut is sufficient to release the catch and let the screen swing across and allow the passenger to alight.



In Polished Walnut with Nickel Fittings:

Price complete with side wings - - £3 0 0
Price of Single Screen - - - - £2 2 0

Dunhills LTD.,

359-361, EUSTON RD., LONDON, N.W.
—42-43, LOMBARD STREET, E.C.—

MANCHESTER: 90-92, Cross Street.
GLASGOW: 72, Vincent Street.

"FORWARD" BRITISH MADE ACCESSORIES

TYPE TT. 3/-

INSIST on Forward British plugs for best results.

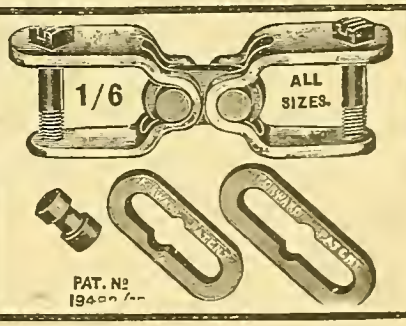
Made in a dozen types.

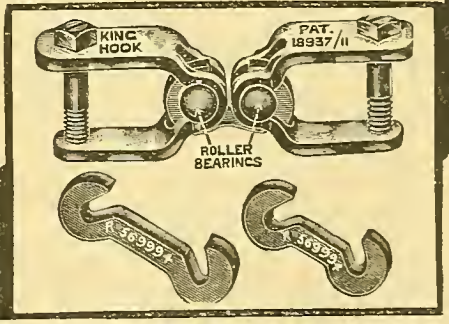
"FORWARD" adjustable belt fastener with the unbreakable links and roller bearings.

Made in all sizes and sold by all agents.

1/6 each.

Forward Leather Link 1/- each.





"KING HOOK" the strongest hook fastener in the world.

Fitted with double strength hooks, roller bearings and unbreakable screws.

1/- detachable. 1/3 adjustable.

King Hook Leather Link **10d. each**

FORWARD MOTOR CO., Summer Row, BIRMINGHAM.

MISCELLANEOUS ADVERTISEMENTS.

PRICES.

ADVERTISEMENTS in these columns —First 12 words or less 1/6, and 3d. for every two words after. Each paragraph is charged separately. Name and address must be counted. Series discounts and special terms to regular trade advertisers will be quoted on application.

Postal Orders sent in payment for advertisements should be made payable to ILIFFE & SONS Ltd., and crossed & Co.

All advertisements in this section should be accompanied with remittance, and be addressed to the offices of "The Motor Cycle," Hertford Street, Coventry. To ensure insertion letters should be posted in time to reach the offices of "The Motor Cycle," Coventry, or London (20, Tudor St., E.C.), by the first post on Friday morning previous to the day of issue.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement, and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

NUMBERED ADDRESSES.

For the convenience of advertisers, letters may be addressed to numbers at "The Motor Cycle" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge. Only the number will appear in the advertisement. Replies should be addressed, "No. ooo, c/o 'The Motor Cycle,' Coventry"; or if "London" is added to the address, then to the number given, c/o "The Motor Cycle," 20, Tudor Street, E.C.

☞DEPOSIT SYSTEM.

Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

The time allowed for a decision after receipt of the goods is three days, and if a sale is effected we remit the amount to the seller, but if not we return the amount to the depositor, and each party to the transaction pays carriage one way. For all transactions exceeding £10 in value, a deposit fee of 2s. 6d. is charged, when under £10 the fee is 1s. All deposit matters are dealt with at Coventry, and cheques and money orders should be made payable to Iliffe & Sons Limited.

The letter "D" at the end of an advertisement is an indication that the advertiser is willing to avail himself of the Deposit System. Other advertisers may be equally desirous, but have not advised us to that effect.

SPECIAL NOTE.

Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

Advance.

ADVANCE, 3½h.p., 1912, Bosch mag., B. and B., good running order; first cheque £11, bargain.—Dunn, Sunningdale, Berks. [6846

A.J.S.

A.J.S., latest 1916 model, 2¾h.p., in stock; immediate delivery.—Timberlake's Garage, Wigan. [X5264

A.J.S., 6h.p., complete with sidecar, just delivered £95.—Turpins, 22 and 29, Preston Rd., Brighton [6716

A.J.S. 1913¾ 6h.p. Combination, Lucas lamps, horn, mirror; £67/10.—Samuel Hewitt, Morton Canes, Cannock. [X4929

A.J.S., 1913, 6h.p., coachbuilt sidecar, lamp, horn, new tyres, good running order; £43.—White, Kilmaine, Birr. [X5262

A.J.S., 1913, 6h.p., with Gloria sidecar, mechanically sound; a bargain, £54.—Beauchamp, 28, Tudor Terrace, Aberdare. [6723

1915 6h.p. A.J.S. Combination, complete, Lucas lamps, horn, numbers, etc.; 80 gns.—Cross, Jeweller, Rotherham. [X5552

A.J.S., 1913½, Gloria sidecar, screen, hood, speedometer, 3 speeds, sound condition; £55.—Hughlock and Hindle, Empire Garage, Chorley. [6465

FOR SATISFACTORY VALUE

HAUCHOPE'S

ARE FIRST AND BEST.

The House with the Kingdom's largest stock of desirable Bargains, Newest Models, Best Makes, all offered on terms that defy competition, including complete guarantee and most liberal exchange offers for present mounts in part payment of new.

TO-DAY'S LIST INCLUDES THESE:

10005.	3½	h.p. 1915	**ROVER**, variable gear	£42 10
10007.	4½	h.p. 1915	3-sp. **JAMES** and S'car	£72 10
10008.	4½	h.p. 1915	3-sp. **QUADRANT** & Sc.	£85 0
10009.	4½	h.p. 1915	3-speed **JAMES**	£52 10
10012.	3½	h.p. 1914	3-speed **A.B.C.**	£47 10
10014.	7	h.p. 1914	**HENDEE** Special and Sidecar	£85 0
10020.	4	h.p. 1914	3-speed **TRIUMPH** ..	£45 0
10025.	8	h.p. 1915	3-sp. **BAT** and Sidecar	£65 0
10026.	7	h.p. 1915	3-speed **HARLEY-DAVIDSON** and S'car	£87 10
10027.	5	h.p. 1915	3-sp. **INDIAN** & S'car	£65 0
10028.	3½	h.p. 1914	Twin **ZENITH**	£32 10
10034.	2¾	h.p. 1915	Single-speed **NEW HUDSON**	£27 10
9803.	6	h.p. 1915	**ZENITH**, counter-shaft gear	£80 9 8
9861.	2½	h.p. 1915	2-sp. 2-str. **WOLF**	£32 11 9
9886.	2½	h.p. 1915	Single-sp. **ALLON** ...	£31 10
9902.	2½	h.p. 1915	2-sp. **WOLF-J.A.P.** .	£37 4
9911.	4½	h.p. 1915	2-sp. **BAT**	£60 7 6
9940.	2½	h.p. 1915	2-sp. **SUN-VILLIERS**	£35 9 6
9949.	3½	h.p. 1915	3-sp. **SUNBEAM**	£73 10
9966.	2¾	h.p. 1915	2-sp. **CALTHORPE-J.A.P.**	£36 15
9977.	4½	h.p. 1916	3-sp. **B.S.A.**, chain and belt drive	£62 0
9978.	6	h.p. 1916	**ENFIELD** Combinat'n	85 gns.
9997.	4½	h.p. 1913	3-sp. **QUADRANT** ...	£60 0
9998.	2½	h.p. 1915	2-sp. **ALLON**	£38 17
9974.	2½	h.p. 1915	2-sp. **DOUGLAS**	£47 10
9979.	1¾	h.p. 1914	**AUTO-WHEEL** and 3-sp. cycle	£12 10
9984.	4	h.p. 1914	3-sp. **TRIUMPH** & Sc.	£49 0
9984.	4½	h.p. 1915	3-sp. **B.S.A.** and S'car	£67 10
9987.	7	h.p. 1911	2-sp. **REX** and Sidecar	£35 0
9994.	2¾	h.p. 1915	2-sp. **DOUGLAS**	£46 10
9995.	4-5	h.p. 1913	3-sp. **HAZLEWOOD** and Sidecar	£45 0
9996.	2¾	h.p. 1915	3-sp. **DOUGLAS**	£48 0
10002.	2½	h.p. 1913	3-sp. **GRANDEX**	£22 10
10004.	2¾	h.p. 1915	2-sp. **CALTHORPE-J.A.P.**	£33 10
9938.	3½	h.p. 1915	3-sp. **SUNBEAM**	£67 10
9944.	3½	h.p. 1909	**TRIUMPH**	£22 10
9953.	2¾	h.p. 1915	2-sp. 2-stroke **TYLER**	£27 10
9958.	6	h.p. 1909	2-sp. **REX**	£28 10
9025.	3½	h.p. 1913	3-sp. **ROVER** Comb'n	£42 0
9931.	6	h.p. 1914	3-sp. **A.J.S.** & Sidecar	£73 10
9895.	6	h.p. 1915	3-sp. **NEW HUDSON** and 2-seater Sidecar	£57 10
9896.	3	h.p. 1913	2-sp. **ENFIELD**	£35 0
9837.	4½	h.p. 1913	3-sp. **JAMES** Comb. .	£45 0
9839.	3½	h.p. 1907	2-sp. **TRIUMPH** & Sc.	£22 10
9840.	3½	h.p. 1911	F.E. **TRIUMPH**	£28 0
9847.	4½	h.p. 1915	3-sp. **QUADRANT** and Sidecar	£87 10
9853.	6	h.p. 1914	**ENFIELD** Combinat'n	£67 10
9867.	2½	h.p. 2-sp.	**ENFIELD**	£26 0
9869.	7	h.p. 1915	T.T. Roadster **INDIAN**	£50 0
9772.	3½	h.p. 1914	3-sp. w.-c. **HUMBER**	£42 0

STUDY OUR LOWEST CASH PRICES AND EASY TERMS.

Wauchopes

9, Shoe Lane, Fleet St., London, E.C.

'Phone: 5777 Holborn. Wires: "Opincer, L'don."

OUR BOOKLET AND TO-DAY'S LIST SENT FREE TO ALL WHO ASK.

DEFENCE OF THE REALM ACT

Under the provisions of the above Act, advertisers requiring workmen, and whose business consists wholly or mainly of engineering or the productions of munitions of war, or substances required for the production thereof, and whose works are situated within 30 miles of London, must include in every such advertisement the words, "No person resident more than 10 miles away, or already engaged on Government work, will be engaged."

Advertisers whose works are situated more than 30 miles from London can only have their announcements inserted with the approval of the Board of Trade, who will allocate to each advertisement a box number, and collect and distribute to the advertiser all replies received. The necessary forms of application can be obtained from any Labour Exchange or from the offices of this paper, and each advertisement must contain a clear reference to the effect that no person already engaged on Government work need apply.

MOTOR CYCLES FOR SALE.

A.J.S.

A J S, late 1913, 6h.p. combination, Lucas head and rear lights, horn, Cowey speedometer, tools, spares, done 4,500; £52.—Kenworthy, Tithe Barn Rd., Stafford. [X5303

1915 4h.p. A.J.S., 3-speed, Stevens coachbuilt sidecar, 4½ months old, as new; £70, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0731

A.J.S. 1916 6h.p. Motor Cycle, actually in stock; £84.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0603

1915 6h.p. A.J.S. Combination, absolutely in stock; this luxurious outfit complete only costs £102/10; exchanges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X1485

6h.p. A.J.S., 1914, 3-speed countershaft gear and free engine, fitted with Gloria sidecar, fitted with Lucas lighting set, Lucas horn, rear light, tools, and spares, any severe trial given, mechanically sound, as new; 70 gns.; rare opportunity.—Wauchope's, 9, Shoe Lane, London. [X5457

Alldays.

ALLON, 1915, 2-stroke, new condition; £25.—Baxter, West Stockwith, Gainsborough [X5329

1916 Alldays-Alloo, 2-speed and clutch, absolutely in stock; £45.—Julian, Broad St., Reading. Biggest dealer in the South. Phone: 1024. [X0802

ALLONS, 2¾h.p., 2-speed models, £38/17; single-speed models, £31/10, best terms for cash, easy terms, or exchange.—Wauchope's, 9, Shoe Lane, London [X5456

1915 Allon 2-stroke, run 100 miles, perfect condition, complete Lucas lamp horn, etc.; £30, or nearest.—O. Whitehouse, Poplars, Bridgtown, Staffs [X5551

ALLONS, single-speed, 2-speed, and 2-speed clutch models actually in stock, deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [6778

Ariel.

1915 Ariel 5-6h.p. Combination, new August; cost £92, accept £75; owner enlisted.—Apply, Petch, Lythe, Whitby. [X5337

1912 3½h.p. Ariel Motor Cycle, just overhauled, new Dunlop belt; a bargain, £18.—W. Lewis, 31, Windmill St., Gravesend. [6709

ARIEL, 5-6h.p., 1914, coachbuilt sidecar, all accessories, very little used, just overhauled at Ariel works, perfect condition; cost £95, accept £65.—G. A. Lightfoot, Solicitor, Carlisle. [X5393

Arno.

SMART Arno Combination, 1914, 3½h.p., 3-speed, cane sidecar, well upholstered, lamp, horn, Sen-spray; 38 gns.—Railway Garage, Staines. [6960

Auto-Wheels.

1914 Auto-Wheel, little used, fast; 8 gns.—Seen Jenks, Garage, Bewdley. [6748

AUTO-WHEEL De Luxe; £15/15, 26/3 monthly.—Seen at 248, Bishopsgate, London. [6935

AUTO-WHEEL, 1914, in good order, new tyre; £8.—Rev. Sumner, Enmington Rectory, Thame. [X5518

1914 Auto-Wheel, Model de Luxe, B.S.A., perfect; £9/10.—Walbro Motor Co., Ely, Cambs. [X5425

Halifax Motor Exchange

68, HORTON ST. HALIFAX.

'Phone—766. Telegrams—" Perfection."

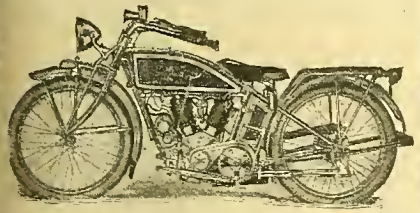
SOLO MACHINES.

New 1914-15 6 h.p. 2-speed **REX**, 650 × 65 Dunlops	£58 10
New **DIAMOND**, 2½ h.p., 2-stroke	£28 13
New 2¾ h.p. 2-speed **CONNAUGHT**	£39 18
New 2½ h.p. 2-speed **WOLF-J.A.P.**	£37 0
New 2½ h.p. **ROYAL RUBY**, 2-speed	£36 10
New 2½ h.p. 2-speed **RUBY-J.A.P.**	£39 10
1913 3½ h.p. **RUDGE** Multi	£34 10
1912 3½ h.p. Magneto **N.S.U.**	£23 10
1912 3½ h.p. 2-speed F.E. **BRADBURY**	£28 10
1912 2-sp. **SCOTT**, specially good	£31 10
2¾ h.p. 2-speed **DOUGLAS**	£28 10
8 h.p. 3-speed **CHATER-LEA**	£33 10
3½ h.p. Magneto **REX**, spring forks	£15 10
1910 3½ h.p. Tourist **TRIUMPH**	£22 10
KERRY, 3 h.p., magneto, Saxon forks	£12 10
5½ h.p. Magneto **REX**, spring forks	£15 10
M.M.C., 3 h.p., magneto	£11 10
N.S.U., Twin, 2-speed, spring forks	£16 10
REX, 3½ h.p., magneto, spring forks	£14 10
DOUGLAS, 2¾ h.p., Twin, spring forks	£16 10
SCOTT, w.-c., 2-speed chain drive	£22 10

EXCELSIOR.

THE GOOD OLD X

7 h.p., Twin, 84×89, mechanical and hand lubrication, kick starter, high-tension magneto, spring forks, 2-gallon petrol capacity, 3-speed countershaft gear, multiple-disc clutch with hand and foot control, handle-bar control, spring seat-pillar, 3in. non-skid tyre, finish Excelsior grey, every possible refinement incorporated.



STANDARD MODEL £62 0
With electrical equipment £71 10

Or with high-class coach-built Sidecar, fitted with 28 × 3 Dunlop non-skid tyre, **£13 10s.** extra. Exchange liberally considered.
We are sole Yorkshire distributers.
Yorkshire dealers supplied.

£145 RITZ LIGHT CAR. £145

The last word in light car values; 10 h.p., 4-cylinder, mechanical lubrication, electric horn and lighting, hood, screen, tools; luxuriously sprung, and a grand top gear car. Deliveries from stock.
Trial runs by appointment. Exchange liberally catered for.

SIDECAR COMBINATIONS.

1914 7-9 h.p. Twin **PREMIER**, chain drive, countershaft gear, coach Sidecar	£59 10
1914 6 h.p. **REX** Sidette, almost as new	£57 10
W.-C. **WILLIAMSON** and Sidecar (new)	£89 15
1912 3½ h.p. 2-speed Twin **PREMIER** and smart coach-built Sidecar	£34 10
1913 6 h.p. 2-speed F.E. **REX**, chain drive, smart coach Sidecar	£45 10
1913 **RUDGE MULTI** and Sidecar	£41 10
ROVER, 3½ h.p., 3-speed Combination	£43 10
1912 6 h.p. 2-speed **REX** and Sidecar	£34 10
1910 3½ h.p. 2-speed **REX** and Sidecar	£24 10
6 h.p. 2-speed **V.S.** and Sidecar	£23 10
Brand New 6 h.p. 2-speed **REX** Sidette	£69 10

MISCELLANEOUS.

New 1916 5-seater **OVERLAND**	£275 0
Sporting **MORGAN**, grand condition, screen, horn, lamp, and speedometer	£82 10
PREMIER, 7-9 h.p., 2-seated Car	£58 10
Cycle Car Front and Rear Axles and Wheels	£3 10
New Upholstered Sidecar Bodies	14/6, 15/6
Triumph Pattern Horns	5/9, 6/9
1914 Rex Coach Sidecar, as new	£8 15
Shop-soiled Coach Bramble Sidecar	£12 0
New Mechanical Horns. Special redueed price	15/11
Triumph Pattern Horns, new	5/11

MOTOR CYCLES FOR SALE.

Douglas.

DOUGLAS, model W, 1914, 2¾h.p., 2-speed, clutch, kick start, excellent condition; £40, or nearest offer.—Dr. Unsworth, North Rd., St. Helens. [X5548

DOUGLAS, 1913, 2-speed, semi-T.T., lamps and horn, perfect condition; £35. F. Halsey, 199, Uxbridge Rd., Mill End, Rickmansworth, Herts. [6825

DOUGLAS, 1912¾, 2¾h.p., 2-speed, clutch, footboards, T.T. bars, 2 brand new heavy Dunlop tyres, spares; £29.—15, Potter St., Bishop's Stortford, Herts. [6761

DOUGLAS, November, 1915, 3-speed, lamp, horn, practically new; owner received commission; £50, no offers.—Gibb, Gough, Douglas Depot, Gloucester. [X5532

DOUGLAS, latest all-black military models in stock; £54/12; exchanges or extended terms arranged. —Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0492

DOUGLAS, late 1912, 2¾h.p., 2-speed, F.E., tyres and tubes practically new, speedometer, all accessories.—Nichols, World's Fair, Old Cattle Market, Ipswich. [6711

DOUGLAS, late 1913, 2-speed model, kick-starter, speedometer, lamp, etc.; £35, or exchange combination, cash adjustment.—14, Griffiths Rd., Wimbledon. [6834

1914 Douglas, 2¾h.p., kick-start, clutch, 2-speed, P. and H. lamp set, Lucas horn, full kit, and spare belt; photograph; £40.—88, Baysham St., Hereford. [6941

DOUGLAS, 1914, T.T., 2-speed, Lucas black head light, tail lamp, horn, speedometer, new Clincher 2¼, spares, perfect; £42/10.—Rutter, Chemist, Sydenham. [6875

DOUGLAS, 1912, 2¾h.p., T.T., free engine, 2-speed gear, new front and rear lampe, all accessories, condition perfect; £28.—Lawton, 3, Castelnau Place, Barnes, S.W. [X5321

DOUGLAS Model U, 3-speed gear and free engine; £52/10; just arrived from works; immediate delivery.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [6739

DOUGLAS, late 1914, 2¾h.p., 2 speeds, kick starter, clutch, P. and H. lighting set, Lucas horn, pan saddle, all accessories, perfect condition; £41.—Red House, Sidcup. [6859

1913 T.T. Douglas, 2-speed, in good condition, 2 lamps, horn, generator, speedometer, tyres good, fast engine, Senspray carburetter; £32.—Turner, 223, High Rd., Kilburn, N.W. [6821

DOUGLAS Motor Cycle, 2¾h.p., new September, 1914, in good condition, and with complete accessories, property of officer on service; price £35.—Robbins, Honeystreet, near Pewsey. [6710

DOUGLAS Models U, TT, W, and War Office, delivered now, from £50/8 to £56/14; deferred payments arranged.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [6772

1914 Douglas, 2¾h.p., 2 speeds, T.T. bars, both lamps (front Lucas), new horn, new spare tube, Stewart speedometer, very little used; £43/10.—Long, 15, Westbourne Rd., Forest Hill. [6942

DOUGLAS, 2¾h.p., 1914½, model W, clutch, 2-speed, kick start, condition as new, only ridden 700 miles, tyres unpunctured, expensive accessories, full kit; £42. —Simpson, Legge Lane, Birmingham. [X5330

DOUGLAS.—We hold an actual stock of the latest models, including the famous military all-black. Send us your money and we will do the rest.—The Colmore Depot, 31, Renshaw St., Liverpool. [6479

1914¾ Douglas, T.T., 2¾h.p., 2-speed, free, Bosch, Amac, Watford speedometer, unpunctured heavy Dunlops, accessories, spare belt; £40, or nearest offer. —Pte. Taylor, Albert Place, Coggleshall. [6831

1914 T.T. Douglas, Amac carburetter, self-contained head lamp, tail lamp, separate generator, large gong, speedometer, etc., in excellent condition; £37/10.—Rex Mundy, 132, Gt. Portland St., W. [6620

DOUGLAS, 1915, model V, 2-speed, as list, with Lucas lamp, horn, and tail lamp, College mudshield with pockets, 2 months old, perfect condition; £45/10.—Robinson's Garage, Green St., Cambridge. [6864

LATE 1915 Douglas, 2¾h.p., model W, 3-speed, clutch, kick starter, horn, and tools, not done 50 miles, shop-soiled only; too high for owner; seen Bridgend, S. Wales; £54.—Box L158, *The Motor Cycle* Offices, 20, Tudor St., E.C. [6770

LATE 1912 Douglas, 2¾h.p. twin, 2-speed, P. and H. lamps, speedometer, spares, tools, etc., good condition, just overhauled, 1915 frame, mudguards, and spring forks just fitted, also new cylinder; what offers? —Nash, 72, South St., Bridport. [X5614

DOUGLAS Model U, £50/8; Douglas Model V, £50/8; War Office Model, £54/12; Douglas Model W, £56/14; Douglas Model X, £56/14.—Above models actually in stock at Sole Wholesale and Retail Midland Distributing Agents, Colmore Depot, 31, Colmore Row, Birmingham. [X2344

DOUGLAS, 1914, 2¾h.p., 2-speed model, with kick start and clutch, fitted with speedometer, separate generator, lamp, electric horn, rear light and tools, complete, and ready for the road, completely overhauled, sound as new; £37/10, guaranteed.—Wauchope's, 9, Shoe Lane, London. [X5462

1916 MODELS

ACTUALLY IN STOCK HERE:

1916 6 h.p. **ENFIELD** Combination 85 gns.
1916 6 h.p. **J H.** Combination.... 90 gns.
1916 5-6 h.p. **EXCELSIOR**, Sturmey countershaft 3-speed gear .. 68 gns.
1916 4½ h.p. **EXCELSIOR**, Sturmey countershaft 3-speed gear .. 64 gns.
1915 12 h.p. **TRUMBULL** Cycle Car, 4-cyl., water-cooled, detachable wheels, all on £120 0

SECOND-HAND BARGAINS.

3 h.p. **SINGER**, vertical, magneto ignition, P. & M. 2-speed gear, Druid spring forks	£10 0
1914 6 h.p. **ENFIELD** Combination	£60 0
1915 2-sp. 2-str. **NEW HUDSON**, done 500	28 gns.
1915 **B.S.A.** Combination, all chain drive	£83 0
3½ h.p. 1908 **REX**, M.O.V., Bosch, B & B carb.	£18 0
3½ h.p. 1909 **REX** de Luxe, 2-sp., handle st'g	£19 0
6 h.p. **ZENITH**, clutch model and Sidecar	£40 0

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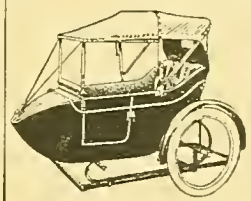
Built throughout in our own factory.

Farlow Sidecars have that pleasing style, exquisite finish, and lasting qualities which are the buyer's ideal.



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Underslung chassis with Luggage Carrier combined.
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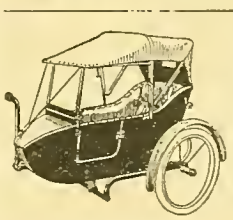

This is MODEL No. 1
A BEAUTIFUL LIGHT SIDECAR.
PRICE **9 Guineas.**
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Delivery from Stock.
Your Agent will supply

NEW MOTOR CYCLE FRAMES.
Fully Guaranteed.
25/- each.

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Latest mechanical horn, black and nickel	£1
Cowey Speedometer for 26 × 2½ wheel	£2
Cowey Speedometer for Morgan	£2 5
Set of Millers Cycle Car Lamps and Generator, new	£3
3 h.p. J.A.P. Air-cooled Eng., fine condition	12 gns.
Lukin Cycle Car Carburetter, new condition	15/-
Cox Cycle Car Carburetter	10/-
Spare Belt Carrier	3/6
Bosch Magneto, single-cylinder, new	£5 0
Bosch Magneto, twin-cylinder, new	£5 10

FARRAR'S MOTORS
(Telephone 919),
Hopwood Lane, HALIFAX.

MOTOR CYCLES FOR SALE.

Douglas.

DOUGLAS, 1913, 2¾h.p., 2-speed, clutch, kick starter, overhauled last month, now in perfect condition, both tyres new, Dunlops, also new Lucas King of the Road head light, generator, and tail lamp (black finish), Sparton horn; accept £35 cash; owner left for Front.—Lieut. J. Dunn, 4th Royal Dublin Fusiliers, Sittingbourne. [6696

LATE 1914 Douglas, 3½h.p., 2-speed, clutch, kick starter, only run 1,200 miles, speedometer, Klaxon horn, tool kit, spares, etc., starts like a car; owner foreign service; this fine model, which will easily take sidecar, is now almost unobtainable; cost £65, price £48, lowest.—Officer, Blenheim House, Brook St., Kingston-on-Thames. [X5517

Enfield.

ENFIELD 1916 Combination, just received; 80 gns.—Motor Mart, Eastbourne. [6897

1916 Enfield, 2-speed, 2-stroke, been ridden 10 miles; 35 gns.—Pitts, Redditch. [X5654

ENFIELD, 1916, 2-speed, 3h.p., kick starter, in stock; 50 gns.—Motor Mart, Eastbourne. [6898

LATE 1913 6h.p. Enfield Combination, splendid order and condition; £50.—Daisy Bank, Matlock. [X6398

ENFIELD, 2¼h.p., 1912, excellent condition; £14, nearest offer.—Downing, Mapperley, Derby. [X5415

ENFIELD Coach Combination, 6h.p., 1913, lamps, spare cover; £52.—10, High St., Mortlake. [6791

ENFIELD 2½h.p. Twin, single-speed, new carburetter, perfect order; £15.—Moorhouse, Joiner, Meltham. [6702

ENFIELD, 2¾h.p., kick start, 2 speeds; genuine bargain £18/10.—29, St. Ann's Rd., Willenhall. [X5485

ENFIELD, 1914, 3h.p., in good trim, nicely fitted, T.T. bars; £34.—Young's, 2 and 3, The Parade, Kilburn. [6951

ROYAL Enfields, 1916 models, including electric Model de Luxe, in stock.—Batchelor's, Clarence St., Kingston. [X5602

ENFIELD, latest 1916 model, 6h.p. Enfield combination in stock, immediate delivery.—Timberlake's Garage, Wigan. [X5267

1912 2¾h.p. Enfield, just been thoroughly overhauled, perfect condition; £16, or offers.—Jarmain, Harwich. [6918

ENFIELD, 1912, 2¾h.p. twin, fast on hills, good condition, accessories; £20.—Douglas, 2, Kemplay Rd., Hampstead. [6915

ENFIELD 1913 Combination, little used, lamps, horn, etc., tyres perfect; £45.—Kirkham, 33, Holdenhurst Av., North Finchley, N. [6768

1914 6h.p. Enfield Combination, speedometer, watch, lamps, etc., excellent condition; 65 gns.—Rev. Skinner Law, 138, Windmill Rd., Brentford, W. [6870

1912 6h.p. Enfield, special wide coachbuilt sidecar to seat 2, accessories, etc.: £45, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0722

ENFIELD 6h.p. Combination, latest pattern, 1916 model, complete; immediate delivery; 85 gns.—Sutherland Garage, Canterbury Terrace, Maida Vale, W. [0739

6h.p. Royal Enfield, with sidecar, 2 speeds, speedometer, and all accessories; can be seen by arrangement.—Williams, Gamon and Co., Kaleyards Works, Chester. [X5514

ENFIELD Combination, August, 1915, speedometer, lamps, etc., very little used, absolutely as new; genuine bargain, 70 gns.—31, Estella Av., New Malden, S.W. [6781

3h.p. Royal Enfield Twin, chain drive, 2-speed, kick start, lamp, horn, speedometer, thoroughly reliable; £35, or near offer.—Avey, Confectioner, Newport Rd., Stafford. [X5414

ENFIELD 6h.p. 1916 Combination, just arrived from works; immediate delivery; £89/5; make sure of this now.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [6741

ROYAL Enfield 1914 6h.p. Combination, 2 speeds, Palmers, lamps, tools, sidecar screen, etc., excellent condition; £63.—Write, Enfield, 72, Wolfington Rd., West Norwood. [X5589

ENFIELD 6h.p. Combination, late 1914, perfect condition, done 3,900 miles, Lucas lamps and horn, speedometer, numerous spares; £60.—Priestley, 9, Gaythorne Rd., Bradford. [6746

1916 Enfield Combination, just received from works; 84 gns.; immediate delivery for cash; exchanges or extended terms.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0607

ENFIELD, 1914, October, 3h.p., kick start, Cowey horn, backrest, P. and H., accessories, perfect condition, new Dunlop; £40; apply evenings.—3, Hillside Villas, Stonebridge Park, Harlesden. [6874

6h.p. 1913 Royal Enfield Combination, a nice reliable motor cycle and sidecar, with all accessories, complete; £50; guaranteed; any severe trial given; tuition free.—Wauchope's, 9, Shoe Lane, London. [X5463

1913 6h.p. Enfield, 2-speed clutch, handle-starting, 26×2½ Avon heavy tyres, Lucas 458 lamp, rear lamp, Jones trip speedometer with maximum hand, horn, Brooks saddle, with Enfield sidecar, art cane body, condition excellent; £45.—Robinson's Garage, Green St., Cambridge. [0613

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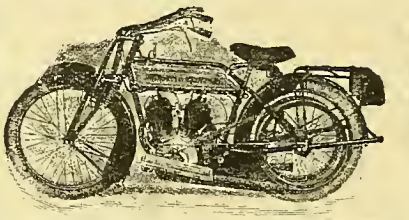
COLLIERS MOTORIES COLLIERS

HALIFAX.

7 h.p. (American) 1915 **EXCELSIOR** de Luxe, dynamo lighting, electric horn, speedometer, nearly new, not done 200 miles. **£69 10s.** for quick sale. (New price **£90.**)

FURTHER REDUCTIONS.

We offer a Brand New Latest Type (just delivered from makers) £65 6 h.p. 2-speed REX at 12½% discount. If you have no customer for your present machine, we give you this discount in addition to a liberal exchange allowance. With REX Coach-built Sidecar, £12 10s. extra. Why wait for deliveries or pay 5% to 33⅓% extra?



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SUNBEAM, 3½ h.p., 3-speed model	£72 10
ROYAL RUBY, 6 h.p. J.A.P., 3-speed	£87 0
ROYAL RUBY, 2½ h.p. J.A.P., 2-speed	£39 10
ROYAL RUBY, 2-stroke, 2-speed	£36 10
WILLIAMSON 3-speed CY-CL-CA	£120 0
OVERLAND 4-cylinder Touring Car, latest model, electric lighting, starter, etc.	£275 0
1916 Sporting **MORGAN,** M.A.G. engine, hood, screen, lamps, etc.	£111 13

CASH BARGAINS.

1915 6 h.p. Countershaft 3-speed **ROYAL RUBY-J.A.P.** and Bramble Sidecar, only done 100 miles	£79 10
1914 7-9 h.p. 2-speed **INDIAN,** fitted electric horn, lamps, and Swan Sidecar	£59 10
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1914 Sporting **MORGAN,** hood, screen, etc.	£82 10
15 h.p. 4-cylinder **RENO,** 5-seated Car	£65 0
1913 3½ h.p. **ROVER,** Grado gear	£27 10
1913 3½ h.p. **RUDGE** Multi	£36 10
1913 6 h.p. **ENFIELD** Combination	£53 10
1913 6 h.p. 2-speed **REX** and Sidecar	£44 10
1913 3½ h.p. 3-speed **TORPEDO-PRECISION** and Sidecar, special bargain	£29 10
1912 6 h.p. 2-speed **REX** and Sidecar	£37 10
1912 6 h.p. 2-speed Free-engine **REX**	£33 10
1912 3½ h.p. **N.S.U.** and Sidecar	£24 10
1912 3½ h.p. 2-speed **BRADBURY** and S'car	£32 10
P. & M., 3½ h.p., 2-speed, grand condition	£29 10
1912 (Nov.) **SCOTT** and Sidecar, extra good	£38 10
1912 3½ h.p. 2-speed **PREMIER** and Sidecar	£33 10
1911 2¾ h.p. 2-speed **DOUGLAS**	£23 10
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1910 3½ h.p. 2-speed **REX** and Sidecar	£24 10
1910 5-6 h.p. 2-speed **REX** and Sidecar	£26 10
MOTOSACOCHE, magneto, lightweight	£10 15
PEUGEOT, 5-6 h.p., 3 speeds, twin	£19 19
P. & M., 3½ h.p., 2-speed, and Sidecar	£24 10
N.S.U., 2-speed, F.E., twin, spring forks	£15 10
REX, 5½ h.p., twin, magneto, Tourist	£15 10
F.N., 4-cylinder, magneto, spring forks	£12 10
5½ h.p. F.E. Twin **REX,** specially good	£17 10
New **REX** Coach-built Sidecar, with apron	£12 10
KERRY, 6 h.p., Twin and Sidecar	£8 15
WILLIAMSON Sidecar, almost as new	£9 15

SPECIAL BARGAIN.

1913 3½ h.p. RUDGE MULTI, with excellent coach-built Sidecar, very powerful £35 10

Lists on application. Trade enquiries welcomed.

WE ARE CASH BUYERS OF DOUGLASES, MORGANS, AND LIGHT CARS.

MOTOR CYCLES FOR SALE.

Enfield.

ENFIELD 1913 6h.p. Combination, 2 lamps and generator, mirror, speedometer, watch, horn, spare tyre, tools, and sundry spares; a bargain, £44.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [6742

ROYAL Enfields, combination 85 gns., 2-stroke 40 gns., 3h.p. twin 50 gns.; all models actually in stock.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0571

ENFIELD Newest 1916 Combination, delivered from stock; also 1915, electrically equipped, hood and screen, £95, bargain; deferred payments arranged; strictest privacy observed.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [6774

1913 Enfield 6h.p. Combination, Lucas sets, Klaxon and bulb horns; the whole turnout is in new condition, and has been very little used; mileage under 3,000; price £50, or nearest.—Bromley Motor Works, Mason's Hill, Bromley, Kent. 'Phone 961. [6567

1914 Enfield Combination, complete with lamps, horn, speedometer, mirror, watch, sidecar complete with hood and screen, machine in splendid condition; this belonged to an officer, and has not been used since the commencement of the war, except for 7 days; £65.—Julian, Broad St., Reading. 'Phone: 1024. [X2347

ROYAL Enfield New Combinations, 6h.p., chain driven machines, fitted with handsome coachbuilt sidecar, countershaft gear and free engine, up-to-date turnout, complete with storm apron; 85 gns.; tuition free, and free delivery to any address within 50 miles of London; best terms for cash, exchange, or extended payments.—Wauchope's, 9, Shoe Lane, London. [X5464

Excelsior.

1915 American Excelsior, 7-9h.p., electrically equipped model, only done 500 miles, like new; £60.—Camm, Calderbank, Todmorden. [X5649

EXCELSIOR (Coventry), 1913 (late), 3½h.p., 3-speed, sidecar, speedometer, accessories, perfect; £35. 2-speed Douglas wanted. — 26, Norfolk Rd., Southampton. [6921

EXCELSIOR (American), 7-9h.p., deliver to-day of one 3-speed model; accept £63, great opportunity, usual price £80; cannot repeat.—Layton' Garage, Bicester, Oxon. [X5570

EXCELSIOR (American), 1913, 8-10h.p., clutch, Bosch waterproof, Schebler pilot, drip lubrication, adjustable tappets, Renold, Dunlop, spring seat-pillar, lamps, etc.; offers above £29; lightweight or cycle car exchange.—B., Clementson, Mossley, near Manchester. [6694

Forward.

2¾h.p. Twin-cyl. Forward, 3-speed gear model, a real little gem, economical and fast; £29, guaranteed.—Wauchope's, 9, Shoe Lane, London. [X5465

F.N.

F.N., 2¾h.p., seen running; great bargain, £5/15.—Speedbey, 45, Church Rd., Acton. [6973

F.N., 1913, 4-cyl., 2 speeds, and clutch, splendid condition; £30.—Earl, 5, Heath St., Hampstead. [X5604

£15.—F.N., 2¾h.p., 2 speeds, clutch, speedometer, tube, lamps; bargain.—J., 156, Gt. Portland St., W. [6925

F.N., 1¾h.p., mag., spring forks, excellent condition; £12.—Lightfoot, Higher Whitley, Northwich, Cheshire. [X5392

1912 4-cyl. F.N. Combination, 2 speeds, F.E., new tyres, new coachbuilt sidecar, all in first-class condition; £35.—Redlands, Cove Rd., Fleet. [6717

1913¾ F.N., 4-cyl., 5-6h.p., 2-speed, F.E., and torpedo undersling sidecar, combination fast, powerful, splendid condition, perfect; £34.—Rose, 5, Forester St., Canal Rd., Milend Rd., Bow. [6867

5-6h.p. 4-cyl. F.N., fitted with 2-speed gear and hand some coachbuilt sidecar, the combination complete with all accessories; 40 gns.; any severe trial given tuition free; guaranteed.—Wauchope's, 9, Shoe Lane London. [X5466

Green.

GREEN-PRECISION Water-cooled Motor Cycle, 3½ h.p., 3-speed gear, 1914 model, fitted with coach built sidecar; cost £78 sell £38.—35, Whittall St., Birmingham. [X5595

Harley-Davidson.

HARLEY-DAVIDSONS in Stock.—Premier Motor Co., Birmingham. [473

FREE of Import Duty.—Model 11F Harley-Davidson 7-9h.p., 3-speed; 65 gns.—The Premier Motor Co., Aston Rd., Birmingham. [695

HARLEY-DAVIDSON Combination, 7-9h.p., 191 model, brand new; £70 to clear.—Percy and Co., 337, Euston Rd., London. [690

HARLEY-DAVIDSON, electric model, soiled only biggest bargain of the week; £70.—Young's, and 3, The Parade, Kilburn. [675

HARLEY-DAVIDSON, 7-9h.p., 1914, speedometer 2-speed free engine; 50 gns.—Hastie, Motor Machine Guns, Bisley, Surrey. [692

HARLEY-DAVIDSON, 11F, new, just arrived, fitted with Swan sporting sidecar to match (if required) in stock.—Motor Mart, Eastbourne. [689

MOTOR CYCLES FOR SALE.

Norton.

NORTON, 3½h.p., semi T.T., 1914, fast, splendid condition; £28, nearest.—Gifford, Spalding. [X5660

NORTON, 3½h.p., T.T., August, 1915, speedometer, lamps and tools, perfect condition; £40.—Gibbon, R.F.C., Norwich. [6924

1916 3½h.p. 3-speed Norton, countershaft, 62 gns.; also several 1914 Nortons in stock; £48.—Parker and Son, St. Ives, Hunts. [6934

N.S.U.

5-6h.p. Twin N.S.U., 2-speed, free engine, Bosch mag., coachbuilt 2-seat. sidecar, tyres new; bargain, £26.—Scott, 37, Ashburnham Rd., Belvedere, Kent. [X6795

3½h.p. N.S.U. Motor Combination, recently overhauled, spring forks, 2-speed, free engine, also spare magneto and parts, value £25; will take £15.—Gawne, 15, Fairfield Rd., Warrington. [X5276

N.U.T.

1914 2¾h.p. Twin 3-speed N.U.T., only run 400 miles, perfect condition; owner going to Front; £40.—Box 9,680, *The Motor Cycle* Offices, Coventry. [X4932

O.K.

O.K., 1915, 2-speed, special clutch model, lamps, horn, etc., only used few weeks; owner enlisted; £31.—Motor Mart, Eastbourne. [6900

O.K. Junior, 1915, in splendid condition, very little used; 23 gns., great bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X2346

O.K. Junior, 2-speed, 1914½, condition as new, new tyres and belt; bargain, £21.—Edwin Hindle, 99, Princess Rd., Moss Side, Manchester. [X5648

O.K. Junior, 1914½, new condition, little used, complete accessories; £22.—Write or call, Doctor, 13, Leonard Place, Kensington Rd 'Phone: Western 226. [X5523

P. and M.

P. and M., 2-speed, tyres nearly new, good running order and condition; bargain, £24.—Moorhouse, Joiner, Meltham. [6701

1913 P. and M., 3½h.p., 2-speed gear, lamp and generator, speedometer, watch, horn, tube in case, perfect condition, only run about 5,000 miles; £45, or near.—Burch, Redclyffe, Worcester Rd., Sutton. [X5582

Peugeot.

6h.p. Peugeot Twin, Bosch mag., Mabon clutch (new), large wicker sidecar, speedometer, lamps.—Taylor 19, Upper Grove, South Norwood. [6728

Precision.

PRECISION, 2½h.p., perfect condition, overhauled by makers; £17.—Leighton Cycle and Motor Co., opposite Wood Green Station. [6904

PRECISION, 2¾h.p., Senspray, low build, £15; also A.C. cycle car, in good condition, £35.—37, Rosendale Rd., West Dulwich. [6827

PRECISION, 3¾h.p., Bosch mag., Amac carburetter, lightweight coachbuilt sidecar; £22.—The Premier Motor Co., Aston Rd., Birmingham. [6958

PRECISION, 4½h.p., built 1915, 2-speed, excellent condition, under 2,000 miles; £30, or near.—Seen at Channon's, Cycle Agent, High St., Sutton, Surrey. [6745

Premier.

PREMIER, 3½h.p., 1911-12 model, fine machine; great bargain, £17/10.—Speechley, 45, Church Rd., Acton. [6972

1913 Premier, 3½h.p., 3-speed, and sidecar, lamps, horn, speedometer, all in perfect condition; £38.—169a, Lower Clapton Rd., Clapton, N.E. [X5577

PREMIER, 1913, 3½h.p., fixed engine, lamp, etc., in perfect running order; property of officer at Front; £21, or near.—Smith, 24, Stanley Gardens, Belsize Park, N.W. [6817

PREMIER, 1914, 2½h.p., with 3-speed and free engine hub, a charming and almost new machine; cost £46/10, worth easily £36, accept £30.—Layton's Garage, Bicester, Oxon. [X5574

Puch.

1915 3h.p. Puch Lightweight, single-cyl., forced lubrication, enclosed Bosch, h.b.c., extra heavy non-skids, new May, originally £45, like new; bargain, £27/10.—Forrett, 58, Brondesbury Rd., Kilburn, N.W. [6877

Quadrant.

QUADRANT Cycle, 2¾h.p., Amac carburetter, climb any hill, excellent tyres; £7.—Keat, 56, Beresford Rd., N. [6783

1912 3½h.p. Quadrant Motor Cycle, in first-class condition; only £20.—F. E. Wootten, 55, High St., Oxford. [6852

1914 Quadrant, 4½h.p., 3-speed, in new condition, accessories; £35.—169a, Lower Clapton Rd., Clapton, N.E. [X5576

4½h.p. Quadrants, latest new 1916 models, chain-cum-belt transmission, B.S.A. 3-speed gear, free engine, and kick start; delivery from stock; price £60; exchange or easy terms.—Wauchope's, 9, Shoe Lane, London. [X5450

Radco.

RADCO, 1915, only ridden 100 miles; 19 gns.—Williams, Chapel Ash Depot, Wolverhampton. [X5503

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CALTHORPE, 2¾ h.p. J.A.P., 2-speed.
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RADCO, 2 broke, new condition, electrical equipped, head and rear lamps, mechanical horn, watch, aluminium footboard, heavy studded Michelin tyres, unpunctured, accessories; £26 10 18, Belle vue Gardens, Clapham Rd., Stockwell, S.W. [6805

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1913 3h.p. Rex, 3 speed, perfect; £18/10.—2, Stringer St., Leigh, Lancs. [X4971

REX 1913 6h.p. 2-speed Combination, speedometer; £45.—133, Back Hamlet, Ipswich. [X5551

REX, 3½h.p., accumulator ignition, splendid condition; £8.—A. Robert, Freeland Rd., Cobham, Surrey. [6864

REX 3½h.p. Combination, 2 speeds, mag., overhauled, many spares; £17/10 for quick sale.—4, Fendick Rd., Peckham, S.E. [6720

REX, bargain, 3½h.p., 2-speed, F.E. clutch, Bosch, Amac, Whittle, lamp, exceptional order, enamelled grey; 15 gns.—Railway Garage, Staines. [6962

REX, 3½h.p., C.A.V. mag., Bates, Palmer, adjustable pulley, fast, reliable; £9; exchange lower power.—Gibbard, Borough Buildings, Abingdon. [X5445

3½h.p. Rex Motor Cycle, spring forks, mag.; exchange for a good 2-stroke 2¾h.p., or sell £14/10, each adjustment.—137, Adnitt Rd., Northampton. [X5586

Rex-Jap.

BRAND New 1913 Rex-Jap, 2-speed, and free engine model, shop-soiled only; £45, if fitted with new Canoelet sidecar £55.—Wauchope's, 9, Shoe Lane, London. [X5454

1913-14 Rex-Jap 6h.p. Combination, 3 gn. Lucas lamp, speedometer, mirror, numerous spares, about 8,000 miles; £38.—Banister, 123, Askew Rd., Shepherd's Bush. [6945

Rover.

ROVER, 1912½, 3-speed, T.T., new tyre, 2 lamps, grand condition; £28.—110, High Rd., Kilburn. [6869

ROVER, 1912-13, 3½h.p., 3-speed, fully equipped, excellent condition; £30.—325, Bath Rd., Hounslow. [X5541

ROVER, 1914¾, 3 speeds, clutch, new tyres, like new; accept £39.—Taylor, Chemist, Holmwood, near Chesterfield. [X5336

1915 3½h.p. Rover Motor Cycle, countershaft gear, speedometer, lamps; best offer.—Thompson, 30, Orford St., Ipswich. [6697

ROVER, 1915, T.T., practically new; £45; comprehensive policy dated September included.—Binks, Benedict Sq., Lincoln. [6930

ROVER, 1913, 3½h.p., T.T., F.E., speedometer, lamps, horn, will do 60 m.p.h., absolutely perfect; £35.—Motor Mart, Eastbourne. [6899

ROVER, 3½h.p., 1914½, T.T., Philipson, with sporting C.B sidecar, condition as new; £45.—Britton, Glendale, Vesey Rd., Wylde Green, Birmingham [X5408

ROVER, 1913, 3-speed, and free engine model, fitted with a Rover coachbuilt sidecar; the combination complete, including accessories; 40 gns.—Wauchope's, 9, Shoe Lane, London. [X5468

1913 3½h.p. Rover Combination, with Sturmey-Archer 3-speed gear, in splendid condition, recently overhauled by makers.—Box 9,711, *The Motor Cycle* Offices, Coventry. [X5617

ROVER, 1913, 3-speed, free engine, Burbury coach-built sidecar, 3 lamps, wind screen, storm apron, and all accessories; £35, complete with spares.—Bowman, 46, Hardshaw St., St. Helen's. [X5407

ROVER.—Delivery from stock of 3½h.p. T.T. models, fitted with hand-controlled Philipson pulleys; £56; exchanges or extended terms. — Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0600

1915 Rover, fitted with variable gear pulley, T.T. roadster model, in condition good as new, Palmer tyres, and all accessories, etc., complete, 40 gns.; guaranteed; opportunity.—Wauchope's, 9, Shoe Lane, London. [X5469

ROVER, 3½h.p., 3-speed, free engine, speedometer, Lucas head and tail lights, done 4,800 miles, with new Montgomery sidecar; £37, complete; sell separately; any trial; owner on active service.—Apply, Thompson's Garage, Kirkby Stephen. [6758

ROVER, 1913¾, 3 speeds, coach sidecar, luggage carrier, Lucas lighting set and horn, electric sidecar lamp, Cowey trip, Dunlop tyres and belt as new, recently overhauled by makers, several spares; £42; would separate.—7, Vale Terrace, King's Rd., Chelsea, S.W. [X5616

Royal Ruby.

ROYAL Ruby, 1915, 2-stroke, in perfect order; 18 gns.—Percy and Co., 337, Euston Rd., London. [6905

1915 Royal Ruby, 2-speed gear, Dunlop tyres and belt, ridden 400 miles only, condition genuinely as new; £29/10.—Robinson's Garage, Green St., Cambridge. [6865

ROYAL Ruby, lady's model, 3½h.p. J.A.P., countershaft 2-speed, semi-automatic lubrication, just up from works; £38/5.—Hucklebridge, 133, Sloane St., London, S.W. [X5810

ROYAL Ruby, 1915½, 2½h.p., 2 speeds, free, kick starter, as new, done 100 miles, £30; also 2½h.p., fixed engine, 1915, done 300 miles, £24/10, nearest.—Gifford, Spalding. [X5662

MOTOR CYCLES FOR SALE.

Rudge.

RUDGE Multi, 3½h.p., late 1914, little used; £42.—26, Rivington Rd., Seacombe, Cheshire. [X5277

1913 Rudge, 3½h.p., clutch model; £20, great bargain.—169a, Lower Clapton Rd., Clapton, N.E. [X5578

T.T. Rudge, 1912, cylinder re-bored, new piston, re-bushed, clutch; £22.—Dr. Frith, Morley, Leeds. [X5501

RUDGE, 1913, N.S.U. 2-speed and F.E., Millford sidecar; £30, complete.—Walbro Motor Co., Ely, Cambs. [X5420

RUDGE Multi, 3½h.p., 1913, clutch, belt, case, horn, tools; nearest £33.—Apply before 6.30 p.m., 23, Sloane Sq., S.W. [6787

1912 3½h.p. Rudge, free engine; £27; cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0724

1913 Free Engine Rudge and wicker sidecar, grand condition; £30; would exchange lightweight.—W. Gilbert, Bilton, Rugby. [X5342

1913½ T.T. Rudge Multi, perfect condition, tyres and belt as new, lamps, etc.; £33.—Noble, 90, Kensington Gardens Sq., London, W. [X5544

RUDGE (1912), 4½h.p., free engine, 2-speed, newly overhauled, sidecar, accessories; offer.—Address, Rudge, Wm. Porteous and Co., Glasgow. [6707

RUDGE Multi, 1915, Isle of Man T.T. racer, large Lucas lamp set, horn, and rear light, speedometer, spares, etc., splendid order; bargain, £47/10.—Below.

RUDGE, 1913, 3½h.p., T.T. model, with Philipsou pulley, new extra heavy Dunlops; bargain, £27/10.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0479

WAR Bargain.—1912 3½h.p. Rudge and sidecar, F.E., in good condition, do 45 miles, and climb with 2; quick sale £22.—2, Cavendish Av., Finchley. [6729

RUDGE Multi, 1912-13, with sidecar, splendid order throughout, speedometer, lamps, horn, tools, etc.; bargain, £28/10.—Speechley, 45, Church Rd., Acton. [6971

RUDGE Multi, late 1913, little used, like new, absolutely perfect, very powerful, horn, speedometer, new Dunlops; £39; appointment.—Henry, 41, Onslow Gardens, Muswell Hill. [X5411

RUDGE Multi, 1915, Isle of Man model, Miller lamp, complete spare contact breaker, engine and tyres in excellent condition; £46, or reasonable offer.—Apply, Crompton, Woodhaven, St. George's Hill, Weybridge. [X5333

Scott.

SCOTT, 1913-14, cane sidecar, drip feed, all new chains, new tyre, very fine condition; £40.—268, Humberstone Rd., Leicester. [X5498

T.T. Scott, very fast, lamps, horn, speedometer, beautiful condition throughout; £26.—Lamb, 113, Bonnerhill Rd., Kingston. [6826

1914 Scott and Canoelet Sidecar, 2-speed, kick-start, lamps, horn, tools, etc., perfect; no reasonable offer refused.—Jarmain, Harwich. [6917

1914 Scott Combination, £16 coachbuilt sidecar and screen, perfect order, many accessories; 50 gns.; exchange T.T. Douglas and cash.—4, Queen's Row, Camberwell Gate, S.E. [6876

SCOTT, 1912-13, Binks carburetter, new Palmer tyres, lamp set, horn, rear light, Cowey speedometer, just overhauled, and in excellent condition, £33; also Millford wicker £10 sidecar, cheap.—Harding, 272, Slade Rd., Erdington. [X5488

1912 Scott and Millford sidecar, 1915 Binks, 75-85 m.p.g., large P. and H. head, and electric rear light, Dunlop combination and Palmer tyres, horn, tools, spares, excellent running order, do 45 m.p.h.; 33 gns.—Rev. Philpott, Arbury Rd., Nuneaton. [X4927

SCOTT Combination, latest model, 1915, fitted with Myers coach sidecar and cover, Lucas best lamp and horn, speedometer, watch, and mirror, very smart turnout, only month old; cost over £100, first cheque £72/10.—Farrington, Avonside, Evesham. [X5483

Sheffield Minor.

SHEFFIELD Minors.—Immediate delivery of this exceptionally fine 2½h.p. 2-stroke single-speed, 26 gns.; 2-speed, 33 gns., including 1916 improvements.—Colmore Depot, 31, Colmore Row, Birmingham. [X2340

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SINGER T.T., 1913, 4h.p., in splendid condition, very good climber; £28.—Mills, Furnisher, Colwyn Bay. [X5535

1914 4½h.p. Chain-driven Singer, Bramble combination, 2-speed, as new, room for child's seat, Lucas King lamps, horn, screen, speedometer, tools, etc.; £46, near offer, bargain.—16, Mitcham Rd., Tooting. [X5335

Sparkbrook.

NEW 2-stroke 2-speed Sparkbrook; no reasonable offer refused.—Williams, Bodolwyn, Bala. [X5275

SPARKBROOK, 2½h.p., 2-speed, 2-stroke; £40; actually in stock.—Exeter Motor Cycle and Light Car Co., Ltd., Bath Rd., Exeter, and 28, Tavistock Rd., Plymouth. [0569

1915 Sparkbrook Combination, 7h.p., splendid coach-built sidecar, wind screen, 3 lamps, and electric horn and tools, 2-speed, kick starter; cost £100 in July, not been ridden 300 miles; will take £85.—Collins, 84, Westmorland St., Barrow-in-Furness. [X5526

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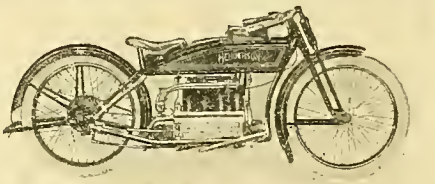

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1914	**CHATER-LEA** and Sidecar, 8 h.p.	£49
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1914 Sun-Villiers 2-stroke, fitted with lamp, horn, tools, etc.; £23.—F. E. Wootten, 55, High St., Oxford. [6847

1914 Sun-Villiers 2-stroke, go anywhere, accessories, owner enlisted; £20.—E., 79, Loughurst Rd., Lewisham. [6818

SUN-VILLIERS, 2-stroke, late 1914, countershaft 2-speed gear, P. and H. lamp, accessories, equal new; bargain, £25/10.—35, Whittall St., Birmingham. [X5596

SUN-VILLIERS, 1914 model, 2¾h.p., countershaft 2-speed, completely equipped, tyres practically unsoiled; £22.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [6800

SUN, V.T.S., 2¾h.p., 1915 T.T. model, 2 speeds, clutch, speedometer, watch, lamps, horn, tools, new Dunlops, B170 Brooks, speedy; £35.—119, Steelhouse Lane, Birmingham. [X5478

Sunbeam.

SUNBEAM, new 3½h.p., standard and T.T. models, actually in stock.—Moss, Wem. [X5587

SUNBEAM, 1916, 3½h.p., just delivered; £73 10.—Coldham, Sunbeam Agent, Northampton. [X5639

1916 3½h.p. Sunbeam, just arrived; 70 gns.; exchanges.—Dosser, Agent, Slingsby, Yorks. [X5495

SUNBEAM, latest 1916 model, 3½h.p., in stock, immediate delivery.—Timberlake's Garage, Wigan. [X5265

SUNBEAM, 1914, 3½h.p., 3-speed; £50.—Lieut. Llewellyn, Fort Cumberland, Eastney, Portsmouth. [6762

SUNBEAM, new August, 1915, and tyres not punctured; £60.—Basnett, Cross St., Cheadle, Staffs. [X5513

SUNBEAM, 2¾h.p. model, complete, only used 600 miles; bargain.—Timberlake's Garage, Wigan. [X5266

SUNBEAM, 2¾h.p., 2-speed, clutch, kick starter, equal to new; price £40.—23, Balby Rd., Doncaster. [6727

SUNBEAM, 2¾h.p., 2-speed, lamps, horn, etc., very little used, practically new; £52, or near offer.—Motor Mart, Easthourne. [6893

1915 3½h.p. Sunbeam, new August, with Grosvenor sidecar, Lucas horn and lamps, spare tyre and tube; 75 gns.—Dr. Pitt, Platt Bridge, Wigan. [6563

1914 6h.p. Sunbeam, Empress sidecar, with screen, 3 lamps, horn, and all spares, done 5,000 miles roughly; £68.—Nelson, 85, Corporation Rd., Newport, Mon. [X5647

SUNBEAM, 2¾h.p., late 1913, 2-speed, kick starter, h.b. clutch, excellent condition; £33, or part exchange 3½h.p. or 6h.p.—Firth, 27, Woodbridge Rd., Moseley, Warwickshire. [X5579

1916 3½h.p. Sunbeam, with the latest improvements, in stock, immediate delivery; exchanges entertained.—T.A.: Bicycles. Tel.: 388.—Robinson's Garage, Green St., Cambridge. [6867

SUNBEAM, 1914½, 3½h.p., Gloria sidecar, 3 lamps, 2 horns, speedometer, wind screen, cost £100, splendid condition, recently overhauled; offers.—Aspden, 6, Southport Rd., Chorley. [6802

SUNBEAM, 1915, 3½h.p., new 16 gn. Swan sidecar, Autoclipse lighting, Stewart speedometer, and mechanical horn, complete set tools; owner buying car; 70 gns.—Box 9,708, *The Motor Cycle* Offices, Coventry. [X5340

3½h.p. New Sunbeam, latest model, countershaft 3-speed gear, and chain drive, still in crate, just as delivered from makers, price 70 gns.; also a magnificent second-hand 1915 Sunbeam, 3-speed countershaft model, and chain drive, fitted with speedometer, lamp, horn, and tools, etc.; £67/10 cash; extended payments or exchange.—Wauchope's, 9, Shoe Lane, London. [X5455

T.D.C.

T.D.C., 2-stroke, 1915, electrical equipment; £20.—Shand, 14, Brandram Rd., Lee, S.E. [6751

Triumph.

1914 4h.p. Triumph, speedometer, lamps, tyre almost new; £34.—Stoner, Aylsham. [X5657

1907 Triumph, good order, new tyres and belt; £15, or near offer.—Howley, Devizes. [6810

3½h.p. Triumph, N.S.U., 2 speeds, and wicker sidecar; £27.—Cross, Jeweller, Rotherham. [X5554

TRIUMPH, 4h.p., late 1914, 3-speed gear, in very fine order, a beauty.—Bunting, Harrow. [6856

1911 Triumph, free engine, completely overhauled, with sidecar; 27 gns.—Yates, Sunningdale, Berks. [X5618

1912 Triumph, 3½h.p., free engine, very good condition; £28.—Wheelhouse, Albion St., South Wigston. [6703

1914 Triumph and C.B. sidecar, 2 Lucas lamps; owner enlisted; £65.—Couchive, Veterinary Surgeon, Bewdley. [X5324

1913 Triumph (new 1914), 3 speeds, full equipment, little used, almost as new; £40.—Dosser, Slingsby, Malton. [X5497

4h.p. 1914 Triumph, 1914 model, in nice condition throughout, fast machine; £45; also a 1907 Triumph and sidecar, £22/10.—Wauchope's, 9, Shoe Lane, London. [X5456

MOTOR CYCLES FOR SALE.

Triumph.

1915 Triumph Junior, little used, and in lovely condition; £36.—Crow Bros., 190, High St., Guildford. [6879

TRIUMPH, free engine model, Philipson pulley, accessories, splendid condition; £29.—G. Stevens, Cowley, Middlesex. [6749

3½h.p. Triumph, 1911, free engine, all parts in perfect order; £22/10.—Adams, 36, High St., Eton, Windsor. [X5606

1912 3½h.p. Triumph, excellent running order, tyres unpunctured; £20, or nearest.—Webster, Stanford-le-Hope, Essex. [6871

TRIUMPH, 3½h.p., 1912, free engine, lamp, horn, and spares; nearest offer £30.—Hucklebridge, 133, Sloane St., London, S.W. [X5511

TRIUMPH, 1910, in perfect order, new tyres, rebushed, all accessories; £20, bargain.—Holman Steddy, Birchington-on-Sea. [X5418

TRIUMPH, 1911, clutch model, wicker sidecar, lamps, and speedometer; £27/10.—81, Amersham Vale, New Cross, London. [X5619

TRIUMPH, 3½h.p., 1909, new outer covers and belt, lamp, horn, carrier, £11/10.—Marshall, Fairholme, Hyde Rd., Gorton, Manchester. [X5397

T.T. Triumph, 1913, 3-speed, splendid condition, practically new tyres, accessories; any examination; 36 gns.—Crookes, Kirkby Av., Ilkeston. [X5600

TRIUMPH, 1914, 4h.p., 3-speed, Bramble sidecar, speedometer, overhauled, perfect condition; £48.—Seen Stag Motor Works, East Finchley. [6854

LATE 1913 Triumph, 3-speed, clutch, Chater-Lea cane sidecar, spares; £43, or near offer.—Daniel, Sydney Arms, Holmshaw Rd., Sydenham. [6801

1912 T.T. 3½h.p. Triumph, N.S.U., 2-speed and free, tyres and belt like new, powerful and fast; 25 gns.—Turner, 12, Stratford St., Iffly Rd., Oxford. [6806

1913 3½h.p. 3-speed Triumph, with Canoelet coachbuilt sidecar; £50, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0734

1912 Triumph, F.E., Lucas lamp set, horn, rear light, engine just been re-bushed, practically new belt and tyres; £24.—Walbro Motor Co., Ely, Cambs. [X5421

1911 Free Engine Triumph, 1914 N.S.U. 2-speed, engine re-bushed, good condition, £24/10; without 2-speed £20.—Overton, Mason, Broadstairs, Kent. [6805

1913¾ T.T. Roadster F.E. Triumph, splendid condition, Philipson pulley, lamp set, Cowey, etc., new heavy Dunlop; £38.—Jackson, 8, Brock St., Lancaster. [6931

LATE 1913 3½h.p. Triumph, free engine, good tyres and belt, lamps, tools, spares, machine in new condition; price £27/10.—Horace Plommer, Sensalter, Whitstable. [X5348

TRIUMPH, late 1913, free engine, Philipsons pulley, 3½h.p., grand condition; £25; owner gone to Front.—Capt. A. K. Procter, 526th Coy., 62nd Divnl Train, Toft Green, York. [X5481

1913 3-speed Triumph, with brand new 17 gn. Gloria sidecar, luggage rail, all accessories, perfect; £50, cash or easy terms.—R. E. Jones (Garages), Ltd. Swansea, London, Cardiff. [0720

1914 3-speed Triumph, coachbuilt sidecar, speedometer, Philipson pulley, Lucas horn, lamp, practically new, only run 2,578 miles; cost £85, offers.—31, Market St., Tottington, Bury. [6940

TRIUMPH, 1914, Sturmey-Archer 3-speed, just overhauled by makers, new heavy Dunlop and tube on back, very little used, as new; offers.—Victor Wright 192, Albion Rd., Stoke Newington. [6700

TRIUMPH, 1912, 3½h.p., exceedingly fast, Cowey speedometer, Bosch mag., all absolutely A1 condition (as new), late owner engineer; real bargain, £33/10.—Lawley Villa, Albert Rd., Watford. [X5426

T.T. Triumph Racer, 1914, special competition engine, complete with tools, spares, A.K. knee-pads, F.R.S. lamp, Chanticler, fine condition; £36/10.—22 Muriel Rd., Christchurch Rd., Norwich. [6759

1914½ Triumph, 3 speeds, Canoelet sidecar, wind screen, luggage carrier, in first-class condition done only 3,500 miles; any trial; £55, no offers.—Willmore, 94, Midland Rd., Wellingborough. [X5557

TRIUMPH, 1914, 4h.p., late model, Sturmey-Archer 3-speed gear, and clutch, Lucas lamp set, tools complete, sound order; bargain, £39/10.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0597

TRIUMPH, 1913, 3-speed, and Millford coach, screen, hood, 3 lamps, speedometer, new Sunstone back, lot spares, excellent condition; £40.—Rowbotham, Deanhouse, Thongsbridge, Huddersfield. [X5608

TRIUMPH, 1913, 3½h.p., 3-speed, clutch, T.T. model, fitted electric head lamp and battery, speedometer, horn, etc., recently overhauled, in splendid condition; £37.—Stiby, 45, Old St., E.C., before 6 o'clock. 'Phone: 746 Holborn. [6949

TRIUMPH, 4h.p., 3-speed, clutch, with Millford sidecar, hood, screen, speedometer, horn, lamps, spare tubes, new back tyre, cost £93 November, 1914, perfect condition; owner bought car; sell 55 gns., no offers.—38, South View Av., Caversham, Reading. [6860

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"VALUE" COLUMN

In Motor Cycles there's VALUE of all sorts, but in EVANS' Stock there's only ONE—"Tip-top."

The keen buyer will note this, and take full advantage of EVANS' Free offer of exhaustive point-by-point comparisons.

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Controlling B'ham Agent:

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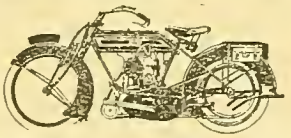
Also Agent for

Triumph, Calthorpe, Zenith, James.



ROVER, 3½ h.p., countershaft, 3-sp., £66 10

Note just a few Prices:—

INDIAN, 7 h.p., twin, road racer, clutch £65 0
INDIAN, 5 h.p., twin, 3 speed £70 0
INDIAN, 5 h.p., 3-speed, with Sidecar £84 0
INDIAN, 7 h.p., 3-speed, electric equipment £78 0
ROVER, 3½ h.p., T.T., with Philipson £58 0
ROVER, 3½ h.p., de Luxe Combination £84 7
ENFIELD, 2¾ h.p. 2 speed, 2 stroke 40 gns.
ENFIELD, 6 h.p., coach Combination ..... 85 gns.
A.J.S., 2¾ h.p., 3-speed, kick starter £58 0
A.J.S., 6 h.p., 3-speed, twin, and Sidecar £102 18
NORTON, 3½ h.p., T.T. £50 0
NORTON, 4 h.p., 3-speed, coach Combination £84 0
NEW IMPERIAL, 2¾ h.p., J.A.P., 2-speed ..... 35 gns.
CONNAUGHT, 2¾ 3h.p., standard £35 3
CALTHORPE, 2¾ h.p. J.A.P., 2-speed ..... 35 gns.
JAMES, 4¾ h.p., 3 speed, Big Single £68 5
JAMES, 2¾ h.p., 2 speed, 2-stroke £38 12 8

NEW 1916 MODELS
NOW ON VIEW.

Now, don't buy hastily, but first consult EVANS for Free Trial Trip on the mount you fancy most. Exchanges arranged. Immediate or Early Deliveries.

P. J. EVANS,
87-91, John Bright Street,
BIRMINGHAM.
'Phone: Mid 662. Wire: "Lytcar, B'ham."

MOTOR CYCLES FOR SALE.

Triumph.

TRIUMPH, 1913, 3½h.p., 2-speed, and Gloria side car, with luggage rail, in excellent condition, new extra heavy Dunlop on back, Avon on front and sidecar, hood and rear light, horn, new Dunlop belt, £40 cash.—Lt. Green, 55, Cardington St., London, N.W. [6715

TRIUMPH, 1913, 3 speed magnificent £17 1915 Gloria coachbuilt sidecar, absolutely all new and uncratched, luggage grid, tyres in splendid condition, speedometer, head and tail lamps, horn, etc., whole outfit in magnificent condition and one of the smartest and most luxurious on the road, cost over £83, accept for quick sale 45 gns.—Julian, Broad St., Reading. 'Phone: 1024. [X5143

Torpedo.

1914 Torpedo, 2¾h.p. Precision, re-bushed, Bosch, Sensspray, accessories, good solo mount; £20.—Pte. Taylor, Albert Place, Coggeshall, Essex. [6832

Velocette.

VELOCETTE, immediate delivery; model D, 2¼h.p., 2-speed, £35/10; model A, £28; the most economical lightweight.—The Premier Motor Co., Aston Rd., Birmingham. [4399

NEW Velocette, economical lightweight, immediate delivery from stock, model D, 2-speed countershaft, £34; new and second-hand cycles.—Williams and Edwards, Llantechell, Rhosgoch. [6403

Victoria.

VICTORIA Precision, 1913, 3½h.p., fixed engine, Bosch mag., B. and B. carburetter, new cylinder, belt, and tyres, perfect; £22.—Tooms, Durham Rd., Ferryhill. [X5268

Williamson.

WILLIAMSON Combination, complete, with £12 accessories, new condition, had little running; only reasonable offers entertained.—Whiting, Rectory, Hunslope, Stony Stratford. [6721

1914 Williamson, water-cooled, special sidecar, hood, and screen, combination in splendid order and condition, speedometer, many refinements; price £68.—Kitson, King St., Glasgow. [X5540

WILLIAMSON, late 1913, 8h.p., W.C., 2-seat sidecar, hood, screen, Cowey, brass lamps, horn, etc., new tyres, splendid condition; trial; £65.—Rogers, 2, Uxbridge Rd., Hampton, Middlesex. [6794

Wolf.

WOLF, 2¾h.p., 1916 model, just delivered, 2-speed, 2-stroke, kick-starter, hand-controlled clutch; £36/19/6; exchanges or deferred payments.—Eagles and Co., High St., Acton, W. [5563

1914 3½h.p. Wolf-Jap, with coachbuilt sidecar, chain drive, Jardine countershaft gear, just overhauled and re-enamelled; £40, or lightweight part exchange.—22, London Rd., Tunbridge Wells. [6828

2½h.p. Wolf Models, 1915.—Delivery from stock of 2½h.p. J.A.P. engine, 2-speed gear, £37/4; 2-stroke 2-speed models, £32/11/9; single speed models, £25/6/3; cash or extended payments.—Wauchope's, 9, Shoe Lane, London. [X5470

Zenith.

ZENITH-GRADUA, 3½h.p.; bargain, £27.—Otterway, Prince Alfred, Egham. [6926

ZENITH, 1912½, 4h.p., overhauled; £25; accessories; owner enlisted.—Poole, 129, Copenhagen St., King's Cross. [6886

ZENITH, 1912-13, 3½h.p., excellent order, guaranteed throughout; £28.—Young's, 2 and 3, The Parade, Kilburn. [6952

1913-14 4h.p. Zenith, Gradua gear, new 14 gn. sidecar, beautiful combination; sacrifice 55 gns.—Alfred Proctor, Chepstow. [X4917

ZENITH Combination, 1915, 6h.p., countershaft, guaranteed as new, fully equipped; £65.—Percy and Co., 337, Euston Rd., London. [6909

ZENITH, 1916, 8h.p., model F and Empress sidecar, £104/6; deferred payments arranged; strictest privacy observed.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [6776

ZENITH, 6h.p., 1915, 3 weeks old, countershaft, speedometer, fully equipped, D.A. cylinder, guaranteed indistinguishable from new; £60.—Percy and Co., 337, Euston Rd., London. [6910

ZENITH-GRADUA, J.A.P. 6h.p. twin, 1912, Binks 1915 3-jet carburetter, Montgomery wicker sidecar, fast machine, and in splendid running order; bargain, £33.—Box 9,714, *The Motor Cycle* Offices, Coventry. [X5492

1914 8h.p. Zenith-Gradua, countershaft, clutch, with 20 gn. Bramble coachbuilt sidecar, wind screen, storm apron, lamps, horn, spares, tools, 2 belts, excellent order; any trial; £65.—Leney, Chilham, Kent. [6857

NEW 1915 Zeniths from stock; 6h.p. and 4-5h.p. countershaft free engine and kick start models; cash, exchange, and easy terms arranged. When dealing with Wauchope's your orders are assured to come satisfactorily through. Wauchope's are the oldest motor cycle dealers, and have a reputation for fair dealing.—Wauchope's, 9, Shoe Lane, London (by Ludgate Circus, City). [X5471

MOTOR CYCLES FOR SALE.

Zenith.

ZENITH-GRADUA, latest 1916 models, just received, 4-5h.p. twin, countershaft gear, clutch, and kick-starter; model D 64 gns., 6h.p. model F 73 gns., 8h.p. model H 74 gns., plus 5% increase; exchanges or extended terms arranged.—Below.

ZENITH-GRADUA, 1914, 8h.p., countershaft model, clutch, and kick-starter, Millford coach sidecar, wind screen, large head lamp, speedometer, electric rear light, splendid bargain, £67/10; also a 1914 6h.p. countershaft model, complete with all accessories, solo at £42/10.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0491

Ladies' Machines.

SINGER, 2¾h.p., free engine, countershaft gear, new condition; £42.—Coldham, Singer Agent, Northampton. [X5638

LADY'S Douglas, 1914, 2-speed, clutch model, perfect, done 1,000 miles, accessories; £42.—11, Carlyle Rd., Addiscombe. [X5302

Miscellaneous.

EAGLES.—Bat-Jap, 8h.p. twin, 1912, 2-speed, free engine, coachbuilt sidecar; £33/10.

EAGLES.—N.S.U., 3½h.p., model de luxe, 1913, spring frame, 2-speed gear, free engine; £27/10.

EAGLES.—Calthorpe, 1915, 2¼h.p., 2-stroke model, 2-speed gear, variable mag. control, only used 250 miles, as new; £28/10.

EAGLES.—N.S.U. 3½h.p. Popular, dropped rear frame, T.T. handle-bars, thoroughly overhauled; £16/10.

EAGLES.—Douglas, 2¾h.p., late 1914, 2 speeds, new condition, with accessories; £40.

EAGLES.—Any of the above can be had on approval, *The Motor Cycle* deposit system.—Eagles and Co., High St., Acton. Tel.: 556 Chiswick. [X5564

PALMER'S Garage, Tooting.—The pre-eminent place for purchasing. Auction sales fortnightly.

PALMER'S Garage, Tooting.—Write at once for illustrated dual catalogue, 500 bargains.

PALMER'S Garage, Tooting.—3½h.p. 1915 T.T. Rudge, 60 m.p.h. machine; £45.

PALMER'S Garage, Tooting.—2¾h.p. 1915 Royal Enfield, 2-stroke, 2-speed countershaft; £32/10.

PALMER'S Garage, Tooting.—3½h.p. Triumph, with Gradu gear; great bargain, £18.

PALMER'S Garage, Tooting.—5-6h.p. modern F.N., 2-speed, clutch, as new, £30; also 4½h.p. F.N., £12/10.

PALMER'S Garage, Tooting.—2¾h.p. Premier 1914 lightweight, splendid condition, as new; £20.

PALMER'S Garage, Tooting.—2¼h.p. Campion, 1914, 2 speeds, as new; £17/10.

PALMER'S Garage, Tooting.—5-6h.p. Clyno and sidecar, 2 speeds, clutch; £32/10.

PALMER'S Garage, Tooting.—2¾h.p. Douglas, 1913, T.T., 2 speeds, fast; £32/10.

PALMER'S Garage, Tooting.—3½h.p. Brown, £10; 2½h.p. F.N., £10; 2¾h.p. Ariel, £5; 2¼h.p. Werner, £4; 2½h.p. J.A.P., £10; 3h.p. N.S.U., £8; 6h.p. Zenith, £30; 3½h.p. Triumph, £12/10; 4h.p. Bradbury, £18; 2h.p. Humber lightweight, £16; 4½h.p. F.N. and sidecar, 2 speeds, £25.

PALMER'S Garage, Tooting.—Great bargain, 4h.p. Zenith, J.A.P. engine, m.o.v., Gradna gear; £15.

PALMER'S Garage, Tooting.—3½h.p. Humber and sidecar, 2 speeds, clutch; £20. [6913

IF You Want Bargains in second-hand motor cycles you can get them at Wauchope's, 9, Shoe Lane, Fleet St., London. [5624

1913 Scott, perfect condition, £34; 1914 Rover, with sidecar, £48.—London and Thames Motor Co., Kingston-on-Thames. [6712

LONGMAN Bros., 1, King St., Acton, W. 'Phone: 1578 Chiswick.—Before making your choice of a machine compare our machines and prices. Exchanges, etc.

LONGMAN Bros.—Zenith, 1914 (late), 3½h.p. twin, with canoelet sidecar, magnificently equipped; £45.

LONGMAN Bros.—Premier, 1913, 2½h.p., 3-speed, clutch, as new; £20.

LONGMAN Bros.—Calthorpe-Jap, 2¼h.p., 2-speed, 1915; cost £40 10 months ago; £27.

LONGMAN Bros.—Two 1912 Triumphs, one special machine £30, other £28, with Middleton sidecar, clutch models.

LONGMAN Bros.—Cheapest machines in London. [6881

IF You Require a really good second-hand motor cycle it will pay you to send us your requirements. We have a good selection to offer at the right price.—The Morris Garages, Oxford. [0314

SCRIPPS-BOOTH Car, month old, electric starter and lighting, 5 detachable wheels, unpunctured, complete in every respect; £235, bargain.—G., 12, Northumberland Rd., Coventry.

MUST Clear; last bargains.—6h.p. 4-cyl. bicycle, m.o.v., clutch, chain drive, battery ignition, £10; 1911 3½h.p. Humber, 2-speed, handle starting, £17/10; 1912 ditto Humber, £22/10; sidecar, 35/-, no offers.—Please call, Liquidator, 10c, Waylett Place, West Norwood. (See Cycle Cars.) [X5641

THE DEPENDABLE FIRM.

The SERVICE Co., Ltd.

New Motor Cycles Delivered at once from Stock, for best CASH, EASY EXTENDED PAYMENT, or on liberal EXCHANGE TERMS.

ALLON, 2¾ h.p., 2-speed	£39	18
CONNAUGHT Miniature, 2½ h.p., 2-st.	£26	5*
CONNAUGHT Standard, 2-speed	£33	10*
ENFIELD, 3 h.p., twin	£52	10
ENFIELD, 6 h.p. Combination	£89	5
COVENTRY EAGLE, 2½ h.p., 2-stroke	£29	8*
ENFIELD, 2-stroke, 2-speed	£39	18
AMERICAN EXCELSIOR, 7-9 h.p., 3-speed, clutch, and kick starter	£80	0
Ditto, with dynamo lighting set, electric horn, and speedometer	£90	0
B.S.A., Model K	£62	0
JAMES, 3½ h.p., twin, 2-speed	£63	0
JAMES, 4½ h.p., 3-sp. Combination	£76	13*
WOLF, 2¾ h.p., 2-stroke, 2-speed, clutch, and kick starter	£33	12*
NEW IMPERIAL-J.A.P., 2½ h.p., 2-sp.	£36	15
O.K. Junior, Mark III., 2-speed	£31	10*
J.H., 2½ h.p., 2-stroke, 2-speed	£35	14*
BLACKBURNE, 3½ h.p., 3-sp., Sturmey-Archer countershaft gear, footboards	£67	9
METRO, lady's model, 3-speed, 2-str.	£36	10
ROYAL RUBY, 2½ h.p., 2-str., 2-sp.	£36	10
QUADRANT Combination, 4 h.p., 3-speed countershaft	£72	10
SUN-V.T.S., 2-stroke, 2-speed	£35	14
SERVICE, 2½ h.p. Peco engine, 2-sp.	£34	13
SERVICE, 2-stroke, 2¾-3 h.p., 2-sp., Sidecarette	£50	0*
ZENITH, 4-5 h.p. countershaft mod., with Gradua gear	£73	18
IVY, 2½ h.p., 2-stroke	£29	14
IVY, 2½ h.p., 2-speed model	£36	17

*Subject to makers' surcharge 5%.

SECOND-HAND MOTOR CYCLES for Cash or Extended Payments.

Stock No.	Specification.	Price.
134.	**MOTO-REVE,** 2 h.p., twin-cyl., magneto, spring forks, etc.	£10 0
690.	**HUMBER,** 1911, 3½ h.p., 2-sp., handle starting, with wicker side-entrance Sidecar	£27 0
537.	**SERVICE,** 1915, 2¾-3 h.p. 2-sp., countershaft, soiled only	£37 10
686.	**EXCELSIOR,** 2-stroke, 1915, 2¾ h.p., with 2-speed gear and clutch	£35 0
704.	**TRIUMPH,** 3½ h.p. (late 1912), 3-speed gear and clutch, new tyres	£32 10
650.	**CLYNO,** 1913, 6 h.p., 3 speeds and kick starter, with No. 6 Sidecar, spare wheel	£55 0

289-292, HIGH HOLBORN, LONDON, W.C.

'Phone: 260 Central. Wires: "Admittedly."

SOLE LONDON AGENTS FOR BROUGH, CONNAUGHT, CLYNO, & METRO MOTOR CYCLES. EMPIRE, MILLFORD, HERCULES, WATSONIAN & CANOELET Sidecars IN STOCK.

MOTOR CYCLES FOR SALE.

Miscellaneous.

WANDSWORTH Motor Exchange, London's leading motor cycle firm; greatest bargains ever known; exchanges.

WANDSWORTH.—Clyno, 1915, 2½h.p., 2-stroke, mag., little used, mostly soiled; £32/10; exchanges.

WANDSWORTH.—Hobart, brand new, 2½h.p., 2-stroke, just delivered from works; 28 gns.; exchanges.

WANDSWORTH.—Rudge, 1915, new, 3½-4h.p., mag., 3 speeds, magnificent machine; £52/10; exchanges.

WANDSWORTH.—American Excelsior 1914½ coach combination, 7h.p., 2 speeds, speedometer; £58/10; exchanges.

WANDSWORTH.—Williamson 1914 coach combination, 8h.p., Bosch, water-cooled, Cowey; £59 10; exchanges.

WANDSWORTH.—Indian 1914 combination 7h.p. Bosch, 2 speeds, speedometer, beauty; £58/10; exchanges.

WANDSWORTH.—F.N., 1913, red, 5-6h.p., Bosch, 2 speeds, fine machine; offers; exchanges.

WANDSWORTH.—Humber, 1913, 3½h.p., mag., 2 speeds, beautiful order; cheap, £32/10; exchanges.

WANDSWORTH.—Sunbeam, 1915, new, 3½-4h.p., mag., 3 speeds, countershaft; offers; exchanges.

WANDSWORTH.—Bradbury coach combination, 4h.p., Bosch, 2 speeds, nice order; £32/10; exchanges

WANDSWORTH.—Premier, 1914-15, 3½-4h.p., mag., 3 speeds, kick, nearly new; 38 gns.; exchanges.

WANDSWORTH.—Sun-Villiers 1915 2-stroke, mag., only soiled; bargain, £25/10; exchanges.

WANDSWORTH.—James 1915 2-stroke, mag., 2 speeds, Cowey, as new; £36/10; exchanges.

WANDSWORTH.—Rover, 1914, 3½-4h.p., mag., 3 speeds, clutch, beautiful order; offers; exchanges.

WANDSWORTH.—Abingdon, 1915, 3½-4h.p., mag., only ridden few miles; sacrifice, £28/10; exchanges.

WANDSWORTH.—Lady's Hobart, 1913, 2½h.p., Bosch, 3 speeds, practically new; £23/10; exchanges.

WANDSWORTH.—Humber, 1913, 2½h.p., mag., only wants seeing; cheap, £17/10, exchanges.

WANDSWORTH.—F.N., 1912, 5-6h.p., with sidecar, multi clutch, speedometer; gift, £26/10; exchanges.

WANDSWORTH.—Easy terms.—Wandsworth Motor Exchange, Ebner St., Wandsworth Town Station. 'Phone: Battersea 327. [X5659

MORGAN and Maxwell, the London Motor Mart, 80, High Rd., Streatham, London, offer the following amongst many other bargains:

M. and M.—A.C. Sociable, 6h.p., mag., hood, screen; £30.

M. and M.—Bat-Jap, 3½h.p., Bosch; £16.

M. and M.—Bat, 5-6h.p., 1914, 3 speeds, chain-combelt, as new; £50.

M. and M.—Bradbury, 1913, 3 speeds; £25.

M. and M.—Two Clynos, 2½h.p., 1914; cheap.

M. and M.—Imperial-Jap, 2½h.p., 1915, as new; £38.

M. and M.—Matchless-Jap, 3½h.p., Mabon; £18.

M. and M.—Moto Reve 2¼h.p. Lightweight; £10.

M. and M.—N.S.U. 3h.p. Twin, 1912, Gradua gear, lamps, etc.; £17.

M. and M.—Royal Enfield, late 1914, 6h.p., combination, lamps, etc.; £62.

M. and M.—Sun-Precision, late 1913, 2½h.p.; £18.

M. and M.—Triumph, 1909, 2 speeds, sidecar, lamps, etc.; £30.

M. and M.—Triumph, late 1912, and sidecar, 3 speeds, £34; also several Triumphs.

M. and M.—Wall cycle car, 2-seat., 1913; offers

M. and M.—Win-Precision, 3½h.p., fine order; £24.

M. and M.—Wooler, 1915, 2¾h.p., 2-stroke, as new, variable gear, patent springing, etc.; £40.

MORGAN and Maxwell have also a 1915 American Excelsior, a 1912 3-speed Rover, a 1914 Triumph, and many others; over 100 in stock. Cheapest and best in Great Britain. Write or call immediately.—The London Motor Mart, 80, High Rd., Streatham, London. [X5592

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ESTABLISHED IN 1903
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SOUTH AFRICA—Central News Agency, Ltd. PARIS—Smith's English Library, 248 Rue Rivoli.

Fittings on American Motor Cycles.

THE American nation has a reputation for smartness, but the American manufacturers who are endeavouring to obtain a footing in this country seem extremely loth to conform to Britishers' ideas. These remarks do not so much apply to the larger firms, who are endeavouring to meet the wants of the British motor cyclist, but certain of the newcomers are somewhat slow in realising how our tastes differ from those of the American. Almost without exception, the motor cycles which come from the United States are provided with filler caps of a size which was heartily condemned on all sides over here four or five years ago. Another favourite error is practically to ignore the existence of the sidecar. The sidecar has not yet attained in the United States anything like the popularity which it enjoys in this country, and perhaps this accounts for the fact that many twin-cylinder machines are sent over here with 3½ to 1 gears for sidecar work. The hand-controlled clutch is satisfactory as far as it goes, but surely it would be very much better to control the clutch by means of a Bowden lever on the handle-bar, a method which does not necessitate the driver removing his hand from one of the handle-bar grips. There are many points which we greatly admire in American motor cycles; for instance, the mechanical system of lubrication, which practically relieves the driver of any anxiety or worries on this score; the excellent steering, and carburetters giving wonderful controllability; but points such as those we have mentioned above certainly need attention. The handle-bar twist control is exceedingly fascinating to those who are accustomed to it, but we are quite sure that the English rider, if given the choice, would infinitely prefer the handle-bar lever. We are well aware that in large factories where everything is standardised, any alteration entails a certain amount of expense, but when a foreigner wishes to popularise his products in a strange country he must be prepared to make some small sacrifice to suit the whims and fancies of its inhabitants.

Cooling Valve Caps.

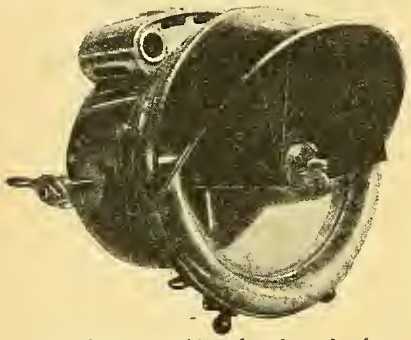
IN the attempt to extract the maximum amount of power from an air-cooled engine, such points as solid masses of metal as are contained in the valve cap must receive attention in the matter of cooling, and it is really surprising that designers have not already standardised some form of cooling for valve caps, as the plain metal must be a point at which heat is harboured to the detriment of the plug which it holds, and the valves directly below. When Tourist Trophy Races and other strenuous tests are on the *tapis*, it is quite usual to see valve caps fitted with a cooling tower composed of a hollow rod with radiating fins to dissipate the heat, and it is usual for fitments which have been proved to be efficient in the races to be adopted subsequently on touring mounts, but so far as a valve cap cooling device is concerned, nothing has been done. Confident in the belief that an improvement in the running and a prolongation of the life of plugs and valves would result as a consequence of efficiently cooling the valve cap, we have collected together and published in this issue illustrations of the different valve cap cooling devices which have so far seen the light of day. Finally, as is usual in discussing such problems, we may turn to the experience of car and aero engine manufacturers, where it has been found that by adopting a water-cooled cylinder head, minus valve caps, the plugs which are contained in the cylinder head, and consequently efficiently water-cooled, give no trouble at all. Valve troubles, too, are practically unknown. Improvement in running can directly be ascribed to the complete and even cooling of the hottest parts of the engine, viz., the cylinder heads, by the elimination of valve caps

An Index to the advertisements in this issue will be found on the page facing the back cover

AMONG THE ACCESSORIES.

AN INGENIOUS LIGHT DIMMING METHOD.

A SOUND device for reducing the glare of a head light has lately been brought out by the Simplex Lamp Dimmer Co., 52, Gray's Inn Road, W.C. It consists of a small threaded spindle, provided with a substantial boss, which is fixed by means of cement to the centre of the front glass



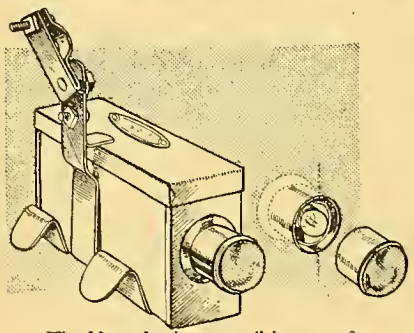
Lamp dimmer working after the style of a lady's fan.

of the lamp. Several segments of mica are next placed in position, the whole being held by a wing nut and washer.

The lamp is shown with the light half dimmed. When it is desired to use practically the whole power of the lamp, the segments are closed up together and placed in a vertical position by undoing the wing nut. Any degree of light can be obtained, or, if it be desired, the segments can be placed in such a position that the whole front glass is obscured. The idea is good, and the outfit is sold complete with cement for sticking on the central spindle, cotton-wool for cleaning the glass, and full instructions for fitting and finding the centre of the front glass. It is suitable for almost any lamp.

A BATTERY TAIL LAMP.

WE illustrate herewith an ingenious dry battery and tail lamp sold by A. H. Hunt, 115, Cannon Street, E.C. The two hooks in the casing are designed to fit on to the



The Hunt dry battery tail lamp outfit.

chain stays, while one clamp fits round one of the back forks. The little bulb holder, if turned to the right, acts as a switch, and switches on the lamp. It will be noticed that the cover may be removed and the lamp used for inspection purposes, as by undoing one screw it can be easily detached from its bracket. The lamp is certainly ideal for use by riders who use their machines for short night runs.

GROSE SPECIALITIES.

THERE have been numerous pillion seats introduced upon the market of recent years, but we have seen few more ingenious than that lately brought out by James Grose, Ltd., 4, Old Jewry, E.C. The seat may be either placed lengthwise on the carrier, in such a position that it would be suitable to be used by a boy, while if it is desired to carry a lady the seat can be placed round the other way—that is to say, transversely. The back is adjustable, and, moreover, can be folded away simply by first lifting it up, and then allowing it to fold down.

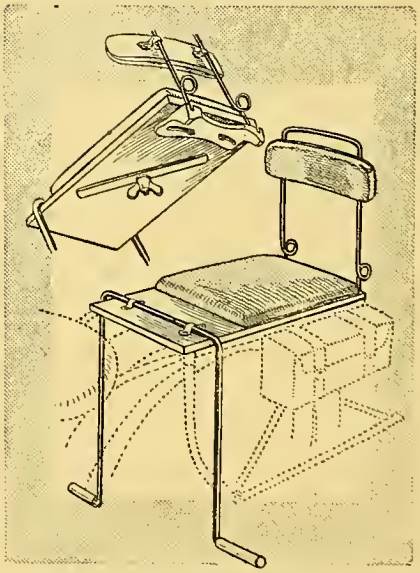
A moderately priced sparking plug sold by J. Grose, Ltd.

Messrs. Grose have also introduced a tyre accessory known as the Tiresaver, which is designed to assist a motor cyclist to return home even if the cover has burst at the bead. It consists of two steel plates, of which the smaller goes inside the cover and the larger outside. The two plates are fastened together by driving bifurcated rivets through them. The head of the rivet, however, must be inside the tyre.

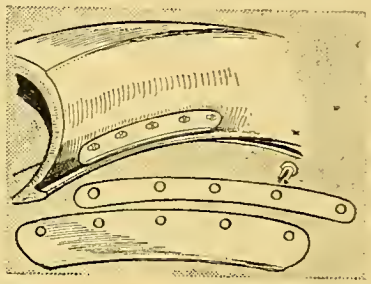
We also inspected on the occasion of our visit to Messrs. Grose's premises a sparking plug, which is sold at a very moderate figure (1s. 6d.). It is well finished, has a steatite insulator, and the electrodes are of substantial design.

Of other accessories may be mentioned a sidecar cover, made of rainproof material. This cover may be made to any pattern supplied by the purchaser, and is excellent value.

The firm is also making a speciality of remaking slightly worn tyre covers. The process includes strengthening and vulcanising on a 24 oz. rubber-studded tread.



The Grose two-position pillion seat.

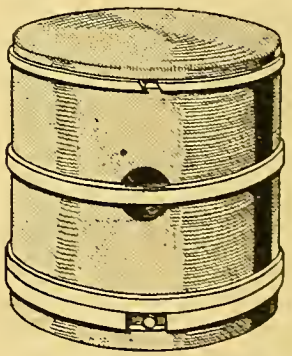


Grose's "Tiresaver," a device for temporarily repairing bursts at the beads of outer covers.

A SCRAPER PISTON RING.

IN order to prevent the oil working past the rings and reaching the piston top where it would burn and form carbon deposit, a novel piston ring has been patented by Jack Marshall, the old Triumph rider, after successful experiments on a 1906 Triumph extending over a period of two years.

In the sketch the ring is shown at the bottom of the piston, but the position is unimportant. The construction of the



Piston fitted with new type of ring patented by the former Triumph racing motor cyclist, Jack Marshall, who won the T.T. in 1908.

device is as follows: Fitting into the groove, which is deeper than usual, is a broad, thin ring with an ordinary diagonal cut. Over this ring two more rings are fitted, one above the other, and held in position by pegs driven into the inner ring; the two outer rings have straight cuts, and are, therefore, cheap to manufacture. On examining a piston so fitted, which we were told had been in use for a lengthy period, we found scarcely any trace of carbon.

OCCASIONAL COMMENTS

By 'Ixion'

Softening Copper-asbestos Washers.

Every practised rider knows that a few thousand miles of heat and compression render a copper asbestos washer leaky. Its elasticity can usually be restored by heating it red-hot and cooling it off in water; and I personally never scrap such a washer, especially in the larger sizes, without first annealing it afresh and seeing it is not fit for a further spell of active service. I find these washers harden much more rapidly than is desirable; and, wherever possible, I scrap them, and make the compression joint with fish glue or seccotine, or graphite jointing paste. Still, their use is practically inevitable for sparking plugs and compression taps at any rate; and here the tip is to fit new washers or to re-anneal the old washers at very frequent intervals.

"Some" Sidecar!

The other day I was waiting for the gates to open at a level-crossing when I noticed something quaint about the appearance of a sidecar just ahead, and dismounted to investigate. It consisted of a modified 7-9 h.p. Matchless with a two-seated tandem type sidecar attached. The sidecar was almost longer than the bicycle, and contained roomy accommodation for two big men, plus a huge luggage box astern and a windscreen in front. This unwieldy combination was fitted up to be driven from the front seat in the tandem sidecar, the well of which contained pedals for operating the clutch and brakes. The oil pump was operated by an inverted Bowden brake lever on the near grip; the steering was performed by a bent bar fastened to a crosspiece joining the ordinary handle-bars, and carrying the carburetter and magneto controls; the gear lever had been adapted for the driver's position by brazing a short horizontal tube and knob to project inwards at right angles. All the special fittings were readily detachable, so that five minutes' work with a spanner enabled the owner to drive from the saddle, leaving the fore tandem seat to be occupied by a *tertium quid*. The owner remarked that he found the cumbrous outfit extremely handy, and thought nothing of taking it across London.

Delivery Tune.

I suppose I must be indulgent towards the trade in war time, but really the condition of a "baby" two-stroke which was delivered brand new to a friend of mine last week has dried up the venom in my inkstand. The tank, as usual, was full of small brass oddments and filings, and the carburetter flooded freely through the needle valve getting jammed open until the solid particles had all been drained from the tank. Beneath the float, and threaded round the needle, was a short length of brass tubing, presumably employed by assemblers as a level gauge, which also had to come out before the needle could possibly cut off the supply of spirit to the jet. The engine had apparently never been run at all; two strong men laboured with it for an hour before getting an explosion, and when it at last fired it was so stiff that it had to be kept on low gear with copious injections of oil before it showed any inclination to two-stroke or even to pull. Still, it is war time; and we have less excuse to grumble when we are left to do our own tuning, and we must try to be grateful that we can get anything through at all. I really publish this grumble because the firm in question—and others—are supplying a few machines to the military, and I wish to do all I can to save them from similar annoyances. By the way, I noticed an unpardonable *bêtise* in the way of design on this little jigger; the petrol pipe passed within half an inch of the tip of the right-hand footboard, so that a little clumsiness with the toe would be bound to *strafe* it badly. Also the machine was delivered minus tyre pump, tyre repair outfit, and oilcan. Surely these three items should figure in every standard outfit

Agents as Manufactures.

In the pre-war days there was little scope for a repetition of the old push-bicycle practices, whereby a provincial agent bought parts from the big component factory, and made up a really decent machine under his own transfer. I have found a few motor cycle agents who build up a good engine, *e.g.*, a J.A.P., into a good frame, *e.g.*, a Chater Lea, decorating it with various proprietary fittings to suit their own notions or the tastes of their customers; but the practice has never been extensive. Now that the quondam flood of new machines emerging from our factories has dwindled to a thin and uncertain trickle, there is a gaping opportunity for the smart agent, and I wonder that our columns are not full of advertisements from small traders, eager to fill up the winter months by turning out "own transfer" machines for machineless enthusiasts. There are plenty of small repair shops, owned and run by men long past military age, whose staff still includes one or two smart youths under the enlistment age, and I have no doubt at all that the demand exists. Of course, conditions are less favourable for adapting this idea to the motor cycle trade, for the simple reason that few men run a motor cycle to destruction, and that the depreciation on an unknown make of machine is heavy, even if all the components are first-class. For example, whereas a carefully kept Triumph need not depreciate more than 20-25% in its first season, an equally costly multi-speeded 3½ h.p. bearing some such local transfer as the "Buckingham Blizzard" would probably not fetch more than 60% of its original cost at the end of its

Occasional Comments.—

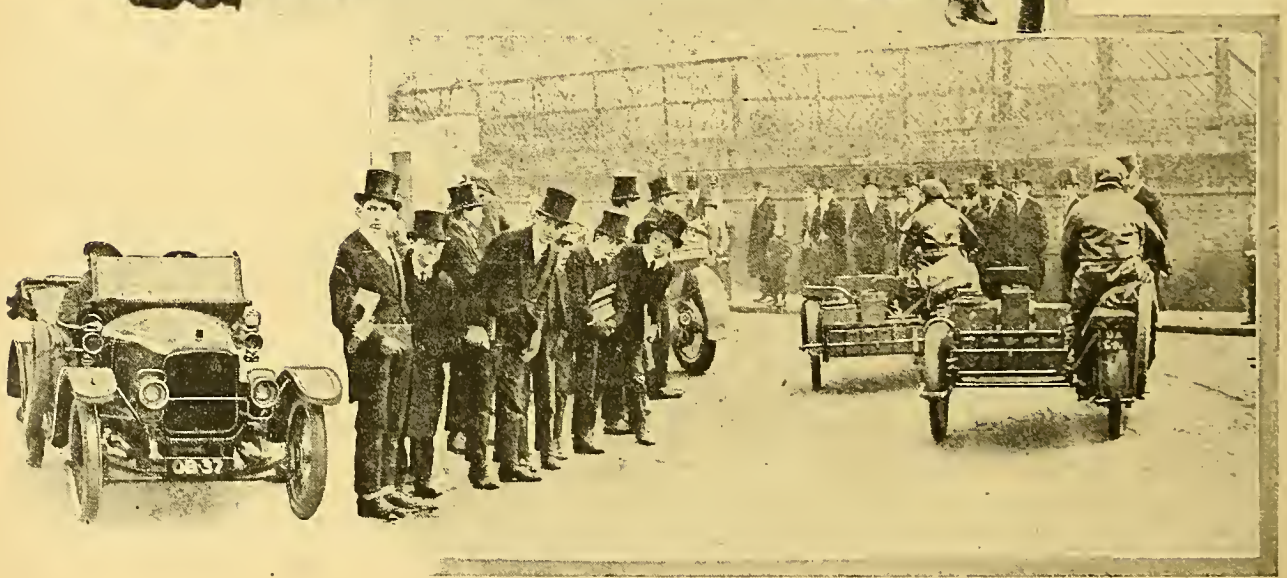
first year. Nevertheless, the demand so far exceeds the supply, that the agents could be sure of effecting sales.

Duplex Lubrication.

The James two-stroke, which does all my short work nowadays, has "petroil" lubrication for the cylinder, assisted by pump-feed for the main bearings and big ends. The double system is unquestionably admirable so far as durability goes, but seems to suggest that the babies are almost as extravagant in oil as some of them are in petrol. Oil is, naturally, cheaper than new bushes, and the single system, whether "drip" or "petroil," as adopted by many makers, does not always conduce to the longevity of the bearings. But my present oil consumption is too high when contrasted with automobile practice. Allowing a gallon of petrol per 100 miles, which is more than I can get on heavy winter roads, but should be possible in summer, the cylinder sucks in four ounces of oil *via* the carburetter; meanwhile the engine bushes take twenty pumps of oil direct. I have not measured the pump charge, but it is at least two ounces, more probably three. Putting it at the lower figure, the two-stroke consumes forty-four fluid ounces of lubricant in 100 miles.

Government Control.

It is by no means certain that the scheme by which part of the output of factories under Government control was to be released for normal purposes will come to early fruition. For example, I have had a machine on order for some months past, and when the makers wrote to tell me it would arrive this week, I replied that I had plenty to ride just now, and if they liked to send my jigger to some less fortunate rider I should be perfectly satisfied to wait till the spring for another. Their answer was that I had better collar it while it was available, as goodness only knew when they would be able to get another batch through. *Verb. sap.*



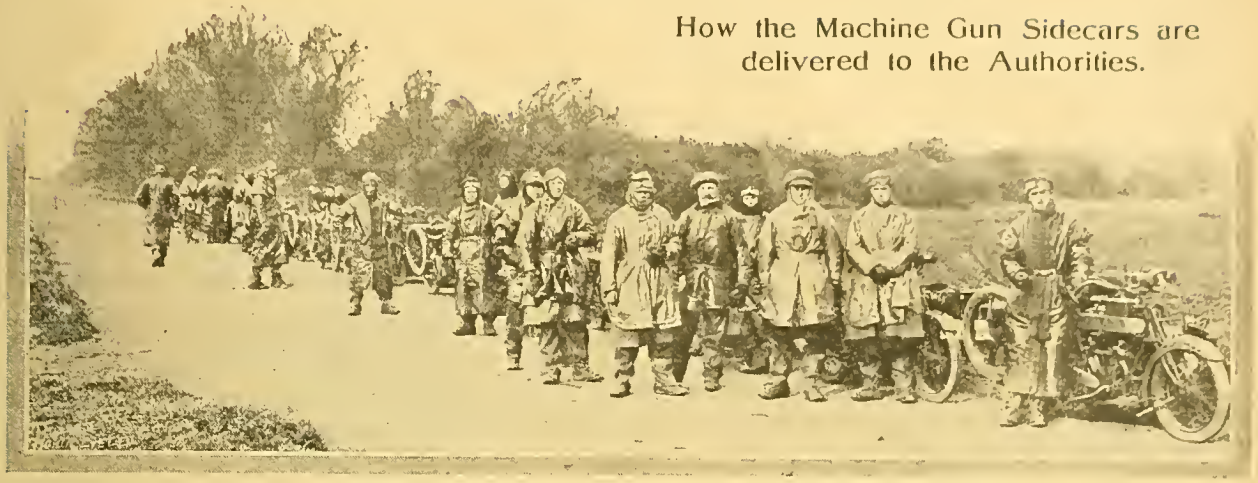
FROM WORKS TO ARMY.

In no places *en route* from Wolverhampton to the M.M.G.S. training centre do the motor machine gun sidecar outfits attract more interest than at Oxford and Eton. The car shown on the left is a Vauxhall, driven by Mechanical Transport Inspector Lieut. Stavers, who is bringing up the rear of the machine gun convoy.

(See opposite page.)

FROM WORKS TO ARMY.

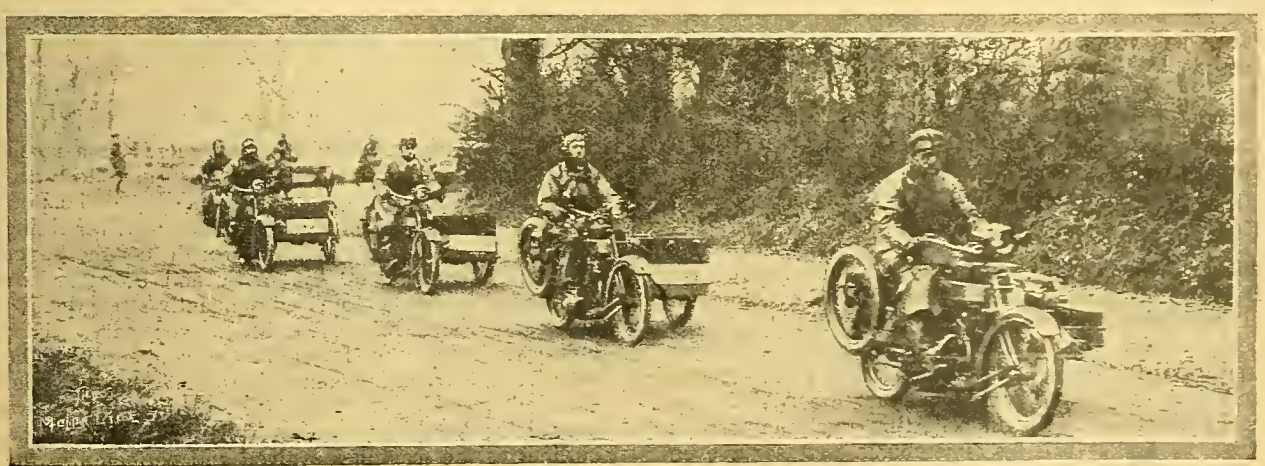
How the Machine Gun Sidecars are delivered to the Authorities.



A study in motor cycling attire for the winter months—a photograph taken of a batch of motor machine gun outfits and the men who drive them from works to training centre.

TO keep pace with the requirements of the Motor Machine Gun Service, the Clyno works of Wolverhampton (the capacity of which has been doubled during the last few months) are kept at full pressure day and night. Men in khaki, who have seen service in the trenches, have been fetched home again to handle the lathes. The success of the motor machine gun sidecar outfit is now common knowledge. Since Mr. Winston Churchill inspected at the Horse Guards Parade, Whitehall, at the end of last summer, the first unit of the kind produced by Mr. Alfred A. Scott, and adapted for warlike uses by Messrs. Vickers, Ltd., developments in design have been rapid, and the Vickers-Clyno machines which are now used are very different in construction from the original machine gun sidecars. We wish we could tell our readers all about them and their capabilities, but we must bow to the decision of the Censor who forbids.

At regular intervals a long procession of machines moves from the Wolverhampton works of the Clyno Engineering Company to the Government base near London, and the accompanying photographs were taken on the occasion of one of these journeys. To see them reminds one of a long distance trial. A very early start is made from Wolverhampton, so that the machines may be delivered at the Government depot in daylight, and the inhabitants of certain districts of Wolverhampton have now become quite accustomed to the roar of engines disturbing them from their slumbers at about 3.30 a.m. A move off is made at 4.15 a.m., Mr. Frank Smith usually leading the way on his 20-30 h.p. Sporting Peugeot, the sidecars forming a very orderly line, the rear being brought up by an A.S.C., M.T., Inspecting Officer, who is usually at the wheel of a Vauxhall car and observes all performances and cause of stoppages, should any occur. The toolbags incidentally are sealed prior to the start. The first stop on the trip under notice was at Shipston for breakfast, and the party then proceeded to Oxford, veering off to the right after leaving Maidenhead, and passing through old Eton, where the passage of the machine gun sidecars has now become an event to be



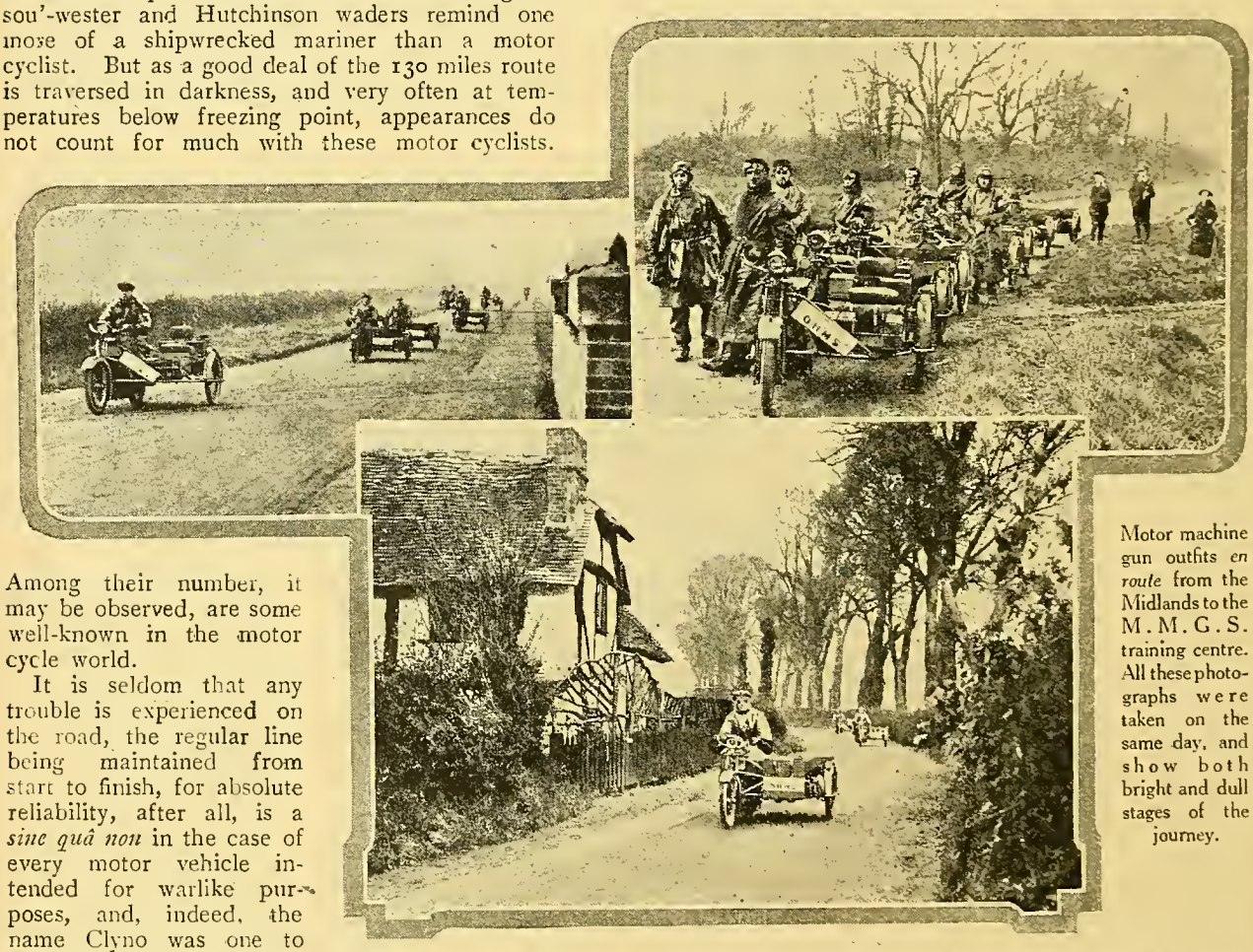
A string of Vickers-Clyno machine gun outfits on the way from the makers' works to the M.M.G.S. training centre.

From Works to Army.—

looked forward to by the boys of Eton College. In fact, all along the route the machines in their khaki finish are regarded with the greatest interest, and, as they flash along the road in orderly fashion, many an old farm hand, judging by his look of consternation, observes to a fellow son of the soil some such remark as was recently heard, "By gum! What are we coming to now? They be airyplanes."

A Study in Riding Apparel.

The garb which some of the drivers adopt is really funny. The men usually wear two or three coats with a full length oilskin on top, with a waist strap which causes the top and bottom of the coat to bulge. And sou'-wester and Hutchinson waders remind one more of a shipwrecked mariner than a motor cyclist. But as a good deal of the 130 miles route is traversed in darkness, and very often at temperatures below freezing point, appearances do not count for much with these motor cyclists.



Motor machine gun outfits *en route* from the Midlands to the M.M.G.S. training centre. All these photographs were taken on the same day, and show both bright and dull stages of the journey.

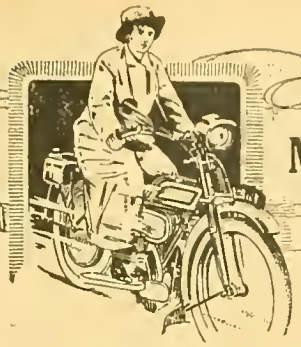
Among their number, it may be observed, are some well-known in the motor cycle world.

It is seldom that any trouble is experienced on the road, the regular line being maintained from start to finish, for absolute reliability, after all, is a *sine quâ non* in the case of every motor vehicle intended for warlike purposes, and, indeed, the name Clyno was one to conjure with for reliability before anybody in this country thought about a war.

The Beneficial Effect of the Six Days Trial.

In this connection one can only now fully appreciate the good effect which was caused by the A.C.U. Six Days Trials routes being arranged over the most difficult road surfaces in the country, usually off the beaten track. In the Lake District and Peak District trials of 1913 and 1914 there were many manufacturers and competitors who considered that the A.C.U. had acted most unwisely in selecting such impossible surfaces, and it will be remembered that some even of the more assertive called protest meetings and tried to organise a strike. But after all, as we pointed out at the time, motor cycles had reached such a stage of excellence that abnormal surfaces were imperative to weed out the weaklings. We, personally, covered both the trials in question on a motor bicycle, and admit that we suffered discomfort on occasion, but, though we were jolted about on bumpy stony tracks, we realised the good that was being done in eliminating weaknesses in design—particularly in sidecar chassis—by reason of the extreme severity of the test. Now, moreover, British manufacturers are reaping the benefit, for, instead of having to evolve a machine which shall be suitable for abnormal uses in Flanders and other countries where roads are not so perfect as in England, our machines are so staunchly constructed as a result of abnormal trials that they are well able to withstand the roughest usage to which they may be put. Of course, motor cycles were never intended for riding regularly over ploughed fields, rough commons, or over roads churned up by shells, and being grossly overloaded in the bargain; consequently strengthening here and there has been found necessary. For instance, instead of four-point attachment for the sidecar, five separate connections are now the rule. Generally speaking, however, the machines which have proved invaluable in this war follow the same broad outlines as the machines evolved and perfected in the piping days of peace.

Modern Girls and Modern Motor Cycling



SOME CRITICISMS ANSWERED.

FROM a motor cycling point of view British girls are divided into three classes—those who are lucky enough to possess motor cycles of their own; those who retain the motoring spirit while they lack the motor cycle, and who occasionally get a chance of a mount through a brother or a friend; and those who either disapprove of, or are not in the least interested in, motor cycling.

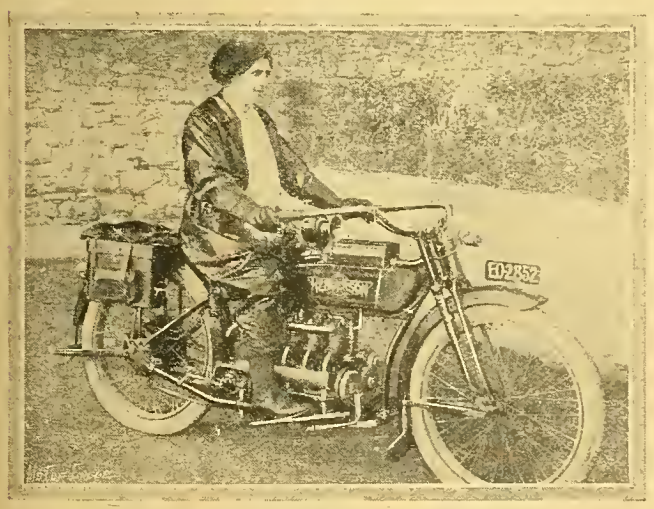
These last, unfortunately, are by no means least, and I should feel rewarded if this article reduces their majority. A keen motor cyclist myself, it seems to me an overwhelming pity that, in these days when motor cycles are on the road in their thousands, carrying riders of both sexes, many women should remain so sternly set against such a splendid sport. That it is a fine sport is undeniable. There is simply no limit to the joy of it, of flying up hill and down dale on a tireless thing which never stops and which passes everything on the road, which is absolutely at your command, and which will carry you miles and miles into the country every fine holiday. Nothing will bring so effectually to your cheeks the colour which the cinema and the theatre and the concert have driven out of them.

Is it Expensive?

Now for the objections. The foremost one, of course, is that of expense. Motor cycling is not so expensive as people believe, that is, of course, if we consider the lightest types of motor cycles with which it is usual for a lady to commence, at any rate, her motor cycling novitiate. Now that so many lightweight machines are being made, many of which are ideal alike in size, speed, and simplicity for the lady rider, and few of which exceed £35, it cannot be urged that the first cost is prohibitive. How much does the average father pay out on his daughter's behalf in theatre tickets, dances, riding lessons, and singing lessons every year? A man with whom I talked on this subject the other day said that his two daughters cost him a hundred a year good, in allowances and extras. "Perhaps," he said, ruefully, "if they had one of these motor cycles each they wouldn't want to be gadding in and out of entertainments the whole of the day long." I can assure him that they would not—nor would there be so many doctor's bills to pay on their behalf, perhaps.

A NOVEL GUN MASCOT.

A neat aluminium-bodied sidecar recently seen in Birmingham, which has a small model of a naval gun mounted on a special platform above the nose of the body. Presumably the gun was intended for a replica of the 4·7in. weapon, although some of the breech mechanism was dubious. Attached to a T.T. twin, and handled by an officer of the sporting type, the combination created quite a sensaiton.



A POWERFUL MOUNT FOR A LADY.

Mrs. Quinlan, of Barrow-in-Furness, on her four-cylinder Henderson. It is not often one sees ladies mounted on such powerful machines as the Henderson, but the flexibility of this machine renders it quite suitable for use by the fair sex.

More Grandmotherly Objections.

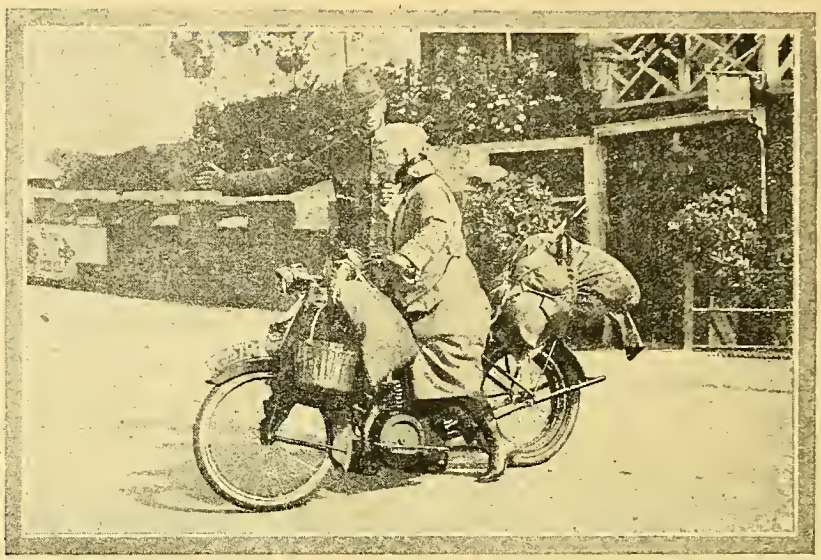
The second great objection—I hear it principally from the lips of mothers—is guised under the word "unsuitable." In these enlightened days of the sporting girl, "improper" and "unladylike" seem to me to be the last words to apply to this particular form of sport. It is no more unladylike to ride on a motor bicycle than on an ordinary "push bicycle," and it cannot even be said of the sport that it is unusual—hundreds of girls can be seen racing comfortably out into the country either behind their friends on the pillion seat or on machines of their own.

"Dangerous" is another word applied—and this I would dismiss with contempt as regards the actual driving of a motor bicycle, for the average woman has a head every bit as clear as that of her brother. With regard to pillion riding, however, there is some

thing in the comment. Accidents have happened to those riding on carriers, but more often than not they have been the result of careless or reckless driving.

Some Advantages.

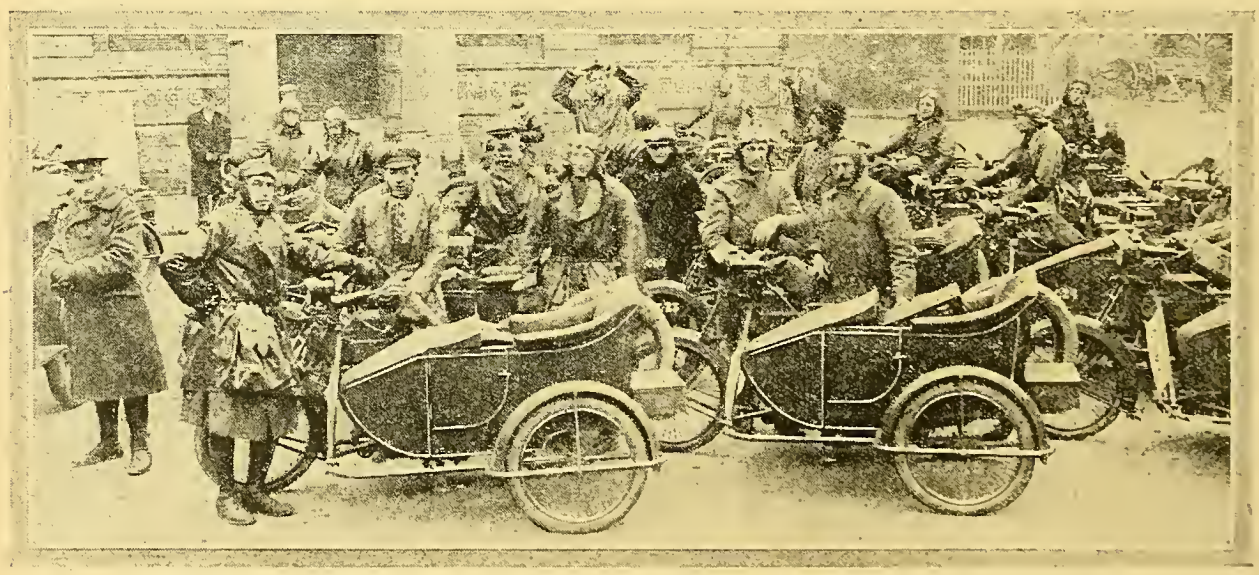
Now for the advantages. A very solid one lies in the fact that motor cycling can sometimes be made an asset in a business career. Not very long ago, a friend of mine who had entered the crowded ranks of women secretaries, and who was badly in need of a post, saw an advertisement for a secretary to a motor cycle agent. Hosts of girls answered the advertisement, but my friend gained the day in front of thirty-seven likely candidates simply because her employer discovered that she had an interest in and knowledge of motor cycles. Here is a good opening for girl secretaries who have their living to make, and another lies in the rapidly growing demand for lady demonstrators. Hence I would advise those who cannot at the moment afford a mount of their own to make themselves familiar with the makes and methods of operation of the modern motor cycle.



SOME LOAD! A lady motor cyclist with a full equipment of luggage. Such loading as that shown is not to be recommended for reasons of personal safety.

Before actually ordering a machine go as thoroughly as possible into the science—for it is one—of the winged roadster. Get to understand the engine and the parts thoroughly. Get to know the makes—you can easily see them all by a visit to a good agent or a walk down Great Portland Street—so well that you can recognise them when you see them on the road. Get a handbook and study the care of the machine and the possible obstacles which you will have to overcome.

O.M.S.

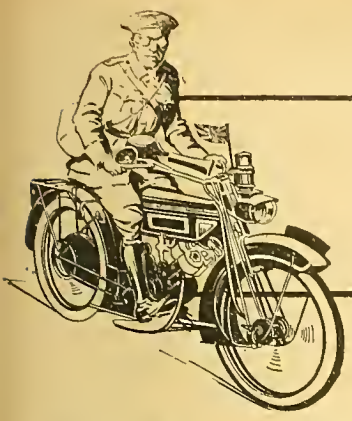


DELIVERING MOTOR MACHINE GUNS TO THE MILITARY AUTHORITIES. (See pages 577-578.)

The delivery convoy halts for lunch. Note the pleasure type sidecars in the foreground; these are mainly used for the conveyance of officers.

THE VILLAGE CLOCKMAKER TO THE RESCUE.

The other day we heard of a strange magneto trouble on one of the makes of machines accepted by the War Office. The contact breaker springs were far too brittle, and snapped frequently. This is fortunately an uncommon occurrence, but so prevalent did the trouble become that the particular officer in charge at the Signal Station called in the village clockmaker to the rescue, who, by skilfully making new springs of a less brittle nature out of clock springs, saved the situation.



THE CAUSES OF ENGINE STOPS.

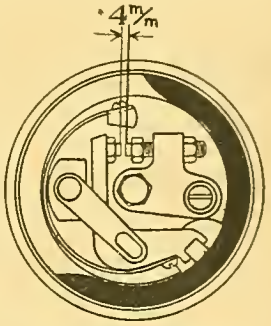
How an Intelligent Diagnosis may save Needless Trouble.

IT is almost impossible for a novice to acquire the knowledge necessary to enable him to effect *any* sort of repair to a motor cycle merely by means of a handbook. Practical experience on the road is absolutely necessary, but there are certain troubles which are likely to occur more frequently than others, which can well be anticipated and the cure known beforehand, and it is with these particular troubles that this short article is intended to deal. However, before proceeding to outline them it is desirable that the rider should know that by treating his machine with sympathy and considering carefully the symptoms, he will be able to determine what is really the matter with it merely by the pull and behaviour of the engine. Again, before a rider attempts to dismantle any portion of the machine, he should consider carefully for a moment or two the symptoms and the possible cause, as it is most unwise to disturb any part of a machine which is working properly on account of disturbing the joints. By tackling repairs hastily and thoughtlessly, it is quite easy to take down parts which are in thorough working order.

The Ignition System.

On the road, the most likely cause of trouble with a modern motor cycle is the plug, but with modern plugs if the proper amount of lubrication is given to the engine, trouble should not occur after a short mileage. We will suppose the rider is careering along the road at a comfortable speed with the engine firing regularly, when suddenly the engine stops firing, and the compression shows itself to be present when the machine is pulled up. Now a moment's thought will prove that this is due to the ignition. It can hardly be due to the tank having run dry of petrol, as an engine which runs out of petrol invariably gives signs a few minutes before it gives up the ghost, by misfiring, spluttering, and then continuing for a short distance. Again, foreign matter which might clog up the jet does not come through in such quantities as entirely to stop the petrol flowing. Thus we arrive at the simple diagnosis that the trouble is due to ignition, and the most likely cause of ignition trouble is in the plug. We therefore remove the plug, clean the points if they should be found to be charred or to have become oiled, and see that the clearance is .5 mm., measured by the "feeler" on the magneto spanner. If the porcelain of the plug and also the electrodes are tight, and the points clean and the right distance apart, the engine should fire again, failing which the contact breaker of the magneto should be examined. In damp weather the rocker arm sticks owing to the fibre bush on which it works swelling. If the engine be turned round, it will be seen whether the steel cam causes the platinum points to make and break properly. If the rocker arm remains stationary it will be necessary to remove it, and ease the fibre bush by rolling a piece of sandpaper as a pencil and easing the bush out very slightly. Even warming it will have the desired effect, but the cure would only be temporary.

The gap between the sparking plug points should be ·5 mm.



Contact breaker, showing correct gap of platinum points.

The platinum points should separate .4 mm. When checking the break of the points, notice particularly that the surfaces of the two tiny points of platinum are perfectly flat and clean. After a time they become charred or burnt, and it is then desirable to use a fine jeweller's file in order to clean and flatten them. This operation should be done very lightly, as platinum is expensive, and it is easily possible to file away a shilling's worth in a moment. After cleaning and facing up the points, the amount of break should be checked, and if an adjustment is necessary it is easily done by loosening the locknut at the end of the screw, and adjusting by the aid of the small spanner provided with every magneto. If this is not the trouble, and the timing has not slipped (this will have been proved by noticing if the contact breaker functions properly when the engine is being turned round), it may be due to the carbon brush in the high-tension terminal on the magneto. This brush bears on the brass slip-ring mounted on the armature, and is pressed into contact thereto by the aid of a tiny spiral spring, and so collects the current. Sometimes this pencil gets charred up, and more

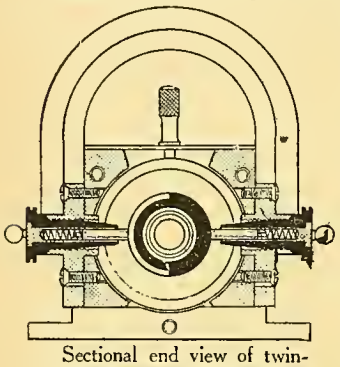
The high-tension terminal removed, showing carbon pencil, the action of which is governed by the tiny spiral spring shown.

The Causes of Engine Stops.—

frequently sticks in the guide on account of the presence of oil. Occasionally, therefore, the terminal should be removed and the pencil cleaned, and faced by rubbing it lightly on a piece of fine sandpaper or a file; also before replacing it ascertain that the pencil moves freely in its guide against the action of the spring.

Carburetter Troubles.

Reverting to our imaginary trip along the road aforesaid, had the engine shown signs of misfiring and spluttering *and a refusal to take any extra air*, one could be almost certain that it was due to a stoppage of the petrol supply, either by foreign matter in the petrol pipe itself or in one of the passages or jets of the carburetter. Almost invariably the extra air lever will determine this before a machine even comes to a standstill, and the jet of the carburetter should be taken out and cleared, likewise the petrol feed pipe. If the misfiring is due to a plug which has been oiled up, this trouble can usually be anticipated, as it is due to over-oiling, and over-oiling is signified by blue smoke emerging from the silencer. An engine should never be allowed to smoke, as it only leads to an excessively oily engine, rapid carbon deposits, and trouble with the plug points.

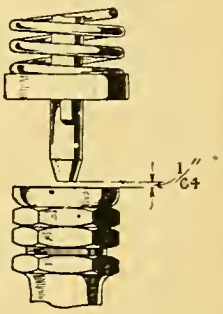


Sectional end view of twin-cylinder magneto showing carbon brushes which bear on brass ring.

Compression.

If, after the engine had stopped firing, the machine ran along more freely than usual when the valve lifter was released, it would show that compression was non-existent, and this might be due to a broken valve. Supposing, however, that the engine had been gradually falling off in power, and the explosions had become fluffy before it finally stopped, the trouble may be found to be due to a broken valve spring, or to the elongation of the valve stem, due to overheating, so closing the gap between the tappet and valve stem and preventing the valve head from touching its seating. (The exhaust valve most probably, as this is the hotter.)

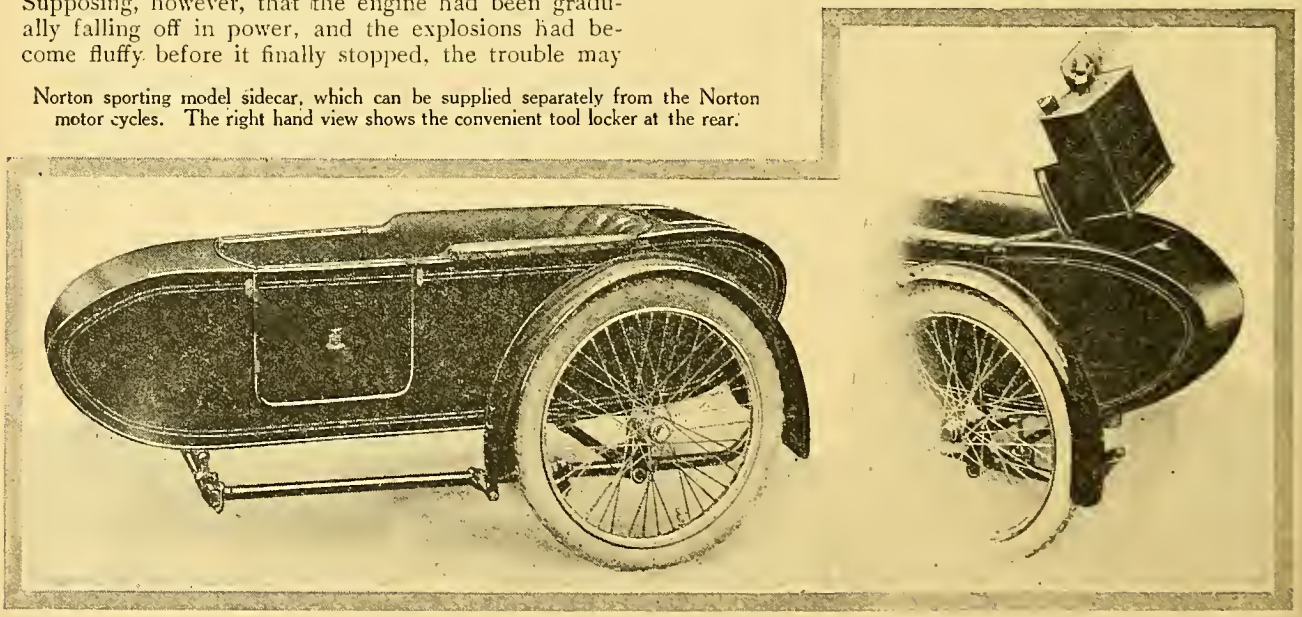
The correct tappet clearance is 1-64th of an inch, which is equal to .4 mm., and can be tested with the magneto gauge before mentioned, but some engines need slightly more clearance, 1.32in. not being excessive in some cases. On modern engines the clearance can readily be adjusted by means of the locknut on the tappet rod, which is a far better method than the laborious one of filing the end of the valve stem.



Correct clearance between valve tappet and valve stem.

Cleanliness Essential for Efficiency.

In outlining the above possible causes of engine stops on the road, we have intentionally omitted the possibility of the insulation of the high-tension wire being damaged, due to a sharp bend, or to the fact that it may have been cut by the metal security clips. At regular intervals the terminals, as well as the insulation of the wire, should be examined to make sure that leakage of current is impossible. Wet and mud, too, will readily cause short-circuiting, and the rider who desires to guard against ignition trouble should protect as far as possible the magneto terminals and wiring from the elements, and wrap each terminal with insulation tape. A tip to prevent water dripping down the high tension wire and so to the magneto, where it will cause endless trouble, is to cut a tiny hole in the middle of a rubber patch and thread the high tension wire through it. In this way the patch will act as an umbrella and drain off the water.



Norton sporting model sidecar, which can be supplied separately from the Norton motor cycles. The right hand view shows the convenient tool locker at the rear.

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— the first Motor Bike to attain a speed of 100 miles an hour — has smashed another world's record. In a 300 mile race in Chicago on September 12th, "The Good Old X" finished first in 3 hrs. 29 mins. 57.2/5 secs. — a speed of 87.51 miles per hour — World's Record for the distance.

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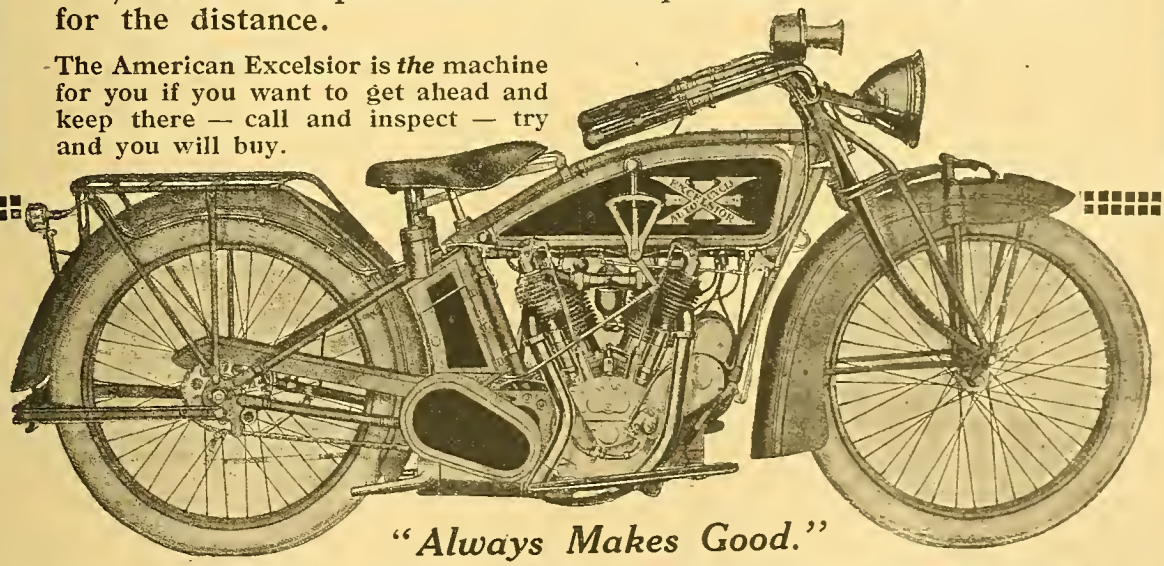

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MODELE DE LUXE, as illustrated, complete with Dixie combination lighting and ignition, powerful head and tail lamps, electric horn, and speedometer **£90**

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AGENTS! Applicants for this valuable agency for districts where we are not represented should write at once. The proposition is attractive:— A splendid machine, a moderate price, and early delivery.

In answering this advertisement it is desirable to mention "The Motor Cycle." A23

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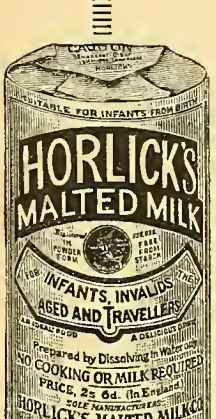

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A glass of Horlick's is always the best invigorator. Taken before a ride it will give strength and endurance, and after strenuous exertion there is no better pick-me-up. At all times it gives and maintains fitness and stamina, and is especially useful to men on Active Service.

SUPERIOR TO TEA, COFFEE, COCOA, AND BEEF EXTRACTS.

READY IN A MOMENT WITH HOT OR COLD WATER ONLY. NO COOKING.

Served in Hotels, Cafes, and Railway Refreshment Rooms.

Also available as delicious food tablets to be dissolved in the mouth. Relieve hunger and thirst and prevent fatigue.

Supplied in Sterilised Glass Bottles, at 1/6, 2/6, 11/-, by all Chemists and Stores.

The Tablets also in convenient Pocket Flasks at **6d.** and **1/-** each.

Liberal sample sent post free for 3d. in stamps.

HORLICK'S MALTED MILK COMPANY, SLOUGH BUCKS.

The Stewart Handy Worker

COMPRISES:

A Powerful Vice, with jaw opening of 4¼ inches. The jaws are 4 inches in width, and will hold any wood or metal article firmly and securely.

Pipe Vice, which will grip pipes up to 1½ inches in diameter.

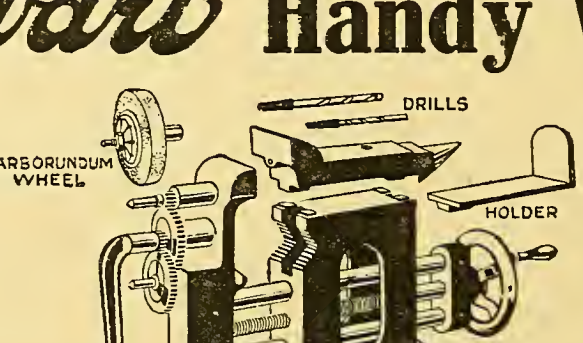
Anvil, strongly and substantially made.

Drill Press, which can be operated at two speeds. Two drills supplied, and a rest to hold job to the drill.

A Steel Cutting Hardy, for cutting wire or steel.

Carborundum Grinding Wheel, diameter 4¾ inches, for sharpening wood or metal cutting tools. Three speeds—direct, 4 to 1, and 16 to 1. *Buffing Wheel, small Circular Saw, etc., could be fitted where Grinding Wheel attaches.*

WRITE TO-DAY FOR ILLUSTRATED PAMPHLET.



Price Complete, 50/-

The "Bazaar and Mart" says:

"One of the cheapest and most ingenious combination tools for both amateur and professional mechanics that we have had brought to our notice is the Stewart Handy Worker, which embraces a number of different devices in most compact form, and whether in workshop, store, or garage, cannot fail to improve, while it will very greatly simplify, a great variety of jobs."

Of Ironmongers, Stores, or direct from

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SIX TOOLS IN ONE.

THE STEWART Handy Worker is a solidly-built tool, 2 feet long, 1 foot high, and weighing 76 lb. It comprises six essential devices, each absolutely efficient, and as good for its purpose as the most expensive of its kind. Together they form a tool outfit which motor cyclists and others can use with great advantage. Apart from its efficiency, its compactness will appeal most to anyone who is short of room space. The Stewart Handy Worker takes up so little space that it can be used in the smallest workshop. Its cheapness, too, cannot fail to impress those who, while requiring the best tools, wish to obtain them at the lowest price possible.

WRITE TO-DAY FOR ILLUSTRATED PAMPHLET.

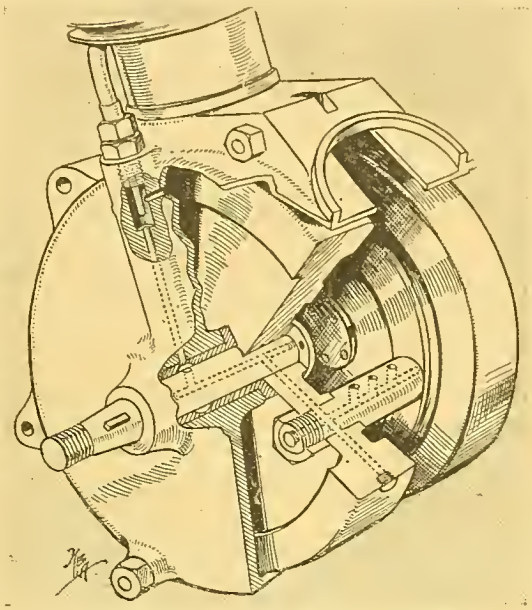
THE A.J.S. LUBRICATION SYSTEM.

Direct Oil Supply to the Main Bearings.

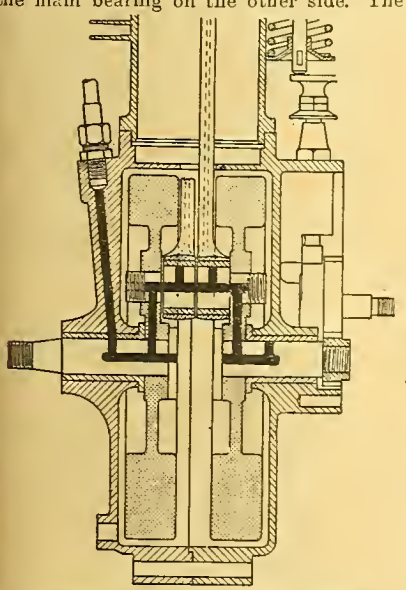
MESSRS. A. J. STEVENS AND CO., LTD., do not rely entirely upon the splash system for the adequate lubrication of all the moving parts of their engine. The oil is delivered to the crank case through a semi-automatic lubricator. On the plunger being depressed the spring forces the oil into the crank case union, but, as in previous models, it does not pass through a sight feed, as Messrs. A. J. Stevens and Co. consider this to be unnecessary, as an oil orifice of a certain diameter is supplied, and they consider that this orifice allows sufficient oil to be delivered to the engine, irrespective of the thickness of the lubricant. After leaving the union, which is screwed into a part of the crank case casting, the oil enters a small chamber; part of it leaks through into the crank case, but the majority passes down the special oilway to the main bearing on the pulley side. The bush is drilled and the hole communicates with a deep groove surrounding the journal, which is always full of oil. A hole in the journal is connected to a passage through the flywheel, which in turn leads to another passage inside the crank pin, whence the oil exudes through three holes, and gives the big end—one of the most important bearings in the engine—plenty of oil.

To revert again to the journal of the main bearing, it will be clearly seen that the two holes register every complete revolution. On leaving the crank pin the oil descends through the flywheel to the main bearing on the other side. The owner is recommended to depress the plunger every five miles, and all the time the oil pump is emptying itself the lubricant is flowing into the crank case.

This is certainly a very sound scheme, and a great improvement upon the simple splash system. Of course, the oil naturally leaks through into the crank case in sufficient quantities to lubricate the cylinders and timing gear by splash. By this means all trouble and worry of adjusting the drip feed are overcome.



A.J.S. lubrication, showing drilled oilways leading to main bearings.



Sectional drawing of the A.J.S. crank case. The oilways to main shaft and crank pin are shown black.

LATEST BROWN & BARLOW CARBURETTERS.

Improved Flooding Device.

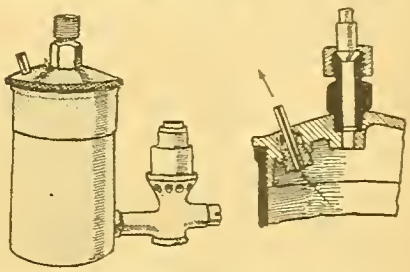
ALTHOUGH the B. and B. carburetter itself is in principle unchanged, yet there is a minor improvement which will be of interest to motor cyclists. This consists of a new float chamber and flooding button having several peculiarities. The B. and B. carburetters so far produced have had the bearing and spring for the flooding button outside the float chamber cover, a thin stem projecting through the bearing to come in contact with the float. The latest button has its bearing and spring wholly within the float chamber itself, and the end of the button only projects through the lid, making the appearance of the carburetter very much neater. Through the centre of the flooding button a hole is drilled, forming the sole air vent for the float chamber, and it is here that the question of careful design comes in. It will be remembered that with the carburetters of some years ago, if the flooding button were held down for any length of time, petrol would flow through the vent in the float chamber as well as out of the main jet. The result would be a considerable amount of waste petrol as well as a certain risk of fire if the engine should fire back into the carburetter when starting. The hole through the flooding button gets over this difficulty very easily and simply, because when the thumb is placed on the button the air within the float chamber cannot escape. Consequently, when the button is pressed down petrol can only arise in the float chamber until the air above the petrol is at a certain pressure, and it cannot rise to such an extent as to leak from the float chamber itself. On the other hand, as the petrol which is in the float chamber is at pressure due to the compressed air in the float chamber, it flows in a steady stream through the jet, and an excess of petrol is obtained where it is required for starting purposes.

To demonstrate the foregoing, a carburetter was shown to us fixed on an ingenious test stand used by Messrs. Brown and Barlow. The choke tube and throttle casing having been taken away the jet chamber was exposed, and by sharply depressing the flooding button a stream of petrol was jerked out of the jet if the thumb covered the air vent. If, on the other hand, the flooding button was depressed by the finger nail only, thus uncovering the air vent, petrol filled the float chamber, and first bubbled out of the jet, finally proceeding from both jet and air vent in a steady stream.

The Petrol Feed.

The B. and B. carburetters are of that type wherein petrol is fed to the top of the float chamber instead of to the underneath part. This has been done for some little time, but it is interesting to recall the reasons for the change. In the first place the little weighted levers acting on the needle valve through a collar and resting on the float could not be made to stay steady, but rattled about, jerking the needle off and on its seating during the time the machine was on the road. Thus considerable wear took place on the needle valve face, while the cut-off of the petrol was anything but steady. With the present instrument the needle has a small collar, and its stem is placed through a hole in the float, the collar resting on the top of the float, while the needle end of the valve is, of course, uppermost, and rests in a seating immediately below the petrol pipe. Thus, there is no lever mechanism, and the cut-off is much smoother, as can be demonstrated by experiment.

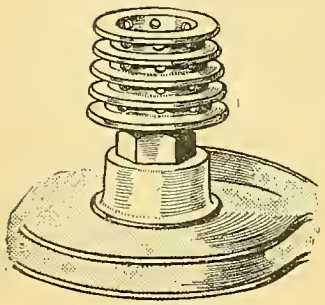
The jet supply pipe now is placed nearer to the bottom of the float chamber, yet not sufficiently near to allow accumulated dirt to flow into the jet. Last year's models had the supply pipe somewhat higher up on the side of the float chamber, with the result that if a machine were swung over to any great extent at a corner the supply of petrol was interfered with.



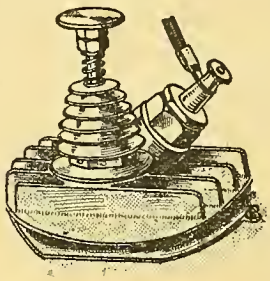
Top feed float chamber of latest pattern Brown and Barlow single-jet carburetter, showing hollow flooding button.

Cooling Devices for Valve Caps.

Greater Efficiency obtained by Reduction of Solid Masses of Metals.

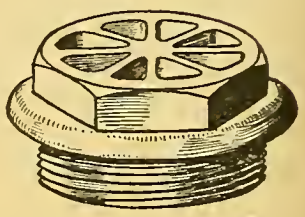


Air-cooled valve cap fitted to a B.S.A. ridden by Kenneth Holden in a T.T. race.



F.N. compression tap, as used on T.T. machines of that make.

Radiating device on valve cap of T.T. Ariel.



Blackburne valve cap, designed to provide an increased cooling surface.

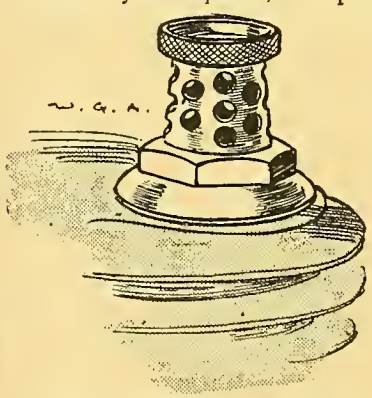
FOR a very considerable time designers of petrol motors, especially those of the air-cooled variety as used on motor cycles, have been endeavouring by various means to reduce to the greatest possible degree the temperature generated and retained in the cylinders, valves, and pistons of the engines. Up till quite recently their efforts have been chiefly centred on improving the design of valves, valve pockets, ports, cams, and so on, all aiming at the reduction of the heat, thereby increasing the volumetric efficiency, but after a certain point is reached the heat can no longer be reduced by these means, and artificial ones have to be adopted. There is little doubt that one of the chief causes of damaged plugs and burned and broken valves, especially on air-cooled engines, is not so much the actual heat generated, which, of course, is very considerable, but the heat which is retained and accumulated in the various masses of metal such as valve caps, heavy spark plugs, and the thickened portions of the castings necessary to allow these parts to be screwed in. The chief offender is probably the valve cap, which up till recently has frequently taken the form of a heavy almost solid piece of metal capable of retaining any amount of undesirable heat, the bulk of which is immediately transmitted to, and retained in the region of, the valves and plugs.

In connection with aero engines, where every ounce of efficiency is required, this point has received considerably more attention with very satisfactory results. Even in the case of water-cooled cars it has been found an advantage to do away with masses of metal used when valve caps are fitted, and now quite a number are fitted instead with detachable cylinder heads and plugs screwed direct into the cylinder, and so receiving the benefit of water-cooling, and in spite of the reduction in accessibility they have proved very beneficial in reducing valve and plug troubles, in addition to reducing expense of manufacture which was the main object.

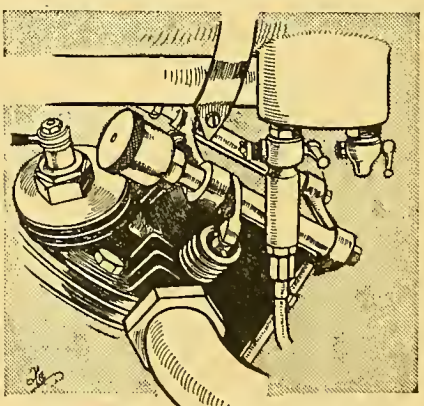
During the last few years quite a number of cooling devices have been tried on motor cycles, especially in races, though hardly any have so far been adopted as standard fittings. They have taken various forms, consisting in some cases of fitting auxiliary fins to give more cooling surface for the valve pockets and cylinder heads, devices for simply cooling the valve caps, and even compression taps and spark plugs, the chief idea being to enable the heat usually retained by these fittings to radiate away as rapidly as possible.

Devices that have been tried.

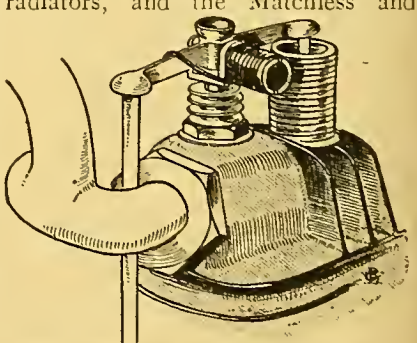
In the 1913 T.T. races we find the Ariel machines with a radiating device fitted to the exhaust valve caps. It consisted of five thin metal discs mounted on a bolt screwed into the cap; these discs were shaped so that the centre was raised slightly and acted as a means of separating the discs, which thus offered considerable radiating surface. In the same race B.S.A.'s were fitted with valve cap radiators, and the Matchless and



Fitting on T.T. B.S.A. valve caps to facilitate quick removal, at the same time providing extra cooling surface.

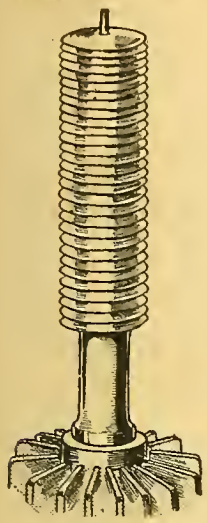


Radiating fins attached to sparking plug, as used by Matchless and Motosacoche in 1913 Tourist Trophy races.



F.N. inlet valve rocker support showing cooling fins.

Cooling Devices for Valve Caps.—

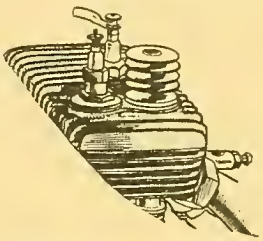


Additional radiating surface provided on the Cyclonette.

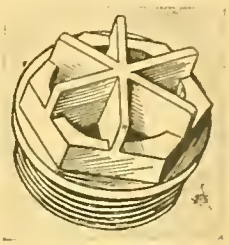
M.A.G. - engined Motosacoche with a device for attaching radiating fins to the plugs. The former consisted of a tube let into the valve cap and drilled with numerous holes, while the latter consisted of several cast-iron radiating fins which were drilled to the size of the body of a long-bodied plug and split and fitted with a clamping screw; this device must have kept a considerable amount of heat away from the plug porcelain. In the 1912 T.T. the Scott racers had special thin steel plug adapters which were let into the cylinder through the water jackets, so that the plug was practically water-cooled. Turning to the 1914 T.T. races we find the F.N. machines fitted with radiating fins on the compression taps and even on the studs supporting the inlet rocker arms. The Matchless was again fitted with the plug radiators, while the Motosacoche was fitted with the De Lissa patent air-cooled exhaust valve, which entirely does away with the valve cap and actually exposes the valve to the air; in addition to this the powerful spring fitted to the top of the valve acts as a radiator to the valve itself. This arrangement also scores tremendously over all the others used, inasmuch as that where the others add metal to gain the extra cooling surface this one does away with it.

So far as ordinary touring mounts go, one seldom finds any of the arrangements fitted as standard. Some years ago a device was invented and placed on the market, the object being to water-cool the exhaust valve cap. It consisted of a water jacketed valve cap and a small tank and radiator placed at the side of the petrol tank.

In the German Cyclonette and Phanomobiles, long copper tubes with radiating gills were attached to the valve caps. The Motosacoche has the De Lissa valve as standard, and for the last two years the Blackburne has had a valve cap with fins. This year's J.A.P. engines also have a valve cap of this description. Quite a number of spark plugs, especially those intended for aero work, have bodies grooved to increase the surface exposed to the air for cooling purposes.



Puch air-cooled exhaust valve cap.



Radiating fins on exhaust valve caps of the 1916 model 8 h.p. J.A.P. engines.

RE-MAGNETISING MAGNETS.

Instructive Demonstrations.

A GOOD many readers are of the opinion that there is some great mystery about the re-magnetising of the magneto magnets. The process, however, is an exceedingly simple one, which anybody can do provided he has the necessary apparatus, but the worst of it is that the apparatus necessary is very rarely found elsewhere than in a magneto factory or a generating station. The process consists simply of wiping the poles of the magnets across the poles of an electro-magnet about twelve to fifteen times in succession, and the job is done.

We recently saw the operation carried out in the electrical laboratory of Messrs. the Harley-Davidson Motor Co., Ltd., and also in the magneto department of Messrs. C. A. Vandervell and Co., Ltd. Messrs. C. A. Vandervell have a large electro-magnet through which a 230 volt town circuit current is passed.

The operation consists in taking the magnets and holding it loosely above, but not too close to, the electro-magnet after the current has been switched on. If the correct pole pieces are opposite the magnets will remain perfectly steady, but if, on the other hand, like poles are opposite—that is to say, the north pole of the magneto is opposite the north pole of the electro-magnet—a violent repelling action is felt, and the magneto is either twisted or pushed in the hand.

This reminds one of the old rule in the books on elementary electricity and magnetism, that "like poles repel, unlike poles attract." Therefore, if the repelling action is felt the magneto is turned round, when the two poles are rapidly pulled down to the electro-magnet. The pulling force exerted is usually so great that it is impossible to pull the magneto straight away vertically, but the magneto-magnet can nearly always be slid off the poles of the electro-magnet by pulling it hard towards one. If this is done, say, a dozen times in succession, it is more than likely that the magnet has been adequately magnetised. Messrs. Vandervell, however, have improved upon this process by fitting up a circuit-breaking arrangement on the wall adjacent to the bench on which the electro-magnet is fitted, and the operation in this case is merely to leave the magneto in position and to turn the handle on the circuit-breaker switch about a dozen or fifteen times in succession.

The magneto is now adequately magnetised, or, in other words, saturated with magnetism, and the degree of magnetism is tested by means of an instrument known as a fluximeter, which measures the degree of magnetic force. The instrument shows a graduated scale, divided into degrees of magnetism, and by the aid of this it is seen if the magneto is up to the requisite standard of magnetism. Once magnetised, a "keeper" or flat bar of iron is placed over the poles of the magnet and left there until it is mounted on the magneto.

Current Chat

TIMES TO LIGHT LAMPS.

		GREENWICH TIME.
Dec.	9th	4.50 p.m.
,,	11th	4.50 ,,
,,	13th	4.49 ,,
,,	15th	4.49 ,,

In London half an hour earlier

Road Signals for Cattle Driving after Dark.

The A.A. and M.U. has made representations to the Home Office on the subject of the danger caused by the driving of cattle and other animals on the road after dark without lights, or any adequate means of indicating to approaching vehicles their presence on the road. The Association has suggested that the persons in charge be compelled to carry lamps of a suitable type both at the front and rear of the animals, and that there should also be an obligation upon these persons to signal to approaching vehicles.

The cattle danger is an old trouble, and so long ago as the early part of 1909 the Coventry Motor Club presented a petition bearing hundreds of signatures to the Warwickshire County Council on the same subject, but without avail.

R.E. Despatch Riders.

The position of motor cyclists who are on the different waiting lists of the Royal Engineers despatch riders is still somewhat obscure. We have, on behalf of our readers, endeavoured to obtain details of their position under Lord Derby's scheme, and it is clear that men should enlist under the group system, notifying the Recruiting Officer that they have been passed for the R.E. when a vacancy occurs. We learn that men who now apply for positions as motor cyclist despatch riders will be enlisted, classified, and passed to the reserve, as in the usual case, and a note made of their wishes to join the Royal Engineers Signal Service as despatch riders. Should vacancies occur before the group in which they are placed is called up for service, they can present themselves for immediate enlistment with the Colours.

The arrangement which has already been made for the Lancashire district, at any rate, is for the application forms of motor cyclists, signed by the inspecting officer, to be first approved by the Officer Commanding the Training Centre, then forwarded to the Recruiting Officer nearest the candidates' homes, with instructions to the R.O. to enlist the men, classify and pass them to the reserve, making a note of their wishes to join the R.E. as motor cyclists. The R.E. application form for enlistment will be attached to the men's attestation papers, and as the men are required to be called up the respective Recruiting Officers will be notified.

Motor cyclists in the West Lancashire divisional area should apply to Mr. S. W. Phillpott, 60, Lime Street, Liverpool.

AUSTRALIAN MILITARY MOTOR CYCLISTS.
A portion of the Motor Cycle Corps of New South Wales receiving final instruction after completing a three days trek under Lieut. T. H. Henderson.

SPECIAL FEATURES.

THE CAUSE OF ENGINE STOPS.
COOLING VALVE CAPS.
FROM WORKS TO ARMY (Illustrated).

Motor Cyclists and Recruiting.

Applications still continue to reach us from prospective recruits for the Motor Machine Gun Service, but for two weeks it has definitely been stated that recruiting is closed for this branch of the Service.

Average Prices.

We give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model, the average for the past week is quoted. If there were not at least two advertisements, then the last occasion on which they were quoted is given.

Make.	Year.	H.P.	Average for last week.	Latest weekly average obtainable
A.J.S.	1915	6 3-sp. sidecar	—	£90
,,	1914	6 3-sp. sidecar	£74	—
,,	1913	6 3-sp. sidecar	£55	—
,,	1915	2¾ 3-speed	—	£48
Allon	1915	2¾ 2-speed	—	£36
Ariel	1914	3½ 3-sp. sidecar	—	£53
,,	1913	3½ 3-sp. sidecar	—	£41
Bat	1914	6 3-sp. sidecar	—	£55
B.S.A	1915	4½ 3-sp. sidecar	£70	—
,,	1914	4½ 3-sp. sidecar	£55	—
,,	1913	3½ 2-sp. sidecar	£36	—
Bradbury	1914	4 3-sp. sidecar	—	£47
Calthorpe	1914	2 2-speed	£19	—
Clyno	1914	6 3-sp. sidecar	—	£63
,,	1913	6 3-sp. sidecar	—	£50
,,	1914	2½ 2-speed	—	£40
Douglas	1914	2¾ 2-sp. kick start	£39	—
,,	1914	2¼ 2-sp T.T.	£41	—
Enfield	1915	6 2-sp. sidecar	£85	—
,,	1914	6 2-sp. sidecar	£64	—
,,	1913	6 2-sp. sidecar	£48	—
,,	1915	3 2-speed	—	£45
,,	1914	3 2-speed	£37	—
H.-Davidson	1915	7 3-sp. sidecar	£73	—
Humber	1913	3½ 3-sp. sidecar	—	£32
Indian	1915	7 3-sp. sidecar	—	£75
,,	1914	7 2-sp. sidecar	£60	—
,,	1914	7 T.T. free engine	£44	—
James	1915	4½ 3-sp. sidecar	£60	—
New Imperial	1915	2½ 2-speed	—	£30
,,	1914	2½ 2-speed	—	£26
O.K.	1915	2 2-speed	£28	—
P. & M.	1914	3½ 2-sp. sidecar	—	£52
,,	1913	3½ 2-sp. sidecar	—	£43
Premier	1914	3½ 3-sp. sidecar	—	£49
,,	1913	3½ 3-sp. sidecar	—	£44
Rover	1915	3½ 3-sp. sidecar	—	£56
,,	1914	3½ 3-sp. sidecar	—	£45
,,	1913	3½ 3-sp. sidecar	£10	—
Scott	1913	3¾ 2-sp. sidecar	—	£44
Sunbeam	1914	6 3-sp. sidecar	—	£80
,,	1914	3½ 3-speed	—	£52
,,	1915	3½ 3-speed	—	£65
Triumph	1914	4 3-sp. sidecar	£57	—
,,	1914	4 3-speed	—	£44
,,	1913	3½ 3-sp. sidecar	£45	—
,,	1913	3½ 3-speed	£38	—
Williamson	1914	8 2-sp. sidecar	—	£65
Zenith	1914	8 Gradua sidecar	£67	—
,,	1914	6 Gradua sidecar	—	£54

Park Speed Limits.

We understand that the twelve miles per hour speed limits in the London parks are being very strictly enforced just now.

Commission for Well-known Scottish Motorist.

Mr. George H. Cutbush, A.M.I.A.E., well known in connection with Glasgow motor circles, and who has been acting as inspector of Royal Engineer despatch riders for the Lowland Division, has been given a commission in the Lowland Divisional Signal Company R.E. (T.)

A Fine Record.

The December number of the Rudge Record, the house journal of Rudge-Whitworth, Ltd., consists of a second special war issue. As such it contains pictures and letters from many R.W. men who are on active service, and when one remembers that the works are working day and night on munitions, one realises that the Rudge firm are doing their share in the conflict.

The National War Funds.

At the week-end the principal war funds stood as follow:

The Prince of Wales's National Relief Fund (£2,793,000 distributed)	£5,631,980	0	0
The Queen's Work for Women Fund	167,261	17	0
The *Weekly Dispatch* Tobacco Fund	90,934	0	0
The Times Fund for the Sick and Wounded	2,400,723	15	9
Daily Chronicle Xmas Gift Fund	18,595	3	0
Daily News Xmas Pudding Fund	22,638	0	0

Aeroplane v. Motor Cycle.

Any speed "stunt" out of the ordinary gratifies our American friends, and, consequently, it was not altogether surprising to hear that at the Wisconsin State Fair there was a race between a motor cyclist and an aeroplane round a dirt track. The aviator was so outclassed that the rider of the motor cycle—a Harley-Davidson—had to slow down to keep the race interesting for the spectators.

Three Roads.—Edinburgh-Glasgow.

There are three main roads between Scotland's two principal cities, and having tried all three on many occasions lately on both passenger and solo mounts (unsprung frames, of course), the writer's experiences may be useful to motorists who may have occasion to do this journey.

The first road tried was *via* Bathgate and Airdrie. Though short (about forty-four miles) the surface is abominable, and would afford excellent preparatory training for an intending despatch rider in Gallipoli. Avoid it at all costs. The second route is *via* Falkirk, and enters Glasgow by Cumbernauld. The surface is excellent, except about Linlithgow and Falkirk; the narrow streets of the latter town necessitate careful driving. This route is fairly long. The third route is by far the best. The surface is uniformly good, the gradients insignificant, and the distance comparatively short (about forty-four miles). The road runs through Midcalder, Holytown, and Bellshill. This is indeed a "no trouble" route.

5,995 Motor Cyclist Recruits.

Now that recruiting for the M.M.C.S. and R.E. (signal section) has closed, it is interesting to note that no fewer than 5,995 prospective recruits have been dealt with by Mr. Geoffrey Smith, Editor of *The Motor Cycle*, who is honorary inspecting officer for these sections. The figures give some idea of the magnificent response of motor cyclists to the call of the country.

Our Spring Frame Campaign.

For once in a way we have this week an issue of *The Motor Cycle* devoid of matter relating to the rear springing of motor cycles. For some months past hardly a week has passed without a description appearing of a new device, and our correspondence columns have contained many instructive letters on the subject. However, the matter is not being dropped, and the numerous readers who are so interested in rear springing will have further opportunities of studying new systems and taking part in the discussions involved.

Twin-cylinder Two-strokes.

During last winter the Connaught Co. produced a horizontal twin two-stroke engine, a type with which a number of manufacturers are experimenting. The latest production of the firm is a V-type twin, which to all intents and purposes is two engines coupled together and mounted into a special frame. The latest engine is rated at 5 h.p., and has a capacity of 586 c.c., the bore and stroke being the same as the standard Connaught, viz., 73×70 mm. It will be interesting to observe its performance on the road.

Incidentally the two-stroke twin is now attracting much attention. Of the vertical type there are the Scott, Premier, and Allon, and of V-type two-stroke engines we have the Sun-Vitesse and Peco. The best known horizontal twin two-stroke is the Levis, though several other makes are under test on the road.

MOTOR CYCLING IN DENMARK.

(Upper) Five Rudge riders who took part in the Danish Grand Prix. It will be noted that they are using standard machines. This make has been very successful in Danish motor cycle competitions.

(Lower) A club meet in Denmark. All the machines are Rudges, and it is known as the Rudge club.

Justice?

A case has been brought to our notice in which a despatch rider unfortunately exceeded the speed limit in Sheen Road. Although it was his first offence the magistrate fined him £5. The soldier's mother, in writing to the Richmond magistrate, thanked him for the unjust fine on her son, and said that the magistrate thus deprived the lad from being able to purchase the few luxuries he required before facing many hardships. *John Bull* says, "We do not envy the feelings of the magistrate when he read that rebuke signed by 'His Mother.'" From every point of view the fine was mercilessly severe, and we regret to say we have had similar complaints from other despatch riders to whom no leniency has been shown. Apparently mercy does not temper justice when applied to motor cyclists in Surrey.

HOME OFFICE ORDER FOR REDUCED LIGHTING.

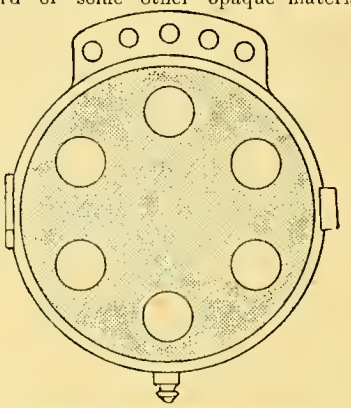
PROPOSED STANDARDISATION OF LIGHTS.

As suggested in a leading article in *The Motor Cycle* last week, a new Home Office Lighting Order is to be issued shortly, by which it is hoped the difficulties arising from the present chaotic lighting restrictions will be reduced. According to the A.A. and M.U., all restricted areas in England and Wales will be divided into two classes, the names of which will be scheduled. In all districts except those mentioned in the schedule, and certain important military centres, there will be no restrictions on lights at all beyond those obtaining under ordinary conditions.

New Regulations.

The exact conditions of the new Order are not available for publication at the moment, but it may be stated that in all districts mentioned in the schedule motor car head lights of any kind will be entirely prohibited, while in one class of restricted area side lights may be used up to a power provided by the Order, but also subject to obscuration, together with motor cycle lamps, if necessary.

In the second class of area lights must be still further reduced by means of an official type of disc made of cardboard or some other opaque material;



Design of lamp shade which may possibly be officially adopted.

this disc will be 6in. in diameter, with six holes each the size of a shilling. Lamps with a glass larger than 6in. will not be permitted.

Lighting-up Time Earlier.

Under the proposed new Order all vehicles will have to show a rear red light provided by means of a lamp placed at the back of the vehicle. More than two lamps showing lights to the front will not be allowed on any vehicle. Lighting-up time will also be half an hour after sunset throughout the country, instead of only in London as at present.

This new Order does not apply to the Metropolitan or City of London police districts. To assist motorists in knowing when they are entering the restricted areas, the Home Office will ask local authorities to display certain distinctive signs on the street lamps similar to those supplied by the Automobile Association, and now fitted in the lamps of many towns and districts where strict lighting restrictions have prevailed.

"THE MOTOR CYCLE" RECRUITING SECTION.

THE fact that practically all motor cyclist sections are closed for recruiting has caused great regret among prospective recruits, particularly in view of the special efforts of the past few weeks and the possible termination of Lord Derby's scheme next Saturday. The position, however, is not generally understood, and we will endeavour to explain it.

The Royal Engineers is the only section taking motor cyclists at present, and the requirements are restricted to ten men from each recruiting area every month. To supply this regular demand, in most cases there are sufficient names of eligible men on the different waiting lists. These men have waited patiently for weeks past.

The Motor Machine Gun Service, for which the Editor of *The Motor Cycle* has acted as recruiting officer, is up to strength, and recruiting closed a fortnight ago.

The Royal Flying Corps closed for motor cyclist recruits three weeks ago.

The A.S.C. is open for fitters and turners only.

It will thus be seen that at the present time there are limited vacancies for motor cyclists, though when the R.F.C., M.M.G.S., R.E., and A.S.C. were open some weeks ago there was a regular weekly influx of dozens of motor cyclist recruits

Last October, when certain R.E. areas were appealing for recruits and other areas were turning eligible men away, we urged the desirability of a central control for recruiting motor cyclists, and subsequently wrote the War Office on the subject. The A.C.U. secretary, Mr. T. W. Loughborough, who is secretary of the London Motor Cyclist Reserve Committee, thoroughly concurred in our views, and, moreover, drew up a scheme for submission to the War Office.

As to the procedure in connection with motor cyclists and the new recruiting scheme, Mr. S. W. Phillpott, of Liverpool, seems to be the only inspecting officer who has received detailed instructions (see page 586).

MOTOR MECHANICS WANTED.

THE Wireless Section R.E. has vacancies for about thirty-six motor mechanics with good practical knowledge of petrol engines. Applicants for these positions must be able to carry out repairs to such engines in the field. Applications for enlistment, stating qualifications, should be sent to the O.C. Wireless Training Centre, Worcester, from whom information regarding terms of service can be obtained.

Men would be required to enlist as sappers in the Wireless Section of the Royal Engineers.

A despatch rider, Corporal H. Akehurst, R.E., photographed by a French refugee after a long run over the roads of Flanders. The state of the Triumph indicates the mud-covered condition of the roads over there after a period of rain, and Corporal Akehurst considers that one requires to be a trick cyclist to negotiate *pave* under such conditions.

THE ORIGINAL BATTERY.

NO. 1 Battery, M.M.G.S., is still going strong, and according to Sergeant Norman Longfield there are very few "lightweights" left, which speaks well for the commissariat in France. What helps to brighten matters is the unexpected meeting of motor cycling friends, and in this connection Longfield tells us that during the past few weeks he has met many men well known in the motor cycling world, including Lieut. Rowlandson and Lieut. Colliver.

Lance-Corpl. A. Wade (a former Zenith rider) is now with the No. 1 Battery, and is putting in some splendid work in the maintenance of the outfits. He has just had a week at home after thirteen months on active service. He had quite a good time, not the least enjoyable being a dinner given in his honour by Cardiff motor cyclists.

MIDLANDERS ON SERVICE.

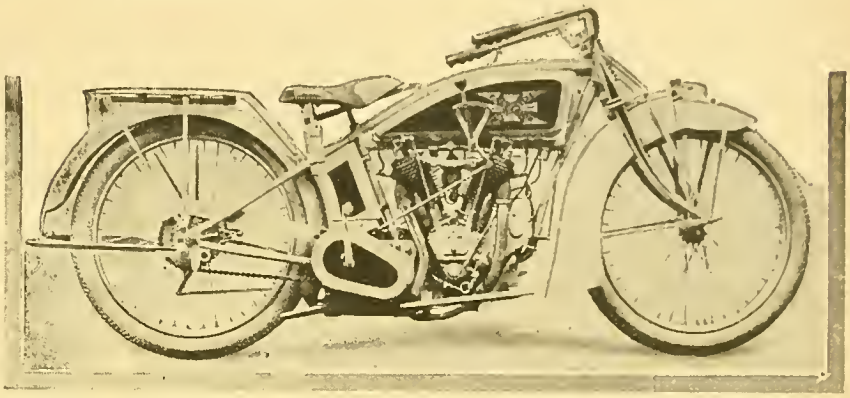
THE Colmore Depot has a roll of honour of thirty-two—an excellent record—and quite recently it honoured three of its men by a complimentary supper, Corporal J. Merton, who has had a son killed on the Gallipoli Peninsula, and Drivers H. J. Woodgate and A. Rowley being the men in question.

Refinements in the 1916 American Excelsior.

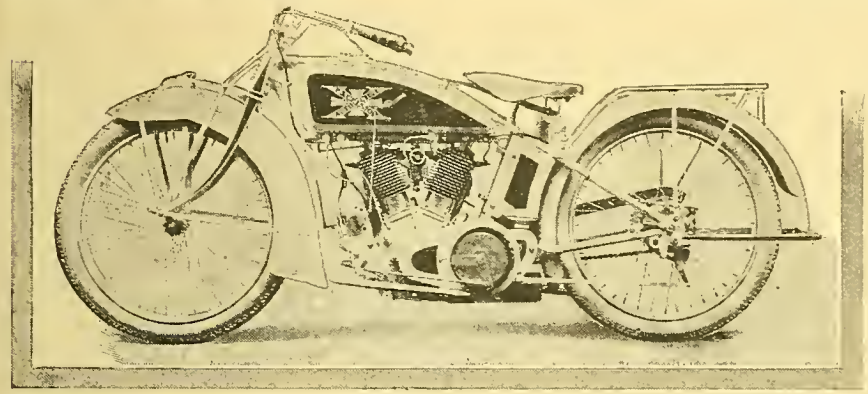
7 h.p. Twin-cylinder Engine, 84 mm. × 89 mm., 986 c.c. Three-speed Gear and All-chain Drive.

THE Excelsior has certainly had a good reception since its introduction to England, and we can speak of its excellent running after personal trial. The 1916 model has not undergone many alterations, and this was hardly to be expected, as the 1915 pattern did not lead one to suppose that there would be many features which could be altered for the better.

A refinement on the new type, which, however, is not obtainable at the present moment, is a new priming device, consisting of a T piece union screwed into the bottom of the petrol tank. From this there are two branches, one of which goes to a point close by the inlet valve dome on the back cylinder, and the other to a similar point on the front cylinder. The supply of petrol is controlled by a small needle valve, brought into operation by turning a milled screw.



1916 model American Excelsior, the chief points of interest of which are described in the accompanying letterpress.



Near side of the latest 7 h.p. American Excelsior. A 986 c.c. engine and a three-speed countershaft gear with all-chain drive are features of note.

The graceful design of the frame is another point worthy of mention, and it will be seen that the top tube is produced to coincide with the line of the back forks, thus rendering the design quite symmetrical. It will be noticed that, incorporated with the frame are eyelets into which the sidecar attachments are fixed. An efficient form of leaf spring fork is fitted.

Method of Control.

As regards control, the twist grip on the off side raises the exhaust valve in one direction, and when twisted the opposite way opens the throttle, while the near side grip controls the clutch, which is also actuated by foot. The small lever adjacent to the clutch control grip is for the operation of one of the two brakes, both of which work on the same drum, the other being operated by means of a pedal. One is internal expanding, and the other is of the contracting type.

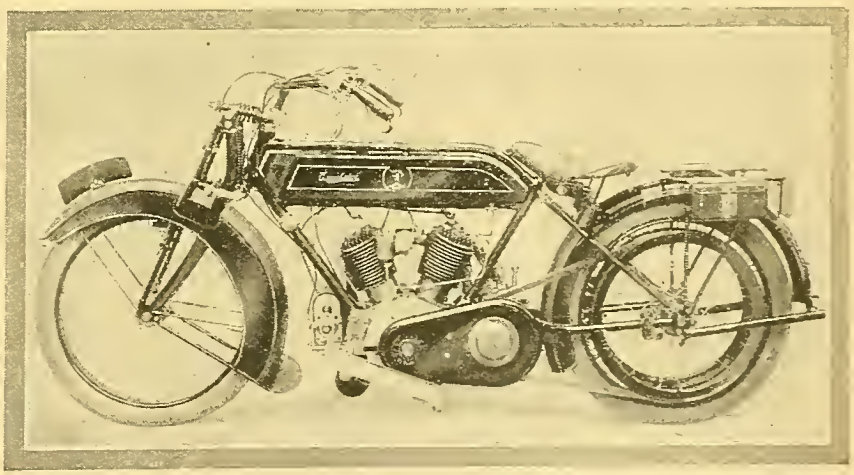
The compression valves on the off side of the cylinders are still retained, as is also the petrol squirt incorporated in the filler cap. This filler cap, by the way, is no longer flush with the tank, but has been raised considerably above it, so that it is much easier to unscrew.

A novel feature is the fitting of the kick starter on the off side of the machine. Formerly it was on the near side, as in America. The sidecar is placed on the opposite side of the machine to what it is in England.

The Lubrication System.

The usual American system of mechanical oil pump, keeping a constant level of lubricant in the crank case, is employed. Below this pump there is a T piece union, at the end of the upright of which there is a small screw. This is a good feature, as it is intended, when the screw is removed and the engine is set in motion, to free the oil pipes of air locks, and as soon as the oil makes an appearance the screw can be replaced, and there will be no doubt about the pump doing its duty. There is also a special lead carrying oil to the front cylinder.

A CHAIN-CUM-BELT-DRIVEN BRITISH EXCELSIOR.



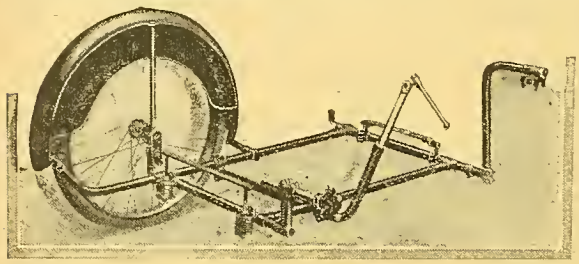
Fitted with an 8 h.p. J.A.P. engine, a three-speed countershaft gear, and chain-cum-belt transmission, the latest Excelsior is a fine specimen of a powerful British twin.

SOME NEW SIDECAR ATTACHMENTS.

Lightweight Chassis Design—A Collapsible Body.

WATSONIAN SIDECAR CHASSIS.

THE four new bodies designed by the Watsonian Folding Side Car Co., Ltd., have been described already (issue of November 11th, page 468), and for these models a new lightweight chassis has been evolved. As will be seen in the photograph of the chassis, the main frame is rectangular, having the axle at one end and at the other a cross tube on which are the supports for the nose of the body, while the offside tube of the frame is extended to form the rearmost support of the mudguard. Since this tube is of the same diameter throughout its length, it forms a very stiff support indeed. Attached to the forward cross tube is a supporting tube adjustable for height in a lug near the frame, and locked when in position by two bolts. Near the axle comes the rear supporting tube bolted to the frame, while the axle end also is clipped to the motor cycle frame, but with a telescopic joint for aligning the sidecar and motor cycle.



New lightweight sidecar chassis built by the Watsonian Sidecar Company and described on this page.

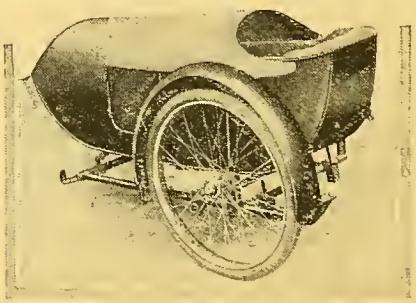
To make it easy to detach the sidecar all joints are made up with one big securing nut, an easy fit on its thread. The back of this nut is serrated, and there is a small spring-held pawl to engage with the serrations, thus forming a ratchet and making it impossible for the nut to come unscrewed. By holding back the pawl one can unscrew the nut by hand and without using a spanner.

This chassis has a 5in. drop between the wheel-spindle and axle, obtained by designing two special malleable cast brackets of strong section, and securing one end of the bracket to the axle tube, while the other holds the one inch spindle. Stiffening webs are employed for the bracket next to the motor cycle.

From the top of the wheel-spindle bracket a short rigid tube supports the mudguard, while a third support is a small bracket bolted to the frame and secured to the forward end of the guard.

Either coil springs or Cee springs may be fitted, the former being connected to a bar running athwart the lower side of the body, the latter clipped to the side tubes, the nose of the body resting on a cross-bar pivoted to allow the body to rock freely on its springs. With the Cee springs long shackles are used.

With 26in. × 2¼in. Michelin tyres, a 2½in. drop, and weighing 46 lb., this chassis is fitted with the "Tourist" model body. The same chassis having one more connecting tube, a 5in. drop, and weighing 50 lb., is used for the "Aero" sporting model.



Watsonian "Aero" sporting model sidecar.

The coachbuilt "Aero" body weighs but 29 lb., and the complete sidecar is built for use with 3½ h.p. machines when weight must be kept at as low a figure as possible.

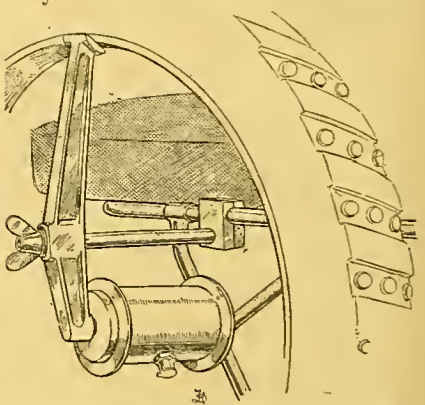
The following sidecars were described in our last issue:

HENDERSON	page	547
BRITANNIC	„	547
MONTGOMERY	„	547
IVY BATH CHAIR SIDECAR	„	548

MONTGOMERY FOLDING SIDECAR BODY.

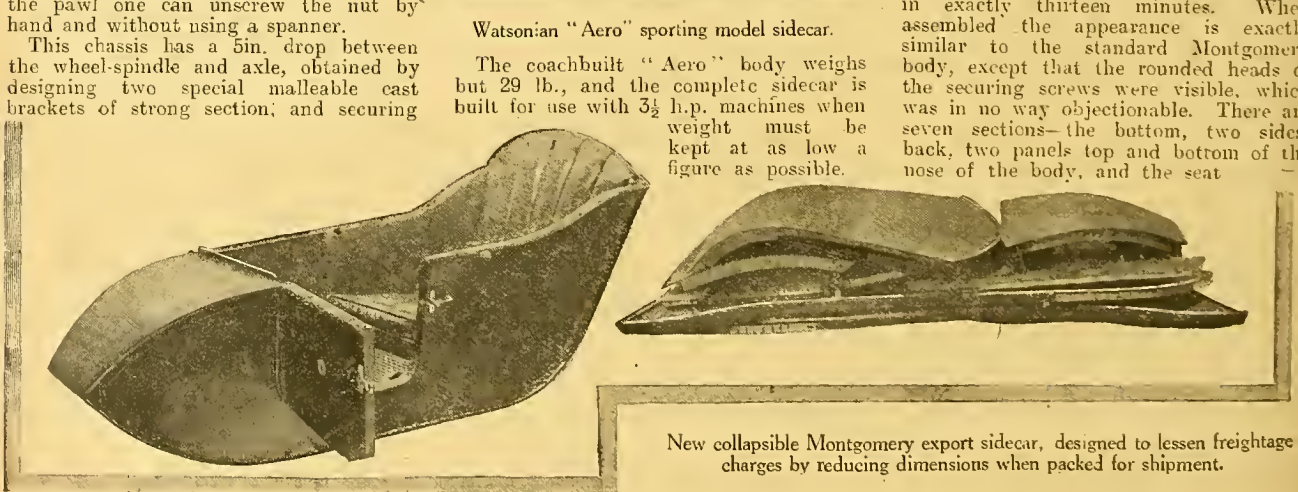
Made in Sections to Reduce Cost of Export.

THE cost of exporting such articles as sidecar bodies is always rather expensive owing to their bulk, which in comparison with their weight is very considerable, and this extra cost is naturally more noticeable under the present conditions of increased shipping charges. In order to reduce this as much as possible, Messrs. Montgomery and Co. have recently brought out a novel coachbuilt sidecar body which will take to pieces and pack into a very small space; in fact, Mr. Montgomery informs us that five of these bodies can be packed into rather less space than that previously occupied by one complete body.



CLYNO DETACHABLE WHEEL SUPPORT.
The quickly detachable fixing for the spare wheel, which is fixed on the off side of the carrier

The body is complete with door fastenings, upholstery, tool locker, paint and varnish. All that has to be done when the body arrives at its destination is to assemble it and fit the screws which hold it together. No skilled labour is required, and we saw two men fit one together in exactly thirteen minutes. When assembled the appearance is exactly similar to the standard Montgomery body, except that the rounded heads of the securing screws were visible, which was in no way objectionable. There are seven sections—the bottom, two sides, back, two panels top and bottom of the nose of the body, and the seat



New collapsible Montgomery export sidecar, designed to lessen freightage charges by reducing dimensions when packed for shipment.

The Editor does not hold himself responsible for the opinions of his correspondents

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street Coventry, and must be accompanied by the writer's name and address.

Carburetter Adjustment.

Sir,—I was interested in Mr. W. Hockney's letter under the title, "Reversing a Scott." I, too, have lately been riding a Scott, but am unable to get anything like the mileage per gallon that he can. With a passenger on the carrier I get about 54 m.p.g., riding solo about 60 m.p.g. The machine is fitted with a Binks two-jet carburetter, and I drive as much as possible on pilot jet, from which I can get any speed up to 24 m.p.h. Owing to increased price of petrol, I am very anxious to get a big mileage per gallon. Perhaps you could put me into direct communication with Mr. Hockney, who would, no doubt, be quite pleased to give advice or hints to a "fellow Scott" as to how he manages to get about 100 m.p.g. riding solo. V. B. YEARSLEY.

Sir,—I noticed in the last issue of your paper (December 2nd) a letter written by W. Hockney, which appears under the heading "Reversing a Scott." In the latter part of his letter Mr. Hockney says that he is getting a mileage of seventy-five to one gallon of petrol on his Scott with sidecar attached, his carburetter being a 1915 B. and B., which is, I presume, of the variable jet type, specially adapted for fitting to the Scott.

A few months ago I had a 1915 B. and B. semi-automatic variable jet carburetter fitted to my Scott, which is a 1913 model. After several adjustments of the needle I can, with careful manipulation of the air lever, obtain a mileage of forty-five to one gallon, with sidecar attached and one passenger.

I should be pleased if Mr. Hockney would inform me as to how he has adjusted his carburetter to give him his mileage of seventy-five per gallon, which is, I should think, a record small consumption for a Scott, which is acknowledged to be fairly heavy on petrol.

I may say that the carburetter has effected a great improvement in the starting of the engine, about three kicks being sufficient to set the engine purring, even during the severe frost of a few days ago, without having to press the "tickler." JAMES F. STANLEY.

A Tip to Indian Riders.

Sir,—I dare say a good many riders of 1915 Indians are troubled with the way in which they rev. when in free engine. Of course, it not only means unnecessary wear on the bearings and every part in general, but in these hard times it is not exactly economical. Now this is my idea after having tried choke tubes and various other devices which all failed.

As is well known among all Indian riders, the carburetter has two jets, and all the slow running is obtained from the smallest of these two jets; each jet having a separate induction pipe.

Now take the pilot jet induction pipe, cut it at the top and bottom, and you will have the centre piece out. Now at any motor cycle dealer's buy an ordinary tap and solder it to the two ends of the pipe and you have a separate throttle to the pilot jet, so that when you are held up in traffic or on any other occasion your engine will tick over slower than a cart, and take you along at a walking pace. I myself know about ten people who have copied my idea and they consider it a great boon. To improve matters, control this by Bowden wire and a magneto control on the handle-bar. I trust you will publish this, as I worked a month to satisfy myself, and I dare say there are many others who will find this useful. G. H. GIBBS.

Paraffin as a Fuel.

Sir,—It may be interesting to you to know that the writer, doing approximately 1,000 miles per month, is using nothing else but half household paraffin and half Crown spirit, with perfect results. An experiment was carried out gradually adding paraffin to the petrol until a mixture of threequarters paraffin and one-quarter petrol was arrived at. This answered quite well once the motor was started, but a very dirty exhaust was the result, and some difficulty in starting on a cold morning. After the engine had been warmed up this mixture was as easy to start as pure petrol. However, to get rid of the bad effects as mentioned above, the half-and-half mixture was finally decided upon. The only difference perceivable is a very slight falling off in power, and perhaps about ten yards further run with the engine in the morning before it fires. Of course, the easiest way to overcome all these difficulties is to fill the carburetter in the morning with pure petrol, then a greater proportion of paraffin to that which the writer uses can be adopted, but, as a rule, this method is too much trouble.

The above is used on a 2¾ h.p. T.T. Douglas with Amac carburetter. The writer knows of an 8 h.p. twin Premier being run on pure paraffin, the rider only having to fill his carburetter with pure petrol in the morning. A mixture of benzole, Jones's Xl'All, and paraffin seems to give the same results as petrol-paraffin, but the benzole gives greater trouble on a cold morning in freezing up.

F. R. SWINBURNE.

Sir,—I note the enquiry in your issue of the 11th inst. as to the harmful effects, if any, resulting from the use of paraffin alone or mixed with petrol. The suggestion of a motor manufacturer that unburnt paraffin escapes past the rings into the crank case and there dilutes the lubricant is no myth, but actual fact. Some particulars of a case

Despatch riders with their respirators in position. The photograph was taken on the Gallipoli Peninsula.

which came to my notice may be of interest. A boat was fitted with a pair of six-cylinder engines running on paraffin fuel. In one set the results were good, but in the other, although apparently under similar conditions, the bearings were wearing out quickly. The lubricant was, of course, suspected, and, in the case of oil drawn from the sump of the troublesome engine, there was a smell of paraffin, and tests showed the presence of this fuel in small quantities. After making sure that fuel could not possibly have been added to the engine oil, I suspected the carburetter, and was informed that, after recent adjustments, the fuel consumption had increased. Further, I elicited the information that whereas, in the case of the satisfactory set, the sparking plugs rarely needed attention, in the other set the sparking plugs had to be cleaned of sooty deposit daily. It was soon proved that the carburetter on the faulty set was giving too rich a mixture which was incompletely burnt, and that a portion of the fuel was condensing on the cylinder walls and percolating into the crank case, assisted, of course, by the oil film between the pistons and cylinders. The efficiency of the lubricant was quickly spoilt and wear of the bearings resulted.

Proper heating and accurate adjustment of the carburetter are essential in the case of paraffin or paraffin and petrol or benzole mixtures. Similar precautions should be taken in the case of benzole, and under all conditions the lubricant in the crank case should be changed more frequently than when petrol is used. Incidentally, one may remark how closely carburation and lubrication are related in the running of internal combustion engines. J. W. G. BROOKER.

Clutch Operation and Transmission.

Sir,—It was with great pleasure I read the letter from Mr. A. I. Dowler in your issue of the 2nd inst. "Ixion's" contention that the handle-bar clutch takes a lot of hauling out is certainly wrong when that remark is applied to the Sunbeam models for 1915, and, in my opinion, it is essential with a sidecar combination for the handle-bar clutch to be fitted.

I began motor cycling in July, 1913, when I purchased a Wall Auto-wheel. This I ran for four months, and during that period the only troubles I had were an occasional sooted plug and punctures. In October, 1913, I bought a well-known 3½ h.p. single and sidecar, belt drive with hub gear and foot control clutch. This was a 1913 model, and had done 600 miles when it was sold to me. I had it three months and did 700 miles, averaging 35 m.p.g. During that time I spent £10 odd for repairs and tyres. I found that it was not desirable to attempt a restart on a steep hill, as it nearly always ended in failure because the engine could not be relieved of the taking up of the load to any extent, as I had to be seated in order to let the foot clutch in.

Early in February, 1914, I purchased a 6 h.p. Sunbeam 1914 combination, and during the fifteen months I had it I did 6,300 miles. I averaged 72 m.p.g. during a tour of 1,009 miles in the summer of 1914, from Cardiff, over Dartmoor, to the Isle of Wight, and as far as Eastbourne. It was during this tour I found the advantage of the hand clutch. I was on the steepest part of Birdlip when the front plug became sooted up. I stopped and put a stone under the back wheel, and put the plug right. I restarted at the first attempt because I was able to ease the strain by pushing as I let the clutch in. The total weight during this tour was 8½ cwt. When I sold the combination the original chains and the front and sidecar tyres were on it. R.O.M. combination, 700×80 mm., were the tyres. I spent £2 on repairs, excluding tyres, and had one puncture for the fifteen months.

In May this year I purchased a 6 h.p. Sunbeam 1915 combination with Lucas dynamo outfit. I average 58 m.p.g., and up to date I have done nearly 4,000 miles, and have just replaced the back tyre; the original tyres are on the other wheels. I again use the oversize R.O.M. tyre, and have not had a puncture. There is a vast difference between the Sunbeam 1914 and 1915 clutch control. I grant the 1914 did take a bit of hauling out, but the 1915 control a child could lift. My repair bill for the 1915 combination is 3s. 6d. so far, and this month I am exchanging it for the 8 h.p. Sunbeam 1916 model. I have always carried complete spare chains, but have never had to use them.

I add the usual disclaimer. R. WILFRED REES.

A Catch?

Sir,—With reference to Mr. F. G. L. Evans's wish expressed to "Ixion" to pit a 7 h.p. F.N. and sidecar with three up against a Henderson solo in a speed contest, if this is really a serious challenge from Mr. Evans, I shall be pleased to ride my Henderson against his little lot as described, the loser to pay £5 to one of the war charities.

In view of the terrific speed Mr. Evans presumably expects to obtain from his overloaded machine, I am afraid that Brooklands track in its present condition might prove dangerously bumpy for him, but a stretch of road might be found to accommodate him. Unless Mr. Evans insists, I would agree to waive the half a mile start offered.

VIVIAN OLSSON.

The Lady Motor Cyclist.—A Protest.

Sir,—*Apropos* the controversy with regard to feminine attire, there are, in my immediate vicinity, three examples which would appear to cover the extreme range of taste. The first is an elderly female who rides a powerful sidecar combination. She wears a mackintosh jacket of the sloppy, waistless sort, and heavy boots. The lower portion of her attire may be, from all appearances, shared by the partner of her private life (possibly this is a step towards economy necessitated by the war!) Huge spectacles and an aggressively unbecoming headgear complete this rig-out.

The second case is that of a younger woman who wears an ordinary male suit of overalls and an ordinary common (very common) peak cap. The latter is anchored down by something that resembles a skewer, and is strikingly reminiscent of washing day in the back kitchen!

The third case is that of the youthful rider of a Rudge. She wears well-cut riding breeches, and a long-waisted jacket reaching almost to the knees. A smart leather belt and high brown boots to match put the finishing touches to this graceful, easy, and becoming attire.

Why does "Logistes" blunder into sarcasm because Mary Reid, very naturally and desirably, wishes to "sit her steed with gracefulness"? The "logic" of the first-named correspondent is, apparently, to the effect that in abandoning the skirt, the high heels, and the stays, the woman of enlightened ideas will further make a point of discarding everything womanly and graceful, in order that she may rise to the proper and dignified standing to which she rightly belongs!

The allusion to the Empire robe is on a par with the other points of "logic," and I certainly do not think that the practical woman, who aspires to be man's chum, would go about it by copying his garments to an extent which would entail the sacrifice of prettiness and grace.

PRO BONO PUBLICO.

Miss Anna Blakiston, of Dore, Derbyshire, who rides a two-stroke Revere. She favours a man's model, and wears ordinary trouser overalls.

A Cure for Four-stroking.

Sir,—I read with interest Mr. R. S. Carr's "Cure for Four-stroking" in your issue of November 25th, and, as I also have a two-stroke motor cycle, I should be much obliged if he would state a few more particulars as to these fitments. What kind of non-return valve is best, and how is it fixed into the induction pipe? What is the cost of having the extra air valve and the non-return valve fitted?

D. G. COSSHAM.

Broken Spokes.

Sir,—I noticed in *The Motor Cycle* for November 18th, under heading of "Letters to the Editor," an enquiry from a Mr. Wild *re* broken spokes.

I assume the machine he refers to is a 1914 Indian spring frame model, for undoubtedly this particular mount is a bad offender; only after many experiments have I managed to arrest the very annoying trouble. I took the wheel out of the frame, and, with a pair of pliers (not the usual spoke spanner), carefully trued up all the spokes to their correct tension. I then lapped all the spokes at the crossing on the driving sprocket side with copper wire, and soldered it in position. (This prevents whipping, which is usual when the wheels are built in the American way, viz., outside spoke on outside of inside spoke instead of the reverse.) The clutch must then be carefully adjusted so as to give slight slip under power of engine immediately on release pedal being pressed forward.

I think if your reader will try this method he will be surprised with the results. I never have a spoke break at all now, even though I often carry a third passenger weighing 9 st. I might also mention that with the spring frame Indian the clutch should always be very slightly released when going over pot-holey roads, otherwise nothing will prevent spokes from going.

I believe I am right in saying that the Indian people introduced a hub in their early models making it possible to insert a new spoke with the wheel *in situ*.

ROBERT RUSSELL.

A COPY OF THIS LETTER WAS SUBMITTED TO THE HENDEE MANUFACTURING CO., WHO REPLIED AS FOLLOWS:

Sir,—We are in receipt of your favour of November 23rd in regard to spokes breaking on Indian motor cycles.

We think the trouble is caused entirely by riders running their machines with the clutches too tight, though, we are pleased to say, we have had practically no complaints in this respect for the past year, undoubtedly due to the fact that motor cyclists are getting more familiar with the chain drive.

Some years ago we used a buttonhole spoke attachment in the rear hub, but we found this was not satisfactory, for the reason that it gave the heads of the spokes considerable movement, which had the tendency to snap them off.

It is our firm belief that if the clutches were adjusted so as to give a slight slip, riders of Indians, as well as of other chain-driven machines, would have no cause to complain of spokes breaking.

HENDEE MANUFACTURING CO.,
W. H. Wells, Manager, London Depot.

Sir,—*Re* "Wild's" experiences with his big twin, I should like to suggest that the breaking of his spokes is mainly due to hanging on to top gear with a large throttle opening at low speeds. This causes the engine to "chug," and a "snatchy" drive results. This trouble seems rather peculiar to American machines, as, owing to their great flexibility, their riders are apt to use the top gear when it would be much more practical, if a little troublesome, to change down to middle.

INDIAN EX.

Sir,—Seeing your correspondent's ("Wild's") letter, and having experienced the same trouble with my 8 h.p. chain-cum-belt drive twin, namely, broken spokes at the bend, I think that perhaps my remedy may cure his case also if he care to try it.

I suggest that he take out his back wheel and examine it most carefully to see if every spoke is taking its fair share of the pull. To do this he should grip two spokes with his hand close up to the belt rim, watching very carefully for any movement between the spoke and the clip, which in my case was a small plate and two bolts. I fancy he will find, as I did, after having been all round the wheel, that not more than one half of the spokes are actually gripped by the plates, as their faces are flat and smooth. On my machine the reason was because the bolts were not threaded far enough down. I therefore purchased new bolts with the threads running right down to the heads, removed one plate at a time, after marking the position of the spoke, and cut a slight groove to allow the spokes to bed themselves down into the plates when screwed home tight. I have done four thousand miles with the machine since, and the trouble has completely vanished.

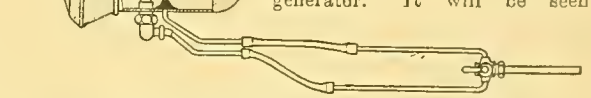
I might mention that the agent from whom I purchased my machine was at a loss to find the cause, although he had ridden the machine for a season prior to selling it to me, and admitted he was continually replacing broken spokes himself.

SECOND YEAR RIDER.

Dimming Bright Lights.

Sir,—In view of the existing regulations for dimming head lamps, I have had the following conversion made to my big F.R.S. Actually it comprises a pilot light, which was constructed in the following manner:

About 3in. of $\frac{3}{16}$in. brass tube was tapped out at one end to take a Lucas tail lamp burner. This was then soldered in a hole in the face of the lamp, so that the main burner and pilot were within $\frac{3}{16}$in. of each other (see sketch).



Pilot light fitted to acetylene lamp to meet dimming regulations. See letter on this page from Mr. D. H. West.

The main gas tube along the top of the tank was then cut about midway, and a two-way tap inserted, the two tubes from this tap being connected to the two burners and the single one to the generator. It will be seen that a turn of the tap will supply gas to either burner, and once alight the main burner will light off the pilot jet and *vice versâ*.

The addition can be made at a very small cost, and will amply repay the trouble taken. Its advantages are obvious, and when approaching a town it is only necessary to turn the tap on to the pilot light (which cuts off the main burner), and in the country one can enjoy the maximum light.

DOUGLAS H. WEST.

Reversing a Scott.

Sir,—With regard to your paragraph in October 28th issue, the following incident which happened to me may be of interest to your readers, and perhaps someone can offer an explanation for it.

I ride a 1914 Scott and sidecar fitted with a Bosch magneto. I was driving this machine into my garage the other night when I accidentally stopped the engine at the door. I started up with the kick starter in the usual way, and, as there is a stiff rise at the door, I speeded the engine up before engaging the low gear, which I did rather quickly. I was very much surprised when I was somewhat rudely carried backwards into a rose bed. For some time after that I could not be certain whether my engine was running the right way or not till I let the clutch in, but now in some mysterious manner the fault has disappeared.

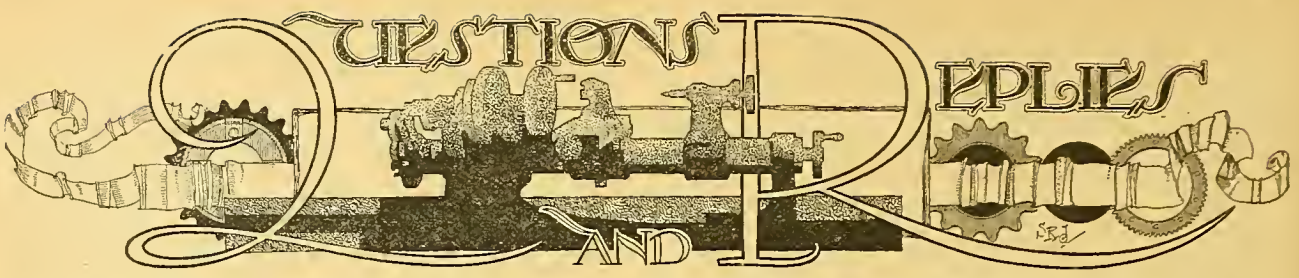
May I add a word of praise for my Scott, which has carried me 17,840 miles in seventeen months, and has never let me down on the road, and has cost nothing for repairs, except a new set of chains and tyres?

With reference to "Scot's" letter in October 28th issue, I may say I have tried mixing the petrol and oil on the Scott machine, and have noted carefully the results.

The acceleration was not so good, the machine was not quite so fast, the petrol consumption was considerably increased, and the machine was inclined to four-stroke at slow speeds, so I had no hesitation in going back to the drip feed.

Need I add that I have no connection with the Scott Co. whatever?

GEORGE ALLEN.



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Use of a Decompressor.

I should be obliged to you if you would explain to me the advantage of a decompressor. Would not opening the compression tap serve the purpose? Also, I should like to know if there are any means of preventing belt slip in wet weather on a 2¾ h.p. direct-drive machine.—T.J.

A decompressor reduces the compression so that the engine is very easy to start; it does this by permitting a certain portion of the gas under compression to escape. The compression tap would not answer the same purpose, as it would also upset the quality of the mixture by permitting air to enter the cylinder on the induction stroke. There is no satisfactory method of preventing a rubber belt from slipping in wet weather. A leather belt is less likely to slip than a rubber one.

A Mysterious Trouble.

I have a 2¾ h.p. twin with a two-speed gear, which was running well until the other day, when it suddenly ceased firing, and, having tried everything without result, I pushed it home. I am unable to get a spark at the plugs at all, but upon removing the magneto from the machine I get a beautiful spark at both plugs, without making any alteration to the magneto and using the same plugs and high-tension wires. Upon refitting the magneto to the machine and trying it, I again failed to get a spark, or even a shock when I held my finger on the magneto terminal. I again removed the magneto from the machine and, without any alteration, tried it, and at once got perfect sparking at both plugs. I may say that the magneto is a 60° 1913 Bosch, which is clamped behind the engine on the frame just behind the countershaft. I have tried to see if I could find a short by pedalling it over in the dark, hoping I might see a spark on the frame or somewhere, but this was also without result. I should be glad if you could enlighten me on this matter.—H.W.D.

Evidently there is a short circuit somewhere when the magneto is in position, but it is impossible for us to say where without actually seeing it. If a switch wire is connected up when the magneto is fitted to the machine, the short circuit is almost certainly somewhere in this wire. You should disconnect it from the magneto and see if matters improve. The mere fact of just bolting the magneto into position should not affect the spark in any way. Make quite sure the high-tension cables are in perfect order and not shorting to the frame anywhere. If these points are in order, the trouble is probably due to the windings being broken down, but the fact that you get a spark when the machine is not in position is certainly very difficult to explain.

Erratic Running.

I have a 1905 Rex with automatic inlet valve, and fitted with an old pattern B. and B. carburetter. If I inject a good squirt full of petrol, it will start easily and run for thirty or forty yards, but will then stop firing suddenly, and refuse to start again till another injection of petrol is given; it will then do exactly the same thing again.—E.A.H.

The trouble is most likely caused through a stopped-up jet. Therefore the engine simply runs on the petrol you have injected into the cylinder, and when this is exhausted it ceases to fire. It could also be caused by an air leak in the induction pipe or carburetter unions. You should thoroughly clean the carburetter, and see that all passages are free from obstruction, and that all joints between carburetter and engine are tight and not admitting air. See that the valve springs are quite strong and valves are not sticking.

Cause of Difficult Starting.

I have a 1912 6 h.p. twin with kick starter and two-speed gear. Some little time ago I had it re-bored, and new piston, rings, gudgeon pin, and a 1915 carburetter fitted. It has run well up to a week or so ago, but is now very difficult to start. I have fitted new plugs and bound all joints in induction pipe to stop air leaks, and have cleaned carburetter, but with no effect. The only way I was able to start last time was to get two to push and then put in low gear.—E.P.

Difficult starting may be due to any of the following points: Carburetter partially choked. Plug points dirty or too wide apart. Carbon brushes on magneto oily. High-tension wires damp and shorting. Switch wire shorting; to test this detach switch wire from magneto. Rocker arm on contact breaker sticking owing to the fibre bush swelling. Make sure that the valves are seating properly and are not leaking at all. If all these points are correct and you can obtain a spark at the plugs when you test them by placing the body of the plug on the cylinder, taking good care not to let the terminal touch any part of the frame, and turn the engine over fairly fast, there is absolutely no reason why the machine should not start quite easily. You should go over the machine systematically, testing each part separately. If the engine is stiff, and so makes it difficult to turn over, you should inject a little petrol or paraffin through the compression taps, and then turn the engine over a few times to free the rings.

Loss of Power.

(1.) My 3½ h.p. machine will carry me and a passenger up any hill shortly after starting and before the engine gets heated—in fact, I need not open the throttle more than half-way—but after it has been on the road for a while it seems to lose power and will not take even small hills. I recently ground in the valves, but this did not cure the trouble completely, although it improved it. (2.) I cannot possibly start the engine on any speed without first injecting petrol; the piston seems to stick the minute the engine gets cold. I use a good oil, but perhaps it is too thick. (3.) I have steel-studded tyres on both wheels, and if the roads are dry all the patches melt off the inner tubes.—M.P.L.

(1.) Apparently the valve stems expand with the heat, so that the valves do not seat properly, and thus the compression is lost. The remedy is to adjust the tappets. A smaller jet might be advisable if you suffer from overheating. (2.) Possibly the piston is too tight a fit in the cylinder. The rings being a tight fit or stuck in their grooves with carbon deposit might also cause the trouble. When rings are fitted into the cylinder the ends should not quite meet. (3.) You had better give up using steel-studded tyres in the summer time. These cause the patches to come off the tube, as they generate so much heat.

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Uneven Running.

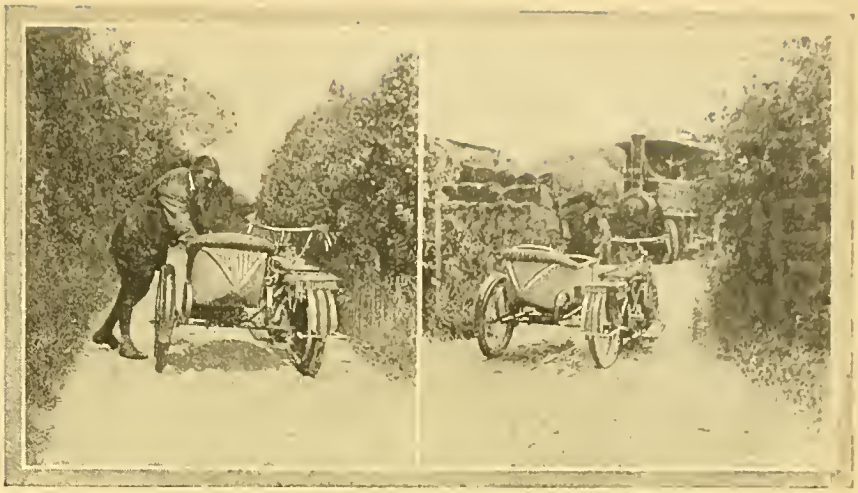
I own a 1912 2¾ h.p. twin. I notice a great deal of misfiring in the front cylinder, while the back cylinder fires very evenly indeed. Every now and then both of them are quite all right, but on the whole the front one misfires much more than it ought to. Will you please tell me the cause of this?—R.N.

There are several causes of the trouble you are experiencing, the most likely being a faulty plug, or one where the points are adjusted either too closely or too wide apart. The gap should be about $\frac{1}{32}$in. The carbon brush for the front cylinder may be damaged or dirty. See that the insulation of the high-tension wire is not damaged and so shorting to the frame. You should also make sure the valve springs are in good order and are not too weak. The contact breaker points should break evenly for both cylinders and should separate .4 mm.

Lubrication Devices.

Will you kindly explain the advantages and disadvantages of the various kinds of drip feed lubricators for motor cycles? First, those operated by suction from the vacuum in the crank case; second, those actuated by a spring? Am I correct in assuming that the former (No. 1) give a supply to the engine automatically greater or less according to whether the engine is running fast or slow? If so, where is the need of the second class of lubricators actuated with a spring? Is the vacuum in the crank case liable to fail from any cause? If then the No. 1 class of lubricator gives the engine its oil automatically according to speed, what more is required, and where is the need of applying a spring which, instead of supplying the engine with oil according to its speed, supplies it according to time, which appears to me to be incorrect? Or, in case of the spring lubricators, is there not also, as in the case of the No. 1 lubricators, a suction going on in the crank case to increase the supply in those also when the piston is moving more rapidly; that is to say, do not the No. 2 lubricators work partially by spring and partially by suction?—E.J.H.

No; the automatic drip feed lubricator No. 1 does not vary the amount of oil supplied to the engine according to the increased speed. The partial vacuum in the crank case which sucks the oil from the tank through the sight feed alters so very slightly with the variation of speed that it would not affect the quantity of oil drawn through. The quantity is practically entirely regulated by the needle valve. This also applies to the type operated by the pump and spring, but in this case the flow also varies according to the position of the plunger, viz., when it is first depressed the compression on the spring is greater, therefore more oil is forced through. In the case of No. 1 the chief trouble arises from faulty crank case joints, but frequently from the ball valves becoming stuck, thus allowing air to enter the crank case and spoil the vacuum. The ideal lubrication system has yet to be designed for a motor cycle—one similar to that fitted to Daimler cars is what is wanted, viz., where the amount of oil is increased or decreased as the throttle is either opened or closed, so giving more oil to the cylinder and piston when the engine is working hard and less when running light.



COUNTRY LANE WANDERING ON A SIDECAR.

As a change from straightaway runs on main roads, nothing is more delightful than a ramble on the byways, and for such a trip a sidecar is, for obvious reasons, a very suitable vehicle. Our picture shows a 1915 3½ h.p. Premier sidecar outfit.

Misfiring on Rough Roads.

I should feel very much obliged if you would enlighten me on the following points concerning my 1911 3½ h.p. single-cylinder machine: (1.) When travelling at a fair pace, say 20 m.p.h., a misfire occasionally occurs, and it is specially noticeable when going over an object in the road, since, as soon as the machine receives a jolt it will misfire. The jet size is, I think, about 33 or 34. Petrol sometimes drips from the carburetter if the machine is tilted over slightly on one side. Everything is clean. The carburetter takes a good deal of air, but, however one adjusts the levers, this occasional misfiring occurs. Is the jet too large? The engine gets very hot. (2.) The saddle position being high, I thought of having the top tube dropped at the rear; that is, either curved at the rear, or brought straight down as in the A.J.S. Would this weaken the frame at all, and which would be the most preferable, the straight or curved tube? (3.) I can just touch 40 m.p.h. Is this a good speed for this machine, or ought I to get more, as the engine is in perfect condition?—G.L.

(1.) We should say that the trouble is probably due to the level of the petrol in the carburetter being slightly too high. Going over a bump would cause an excess of petrol, and, consequently, too strong a mixture and misfiring. Also make sure the high-tension wire is quite sound and is not shorting to the frame anywhere when jolted. (2.) You will find a tube curved at the rear or a straight dropped tube perfectly satisfactory. Neither will weaken the frame if the work is properly carried out by a competent repairer. (3.) You should get about 45 m.p.h.

EXPERIENCES WANTED.

Readers desirous of obtaining the experience of others with various motor cycles or accessories must enclose a stamped addressed envelope in which the replies may be forwarded. Answers to the queries should be addressed c/o The Editor.

"S.T.C." (Sussex).—2 h.p. Calthorpe two-speed. Consumption, maximum speed, hill-climbing, and reliability.

"E.A.H.M." (India).—G.N. cycle car and Morgan runabout in India. Effect of heat on engine.

"B.R.F." (Birmingham).—2¾ h.p. De Luxe T.D.C. two-stroke. Stability, lubrication, efficiency, and suitability for sidecar work. Also Grado multi pulley.

RECOMMENDED ROUTES.

ST. NEOTS TO RUISLIP.—MRS. V.S.

St. Neots, Sandy, Hitchin, St. Albans, Watford, Rickmansworth, Ruislip.

HUNTINGDON TO GRIMSBY.—R.W.

Huntingdon, Alconbury Hill, Norman Cross, Market Deeping, Spalding, Gosberton, Donington, Horncastle, Louth, Grimsby.

BIRMINGHAM TO DEWSBURY.—R.J.

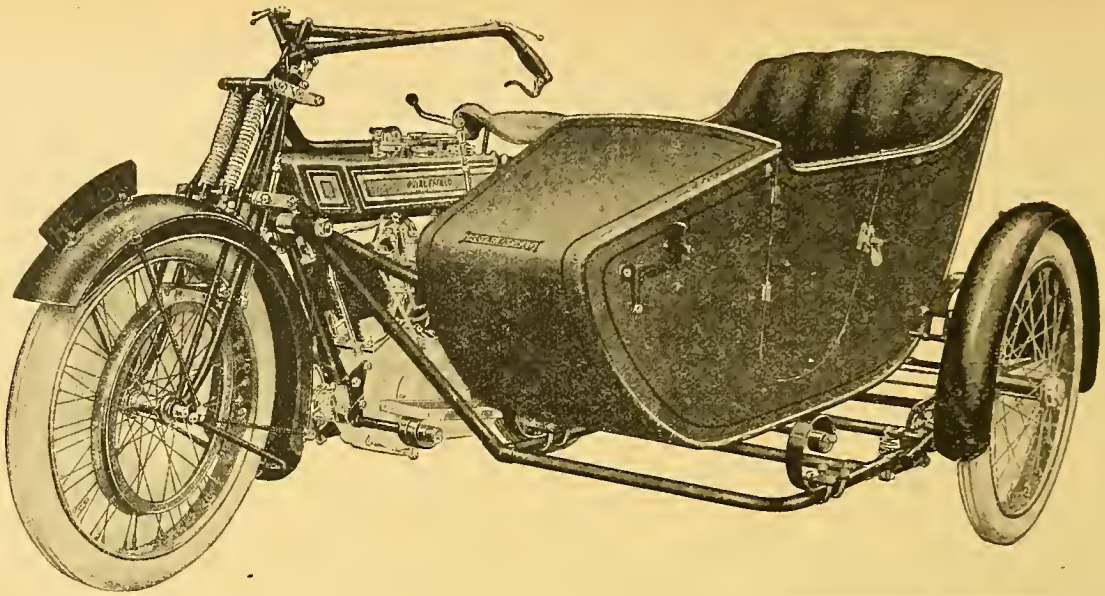
Birmingham, Lichfield, Derby, Ripley, Alfreton, Clay Cross, Chesterfield, Sheffield, Barnsley, Wakefield, Dewsbury. The distance is approximately 103 miles.

ACCRINGTON TO LLANBERIS.—W.B.

Accrington, Blackburn, Chorley, Wigan, Warrington, Stretton, Crabtree Green, Chester, Mold, Ruthin, Corwen, Cerrig-y-Druidion, Pentre-Voelas, Bettws-y-Coed, Capel Curig, Llanberis.

SUNDERLAND TO GLASGOW.—T.W.V.

Sunderland, Newcastle, Blaydon, Hexham, Haltwhistle, Greenhead, Brampton, Low Crosby, Carlisle, Gretna Green, Kirklefechan, Lockerbie, Beattock, Crawford, Abington, Douglas Mill, Lesmahagow, Larkhill, Hamilton, Bothwell, Uddingston, Glasgow.



ROYAL ENFIELD

Whatever type of motor cycle you require there is a Royal Enfield model to suit—and in every one the famous Enfield Two-speed Gear, Cush Drive Hub, and Chain Transmission are embodied. Royal Enfields are reliable.

The illustration above shows the 6 h.p. Royal Enfield sidecar combination. There never has been a more satisfactory passenger model than this—it is the standard of quality and efficiency the world over.

Four great Allied Armies are all using Royal Enfields.

At 40 guineas
The 2¼ h.p. Royal Enfield Two-stroke Lightweight.

At 50 guineas
The 3 h.p. Royal Enfield.

At 85 guineas
The famous 6 h.p. Royal Enfield Sidecar Combination.

At 100 guineas
The 6 h.p. Sidecar Combination. Complete with Lucas Dynamo Lighting Set, etc.

Mention "The Motor Cycle" and write for the Royal Enfield Catalogue.

THE ENFIELD CYCLE CO., LTD., REDDITCH.

Contractors to His Majesty's Government, the French and Belgian Governments, and the Russian Military Authorities.

London Office and Showrooms: 48, Holborn Viaduct, E.C. **Agents Everywhere.**

Useful and Economical Christmas Presents.

A suggestion that these well-known books would provide appropriate gifts for friends in the motor sections of the Army, or in training for these branches of the Service.

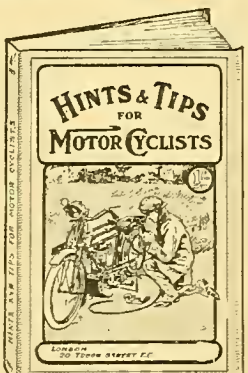
THE selection of Christmas gifts is always a matter of some difficulty, and the unusual conditions prevailing this year render it even more difficult. As a means of assisting our readers to choose appropriate presents for their motoring friends, particulars are given below of the various handbooks issued by the publishers of *The Motor Cycle*. These would no doubt be found suitable for presentation to motor cycling friends serving as despatch riders in the Army, in the Motor Machine Gun Section, or other branches of the Service. For friends in the Motor Transport the motoring handbooks mentioned would be most useful.

"MOTOR CYCLES & HOW TO MANAGE THEM."

Of all the books that have been published for motor cyclists this easily takes pride of place. It is recognised everywhere as the standard handbook on the motor cycle, its care and management, and the fact that it has now reached its sixteenth edition (revised) shows the exceptional degree of popularity it enjoys. The book, though comparatively small in size, is a veritable storehouse of useful information, compiled with care and discrimination for the benefit of all users of motor cycles. The present edition is a great improvement on the earlier ones, and it may be said with strict accuracy that it tells the motor cyclist everything he wants to know.

In this edition the chapters dealing with the carburetter, transmission, and gearing have been carefully revised and enlarged, and are a most important feature. The chapter on the two-stroke engine has also been enlarged, and practically every two-stroke engine on the market is now described. Gas and electric lighting, including rear lighting, are dealt with very fully. There are numerous illustrations, and a very comprehensive index is included to facilitate reference to any particular subject. The price of the book is 1s. net, by post 1s. 4d.

"HINTS & TIPS FOR MOTOR CYCLISTS."



This book gives hundreds of useful "wrinkles" and little items of information concerning the running, management, and repair of motor cycles, and contains what may be termed the cream of up-to-date motor cycling knowledge. The large mass of knowledge which is more or less common to all experienced riders has been collected in the course of years and "boiled down" in this book for the benefit of riders of lesser experience. By a careful system of paragraphing and indexing all this knowledge is presented in a most convenient form. Every part of the machine and every aspect of its use is fully covered. Each item of information is reliable, being the result of practical experience on the road. Here, again, two-stroke machines are given their meed of space, so, no matter what type of machine is used, the book will prove equally valuable. Although nearly 1,000 hints and tips are given, the size of the book is only 6in. × 4in., and it occupies, therefore, very little space in the pocket or valise—an important consideration to the military motor cyclist with full equipment. Price 1s. net, by post 1s. 2d.

"TRACING TROUBLES."

Nothing in this world is free from trouble, not even the almost perfect modern motor cycle. Faults of various kinds will develop occasionally, and these are often a source of worry to the rider, even if he has had considerable experience. This book has been written to put an end to such worry, by enabling the rider, not only quickly to trace the cause of the fault, but to remedy the fault in the shortest possible time. The work is ingeniously arranged, so that it can be used with equal facility whether the rider knows exactly what is wrong with his machine, or whether he does not know what is the matter. The system of identifying and remedying faults is applicable to all makes of machines, both four-stroke and two-stroke. A special section is also included, dealing with dynamo lighting sets for motor cyclists, and in all other respects the book is fully up to date. The price is 1s. net, or 1s. 2d. if ordered by post.

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A practical guide to the motor car—its care, management, and equipment. Thoroughly up-to-date in matters relating to electric starting, car lighting dynamos, carburetters, lubrication, etc. Price 1s. 6d. net. By post 1s. 11d.

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Any of the above books can be obtained direct from the publishers—Iliffe & Sons Ltd., 20, Tudor Street, London, E.C. A remittance should in all cases accompany the order. If required, the books ordered will be sent direct by the publishers to a friend on receipt of the address or a prepared label.

A 27

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The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

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Persons who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Motor Cycle," both parties are advised of this receipt.

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Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post.

MOTOR CYCLES FOR SALE.

A.J.S.

A.J.S., 1916, 2¾h.p.; £58.—Turpins, 22 and 29, Preston Rd., Brighton. [0716

A.J.S., 1916 models, for early delivery; limited supply; book now.—Moss, Wem. [X6280

A.J.S. 1916 Models; order now to avoid disappointment.—Williams, Chapel Ash Depot, Wolverhampton. [X6278

A.J.S., 6h.p., 1914, with wicker sidecar, Lucas lamps; any trial; £65.—64, Doggett Rd., Catford, S.E. [7311

A.J.S., 1915, 2¾h.p., 2-speed, Lucas outfit, horn, all accessories; 45 gns.—Dr. Moore, Wilton House, Rotherham. [X5678

A.J.S., 1914, 2¾h.p., T.T., 3-speed, Lucas lamp and horn, perfect condition; £40.—Tranter, Redlands, Kidderminster. [X6181

1915 A.J.S., 2¾h.p., 3-speed, just delivered; £53.—F. J. Bull and Co., 228, Wellington Rd., Northampton. [X6380

A.J.S., 6h.p., 3 speeds, late 1913, lamp and horn, etc., new tyres, excellent condition; £50.—Russell, Clifford St., York. [7129

A.J.S., 2¾h.p., 2-speed, speedometer, new tyres, lamps, and tools; £22.—W. Vickery, 24, Elmhurst Rd., Bruce Grove, Tottenham. [7003

Halifax Motor Exchange

68, HORTON ST. HALIFAX.

'Phone—766. Telegrams—"Perfection."

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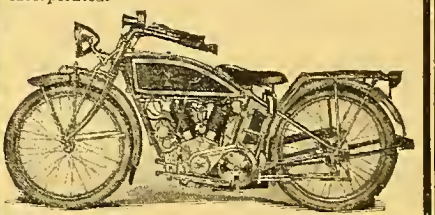
THE GOOD OLD X

7 h.p., twin, 81×89, mechanical and hand lubrication, kick starter, high tension magneto, spring forks, 2-gallon petrol capacity, 3-speed countershaft gear, multiple-disc clutch with hand and foot control, handle-bar control, spring seat-pillar, 3in. non-skid tyre, finish Excelsior grey, every possible refinement incorporated.



STANDARD MODEL £62 0
With electrical equipment £71 10

Or with high-class coach-built Sidecar, £13 10 extra. Exchange liberally considered. **Test this.**
We are Sole Yorkshire Distributers.
Yorkshire dealers supplied.

SOLO MACHINES.

New **DIAMOND**, 2-stroke £23 13
New 6 h.p. 2-speed **REX** de Luxe, 650×65 Dunlops, late 1915 delivery £56 10
New 2¾ h.p. 2-speed **CONNAUGHT** £39 18
New 2½ h.p. 2-speed **WOLF-J.A.P.** £37 0
New 2½ h.p. **ROYAL RUBY**, 2-speed £36 10
1913 3½ h.p. **ROVER**, Grado gear £27 10
1912 3½ h.p. 2-speed F.E. **BRADBURY** £29 10
1912 2-speed **SCOTT**, specially good £31 10
2¾ h.p. 2-speed **DOUGLAS** £26 10
3½ h.p. magneto **REX**, spring forks £15 10
1910 3½ h.p. tourist **TRIUMPH** £22 10
KERRY, 3 h.p., magneto, Saxon forks £9 15
TRIUMPH, 3½ h.p., magneto, spring forks .. £19 19
5½ h.p. magneto **REX**, spring forks £15 10
M.M.C., 3 h.p., magneto £9 10
N.S.U., twin, 2-speed, spring forks £15 10

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1912-13 6 h.p. 2-speed REX de Luxe and coach-built Sidecar, with lamp, horn, tools, and spare tube ..... 30 guineas.

SIDECAR COMBINATIONS.

1914 6 h.p. **REX** Sidette, nearly new £52 10
8 h.p. W.-C. **WILLIAMSON** (new) £89 15
1914 3½ h.p. **ROVER** and Sidecar £35 10
6 h.p. 2-speed **ENFIELD** and Sidecar £47 10
1912 3½ h.p. 2-sp. twin **PREMIER** and smart coach-built Sidecar £34 10
1913 6 h.p. 2-speed F.E. **REX**, chain drive, smart coach Sidecar £45 10
1913 **RUDGE** Multi and Sidecar £38 10
1912 3½ h.p. **RUDGE** Multi and Sidecar ... £34 10
1909 5-6 h.p. 2-speed **REX** and Sidecar £25 10
Cash offers wanted.

New **RITZ** Light Car, 2-seater, 4-cylinder engine, hood, screen, electric lamps, and horn .... £145. Exchanges quoted.
New 1916 5-seater **OVERLAND** Car ..... £275.

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Lucas King's Own and Separate Generator.. 32/6
Miller's Head Lamp and Generator 29/6
Smith's Speedometer 35/-
Cowey Speedometer £2 15
Dunlop 28×3 Non-skids (American sizes) .. 28/6
Dunlop 28×3 Tubes 10/6

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MOTOR CYCLES FOR SALE.

A.J.S.

1914 A.J.S. 6h.p. Combination, interchangeable wheels, fully equipped, excellent condition.—67, Primrose Mansions, Battersea. [X6269

A.J.S., 6h.p., latest model, just delivered, complete with sidecar fitted, hood and wind screen; £98.—Hopkins, New St., Ledbury. [X6278

A.J.S., 1915, 2¾h.p., horn, head light, spares, run 1,500 miles only, new condition; £48.—Fortescue, Hill House, Purbrook, Cosham. [7198

A.J.S. 6h.p. Combination, 1915, every accessory, new August, owner enlisting; £85, nearest offer.—Cox, 30, Hinton Rd., Gloucester. [7159

A.J.S., 1916 models in stock; 2¾h.p., also 4h.p. and 6h.p. combinations; ready to drive away.—P. J. Evans, John Bright St., Birmingham. [7264

A.J.S., 1914 (June), 2¾h.p., 3-speed, clutch and kick starter, guaranteed sound; £37/10.—Elce and Co., 15 16, Bishopsgate Av., Camomile St., E.C. [0600

1915 6h.p. A.J.S. Combination, absolutely in stock; this luxurious outfit complete only costs £102/10; exchanges, easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X1485

6h.p. A.J.S., 1914, 3-speed countershaft gear and free engine, fitted with Gloria sidecar, fitted with Lucas lighting set, Lucas horn, rear light, tools, and spares; any severe trial given; mechanically sound, as new; 70 gns.; rare opportunity.—Wauchope's, 9, Shoe Lane, London. [X6208

Alldays.

ALLON, 2-speed, perfect condition, fast, climbs Sutton; bargain, £33.—Walker-Tisdale, Northallerton. [X6359

ALLDAYS Allon, 1915, single speed, absolutely perfect; £27.—Cogdale, 19, Eagle Rd., Wembley, London. [7239

ALLDAYS Matchless, 1915, 2-stroke, 2½h.p., excellent condition; £21.—Romney House, Park Hill, Carshalton. [X6060

ALLDAYS Allon, 1915, 2-speed, 2-stroke, perfect, Lucas lamps; £33.—Mason, 265, Portnall Rd., Kilburn Lane. [7076

1916 Alldays-Allon, 2-speed and clutch, absolutely in stock; £45.—Julian, Broad St., Reading. Biggest dealer in the South. 'Phone: 1024. [X0802

NEW Allons, 2-speed models £42, single-speed models £34; delivery from stock; cash or extended payments.—Wauchope's, 9, Shoe Lane, London. [X6232

ALLDAYS Allons.—You will always find these famous machines in stock from £34 to £45; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7084

Ardini-Minerva.

8h.p. Ardini-Minerva, 90° twin, m.o.i.v., outside fly wheel, low, fast, with battery and H.T. mak.; £17.—Yarwood, 16, Grove Mansions, Grove, Hammersmith, London. Seen after 6 p.m. [7324

Ariel.

ARIEL, 4h.p., variable gear, decompressor, new B and B.; £22, offers.—9, Terrout Rd., West Green, N. [7103

1912 3½h.p. Ariel Motor Cycle, just overhauled, new Dunlop belt; a bargain, £18.—W. Lewis, 31, Windmill St., Gravesend. [6709

"FLYING MACHINES"

of the road.

IN STOCK.

No 1 G.P. **MORGAN** £111 6
2¾ h.p. **A.J.S.**, 3-speed, with kick starter.. £58 0
2¾ h.p. **A.J.S.**, sporting model, 3-speed ... £58 0
2¾ h.p. **A.J.S.**, model B, 3-speed £58 0
2¾ h.p. **DOUGLAS**, black military model.. £54 12
3 h.p. **ENFIELD**, T.E., 2-sp., kick starter £52 12
3½ h.p. **ROVER**, counter-shaft, Combinat'n £84 7
INDIAN, 5 h.p., T.T., model B £70 0

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T.T. SPARKBROOK £37 16
T.T. IXION £28 10
JAMES, 2-speed £38 10
Lady's **METRO**, 2-speed £38 10
IVY, single-geared £29 10
ROYAL RUBY £29 10
HOBART, 2-speed £38 10
SPARKBROOK, 2-speed £37 16
EXCELSIOR, single-geared £30 16
METRO, sporting model £28 10
EMIR, 2 speed £44 0
IXION £28 10

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1914 3½ h.p. T.T. **SINGER**, lamp and horn .. £38
1914 2¾ h.p. T.T. **DOUGLAS**, lamp and horn. £38
1915 5 h.p. T.T. **INDIAN**, 3-speed, like new, complete £62
1915 4-5 h.p. clutch **ZENITH**, complete with Canoelet Sporting Sidecar, practically new £70
1915 **IXION**, 2-stroke, nearly new £26
1914 **IXION**, 2-stroke £22
1914 T.T. **KUDGE**, Philicson pulley, lamp, and speedometer. A beauty £32
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1912 4 h.p. 2-speed **REX**, fine condition £20
1910 F.E. **TRIUMPH** £25
1914 3 h.p. **ENFIELD**, T.T., 2-speed £36
1913 **TRIUMPH**, 3-sp., and coach-built Sidecar £48
1913 **HUMBERETTE**, nice condition, complete with Stepney, hood, and screen £60

SECOND-HAND ACCESSORIES.

A.J.S. Sidecar Hood (new) 35/-
Luggage Back Rest 3/-
Exhaust Whistle, brass 2/6
P. & M. Lamp and Generator, nearly new .. £1
Sidecar Body, wicker 7/6
Sidecar, art cane, canoe fronted, complete.. £4
1914 Ridge-Multi Tank £1
Brooks Pan Saddle, B150 ..... 15/-
Good Spare Plugs ..... each 9d.
Wills-Fulford Coach-built Sidecar, fits Triumph £3
Ridge Adjustable Pulley 10/-
White & Poppe Car Carburetter £1
Stewart Mechanical Horn 15/-
Lucas No. 462 Lamp Set £2 5

The North Wales Motor Exchange, HOLT STREET, WREXHAM.

Telephone: 283.
Telegrams: "Motor Exchange, Wrexham."

MOTOR CYCLES FOR SALE.

Douglas.

1914 Douglas, 2¾h.p. T.T model, 2-speed gear, in splendid order, guaranteed sound; bargain, £37/10.—Below. [0551

DOUGLAS War Office All-black Models in stock, ready to ride away; £54/12.—Elce and Co., 15-16, Bishopsgate Av., Cannonile St., E.C. [0551

DOUGLAS, 1911-12, 2 speeds, foot clutch, fine machine, speedometer, etc.; £23, offers.—Speechley, 45, Church Rd., Acton. [7329

2¾h.p. Douglas, 1911, just overhauled by makers, sound throughout; £25.—Write, W. Dobson, Kelsick Rd., Ambleside. [X6205

DOUGLAS T.T., 1913-14, 2¾h.p., 2-speed, very fast, horn, lamp, wants enamelling; £30.—30, Station Rd., Ashley Down, Bristol. [X6277

DOUGLAS, 1914, T.T. model V, 2 speeds, Amac, splendid condition, all accessories; £39.—Morgan, Marsham St., Westminster. [7100

DOUGLAS, 1915, immediate delivery any 2¾h.p. model, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [9203

DOUGLAS.—Immediate delivery from stock; not agents only, but Douglas experts and specialists. —Gibb, Gough, Gloucester. [X3538

DOUGLAS, 1914¾, 2¾h.p., model W, clutch, T.T. bars, Amac, 2 lamps, condition excellent; nearest £42.—21, West St., Reigate. [7168

DOUGLAS, late 1911, 2¾h.p., 2-speed, just overhauled, new tyres, accessories; £20, or near offer. —Lieut. H. Mole, Newhaven. [X6251

LATE 1915 4h.p. 3-speed Douglas Combination, accessories, perfect, guaranteed; £69.—Lieut. Bridge, Sobraon, Colchester. [7254

DOUGLAS, 2¾h.p., 2-speed, good tyres, 1913, in good condition, lamp set, tools; £30.—Bates, 3, St. George's Gate, Canterbury. [7021

DOUGLAS, 1914, 2¾h.p., 2-speed, clutch, kick starter, speedometer, F.R.S. lamp, excellent condition; £38. —Dr. Fox, Brook War Hospital, Woolwich. [7120

DOUGLAS, 1914, 2-speed, clutch, electric light front and rear, condition like new; 39 gns.—Victor Shillingford, 103, Fox Lane, Palmer's Green. [7020

DOUGLAS, 2-speed, 1914, T.T., £38; a 1914, 2 speeds, kick starter, £37; a 1913, 2 speeds, kick starter, £31.—Percy and Co., 337, Euston Rd., London. [7188

1914 Douglas, 2¾h.p., semi T.T., perfect condition very fully equipped; first cheque £42 secures this bargain.—Tom Hull, Garage, Terrington, Norfolk. [X5952

1915 Douglas, 2¾h.p., 3-speed, footboards, head and tail lamps, horn, full equipment, only run 1,600 miles, as new; £45.—33, Liverpool Rd., Southport. [7290

1914 T.T. Douglas, in good condition, Stewart speedometer, F.R.S. lamp, horn, spares, 2¼ Palmer cord and Moseley tyres; £35.—Withington, Upleatham, Yorks. [X6048

DOUGLAS, Douglas, Douglas.—Immediate delivery model V, 2-speed, £50/8, and war model £54/12, actually in stock.—Alexander's, 115, Lothian Rd., Edinburgh. [7001

DOUGLAS, 2¾h.p., U model, new May, 1915, 3-speed, P. and H. lamps, Lucas horn, spares, tools, excellent condition; £45.—Williams, East Bank, North Rd., Aberystwyth. [X5670

DOUGLAS, July, 1915, 2¾h.p., 2-speed, model W, kick starter, clutch, accessories, lamp and horn, only run 100 miles; £48.—Stevenson, The Drive, Halesowen, Birmingham. [X5951

1913 Douglas, model W, clutch, kick start, condition engine guaranteed perfect, enamel and plate exceptionally good; £32/10.—Robinson's Garage, Green St., Cambridge. [6867

DOUGLAS Motor Cycles.—Full range of models in stock; immediate delivery.—Colmore Depot, 'sole wholesale and retail Midland distributing agents, 31, Colmore Row, Birmingham. [7147

DOUGLAS, 2¾h.p., November, 1913, Amac, new tyre, sprockets, and chain, recently overhauled, T.T. bars, footboards; £30, or nearest.—Letters only, S., 39a, Kitsbury Rd., Berkhamsted. [7308

DOUGLAS Motor Cycles.—Book your 1916 machine now; exceptional demand anticipated; many new features.—Colmore Depot, wholesale and retail Midland agents, 31, Colmore Row, Birmingham. [7146

DOUGLAS, 2¾h.p., War Office model, £54/12; model U, 2-speed, £50/8; model W, 3-speed; actually in stock; easy payments 2% only extra.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [7231

2¾h.p. Douglas, 1913, all accessories, complete, front and rear lights, with separate generators, 2-speed gear, new tyres and tubes, just been overhauled; price £30.—Collins, Fulham House, Putney Bridge. [6982

1914 T.T. Douglas, Amac carburetter, self-contained head lamp, tail lamp, separate generator, large gong, speedometer, etc., in excellent condition; £37/10.—Rex Mundy, 132, Gt. Portland St., W. [7113

DOUGLAS.—We have some of these machines in actual stock, ready for immediate delivery. Let us know your requirements. We are the people to fill them.—The Colmore Depot, 31, Renshaw St., Liverpool. [7174

1916 MODELS

ACTUALLY IN STOCK HERE:

1916 6 h.p. **ENFIELD** Combination 85 gns.
1916 6 h.p. **J H.** Combination.... 90 gns.
1916 5-6 h.p. **EXCELSIOR**, Sturmey countershaft 3-speed gear .. 68 gns.
1916 4½ h.p. **EXCELSIOR**, Sturmey countershaft 3-speed gear .. 64 gns.
1915 12 h.p. **TRUMBULL** Cycle Car, 4-cyl., water-cooled, detachable wheels, all on £120 0

SECOND-HAND BARGAINS.

1913 2¾ h.p. **DOUGLAS**, T.T. bars, 2 speeds, speedometer, horn, and lamp £33 0
3 h.p. **SINGER**, vertical, magneto ignition, P. & M. 2-speed gear, Druid spring forks £10 0
1914 6 h.p. **ENFIELD** Combination £60 0
1915 2-sp. 2-str. **NEW HUDSON**, done 500 28 gns.
1915 **B.S.A.** Combination, all chain drive .. £63 0
3½ h.p. 1908 **REX**, M.O.V., Bosch, B & B carb. £18 0
3½ h.p. 1909 **REX** de Luxe, 2-sp., handle st'g £19 0
6 h.p. **ZENITH**, clutch model and Sidecar .. £40 0

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DOUGLAS, 1915, 2¾h.p., 3-speed gear, only run 300 miles, in absolutely new condition; £46; exchanges entertained.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, 599, High Rd., Tottenham, London, N. [7054

DOUGLAS, 1914, 3½h.p., kick starter, clutch, 2-speed, large new Miller head, tail lamps, Low generator, new back tyre and spare, all tools, excellent condition; £48, or part exchange Morgan.—Capt. Hepworth, Thames Haven. [7011

LATE 1915 Douglas, 2¾h.p., model W, 3-speed, clutch, kick starter, horn, and tools, not done 50 miles, shop-soiled only; too high for owner; seen Bridgend, S. Wales; £54.—Box L158, *The Motor Cycle* Offices, 20, Tudor St., E.C. [6770

DOUGLAS Model U, £50/8; Douglas Model V, £50/8; War Office Model, £54/12; Douglas Model W, £56/14; Douglas Model X, £56/14.—Above models actually in stock at Sole Wholesale and Retail Midland Distributing Agents, Colmore Depot, 31, Colmore Row, Birmingham. 'X2344

DOUGLAS, 1914, 2¾h.p., 2-speed model, with kick start and clutch, fitted with speedometer, separate generator, lamp, electric horn, rear light and tools, complete, and ready for the road, completely overhauled, sound as new; £37/10, guaranteed.—Wauchope's, 9, Shoe Lane, London. [X6213

DOUGLAS Eastern Counties Agents.—Models U, V, and W., 2 or 3-speed, in stock; immediate delivery; at rock-bottom nett cash prices; exchanges entertained; trade supplied; illustrated lists on application. 'Phone: 388. 'Grams: Bicycles.—Robinson's Garage, Green St., Cambridge. [6864

Elswick.

1915 Elswick, 2½h.p., 2-stroke, 2-speed; £28, or exchange higher power, cash either way.—Taylor, Harker, Carlisle. [X6309

Enfield.

ENFIELD, 3h.p., 1915, as new; £42.—Bush, 20, Whittaker Rd., East Ham. [7310

1913 2-speed Enfield, 3h.p., accessories; £28.—Pascall, Woodbridge Rd., Guildford. [7276

ENFIELD Coach Combination, 6h.p., 1913, lamps, spare cover; £52.—10, High St., Mortlake. [6791

ENFIELD 3h.p. Twin, 1914, lamp and horn, excellent condition; £34.—Russell, Clifford St., York. [7131

ENFIELD Combination, 6h.p., 1914, accessories; £65, offers.—H. Oakley, Hurst Green, Sussex. [X6183

ENFIELD 6h.p. Combination, latest, almost new, speedometer, lamps; 70 gns.—M., 24, Glyn Mansions, W. Kensington. [7154

2¼h.p. Royal Enfield, 1910, for sale, new tyres and belt, owner enlisted; £14.—A. White, Retreat Cottage, by Cupar, Fifeshire. [X6068

ENFIELD 1913 Combination, little used, lamps, horn, etc., tyres perfect; £45.—Kirkham, 33, Holdenhurst Av., North Finchley, N. [6768

WORTH £30.—1913 2¾h.p. Enfield, 2-speed, unpunctured; £24; seen Bow.—Box L226, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7316

ENFIELD, 1914, 3h.p. twin, lamps, etc., mileage 3,000, perfect order; £39, or near offer.—Write or 'phone, Scholes, 75, Royal Mint St., E. [7282

1913 Enfield 6h.p. Combination, lamps, horn, and speedometer, good condition; £50.—Samuel Buckpitt, Wadstray, Blackawton, near Totnes. [X6057

ROYAL Enfield 6h.p. Combination, 1914½, 2 speeds, lamps, tools, etc.; open to any trial; £62.—White, Enfield, 72, Wolfington Rd., West Norwood. [X6140

ENFIELD Combination, 6h.p., 1915, Lucas horn, bend and tail lamps, excellent condition, spares; £73.—Treby, 527, Romford Rd., Forest Gate. [7240

ENFIELD, coachbuilt, October, 1914, splendid condition, 3 lamps, watch, blind, mudshields, horn, and spares; £60.—Gealy, Tumble, Carmarthenshire. [7067

1912 6h.p. Enfield, special wide coachbuilt sidecar to seat 2, accessories, etc.; £45, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0722

ENFIELD 6h.p. Combination, latest pattern, 1916 model, complete; immediate delivery; 85 gns.—Sutherland Garage, Canterbury Terrace, Maida Vale, W. [0739

ENFIELD Combination, 6h.p., 1913, coachbuilt sidecar, perfect running order; £45; trial any time by appointment.—Apply, Weise, Longfield Mills, Heckmondwike. [X6290

1913 Enfield Combination, new chassis, coach body, re-enamelled, wind screen, new Palmer cord on back, accessories; any trial; £54.—Lewis, 20, Normandy St., Alton, Hants. [6987

ENFIELD 1915 Combination, 3 weeks old, Lucas head lamp, generator, horn, rear lamp, generator; £78, no offers.—W., c/o Jennings and Hill, 12, Eltham Rd., Lee, S.E. [7125

1916 Enfield Combination, just received from works, 85 gns.; immediate delivery for cash; exchanges or extended terms.—Eloe and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0597

6h.p. 1913 Royal Enfield Combination, a nice reliable motor cycle and sidecar, with all accessories, complete; £50; guaranteed; any severe trial given; tuition free.—Wauchope's, 9, Shoe Lane, London. [X6214

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LATE 1915 6h.p. Enfield Combination, complete w lamp, generator, and horn, almost new; great b gain, £74, first cheque secures; guaranteed perfect Alexander's, 115, Lothian Rd., Edinburgh. [69

1913 6h.p. Enfield Combination, 3 Lucas lamps, spe ometer, wind screen, horn, and sundry spar everything in excellent condition; price £50.—Simps 15, Belgrave Crescent, Eccles, Manchester. [X62

ENFIELDS, 1916, actually in stock for immedi delivery; 6h.p. coachbuilt combinations, 3h.p. speed double purpose models, and 2¼h.p. 2-speed strokes.—P. J. Evans, sole controlling Birmingh agent, 87 to 91, John Bright St. [72

1914 6h.p. Enfield and coachbuilt sidecar, spri handle-bars, hood and screen, head and t lamps, horn, and speedometer, extra business body a springs, all in good condition, tools, and quantity spares; price £65, or exchange with cash for 19 Morgan.—March, Builder, Hampton, Middlesex. [71

1914 Enfield Combination, complete with lamp horn, speedometer, mirror, watch, sidecar co plete with hood and screen, machine in splendid con tion; this belonged to an officer, and has not been us since the commencement of the war, except for 7 day £65.—Julian, Broad St., Reading. 'Phone: 1024. [X23

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ROYAL Enfield New Combinations, 6h.p., cha driven machines, fitted with handsome coachbu sidecar, countershaft gear and free engine, up-to-da turnout, complete with storm apron; 85 gns.; initia free, and free delivery to any address within 50 miles London; best terms for cash, exchange, or extend payments.—Wauchope's, 9, Shoe Lane, London. [X621

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1914 American Excelsior, 2 speeds, with Watsoni sidecar; £48.—Moore, 7, Poplar Grove, Stockpo [X602

EXCELSIOR, 7-9h.p., 1915, with lamp, horn, spee ometer, only done 400 miles; £68.—G. Minto 124, High St., Woolwich. [X604

AMERICAN Excelsior, 1914, 7h.p., 2 speeds, wil coachbuilt sidecar, speedometer, horn; £42/10; Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [717

TWO Only, new 1915 3-speed 7-10h.p. American E celsior motor cycles, electrically equipped, at t old price, £71/10 cash.—Midland Motor Co., Deronpor [X608

AMERICAN Excelsior, the finest and cheapest sid car mount marketed; demonstrations, exchange etc., from Colmore Depot, 31, Colmore Row, Birmin ham. [714

EXCELSIOR (American), 7-9h.p., delivery to-day one 3-speed model; accept £63, great oppo tunity, usual price £80; cannot repeat.—Layton Garage, Bicester, Oxon. [X634

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F.N., 2¼h.p., splendid condition: £10/10.—Moto Works, 317a, Hoe St., Walthamstow. [700

F.N. 2¾h.p. Lightweight, mag., Mabon clutch, lamp stand, carrier, wants cleaning; great bargain £7/10; also 3½h.p. De Dion, new tyre, wants overhau ing, 50/-.—Brown, 554, High Rd., Tottenham. [701

Harley-Davidson.

7-9h.p. Harley-Davidson, special Millford sidecar shop-soiled only: 78 gns.—Stretton's, Gloucester. [715

HARLEY-DAVIDSON Models in stock, complet with Gloria sidecar.—Turpins, 22 and 29, Preston Rd., Brighton. [071

HARLEY-DAVIDSON Model 11C, 2 speeds, 4-6h.p. perfect order: £50 (not guineas).—Northern Sidecar Co., Darlington. [X595

HARLEY-DAVIDSON, 7-9h.p., 11J model, and special sidecar; £96/10.—F. J. Bull and Co., 228, Wellington Rd., Northampton. [X638

BARGAIN.—Nearly New 4½h.p. Harley-Davidson 11C model, 2-speed, in absolutely perfect order 45 gns.—Railway Garage, Staines. 'Phone: 46. [730

HARLEY-DAVIDSON Combination, model 11J, 3 speed, 7-9h.p., dynamo lighting equipment, electric horn, Stewart speedometer, watch, Mills-Fulford side car, with electric side lamp, done under 3,000 miles a bargain at £70 (not guineas).—Northern Sidecar Co., Darlington. [X595

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NEW Hudson Big Six, £92/8; model O, 2-stroke, £38; delivered from stock; exchanges and generous deferred payments if desired.—Lamb's, 151, High St., Walthamstow [7081

1914 New Hudson Big Six, coach sidecar, speedometer, newly overhauled, not done 800 miles, lamps, and tools; price £55.—Morgans, Bootmaker, Cumble. Carm. [X6034

3½h.p. 1915½ New Hudson, 3-speed countershaft gear, sidecar, Cowey, Lucas horn, P. and H. lamps, carriers, spares, perfect order; £75.—Weldon, Devonshire Rd., Nottingham. [X6146

NEW Hudson Lightweight, 2-speed, 2-stroke, and sidecar, only shop-soiled; £38; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7088

New Imperial.

1915 New Imperial-Jap, 2-speed, F.E., variable mag., done 300m.; enlisting; £28.—Write, 7, Hay Lane, Coventry. [X6032

NEW Imperial-Jap, 1915, 2¾h.p., 2-speed, shop-soiled; 32 gns.—Julian, Broad St., Reading. 'Phone: 1024. [X6408

IMPERIAL-J.A.P., 1915, as new, 2½h.p.; £37.—Jap, 18, Beechwood Av., Thornton Heath. Seen by appointment only. [X6139

NEW Imperial-Jap, lightweight, 2½h.p., 1915 model, only run 500 miles, guaranteed perfect; £24.—Birney, Station Garage, Harpenden. [7075

NEW Imperial-Jap's, 1915, new machines, for delivery from stock; 2-speed models £36/15.—Panchope's, 9, Shoe Lane, Fleet St., London. [X6219

NEW Imperials, the all-British motor cycles of perfect dependability; prices from 35 gns., and delivery from stock.—The Colmore Depot, 31, Renshaw St., Liverpool. [7176

NEW Imperial-Jap Light Tourists, both models in stock, with and without clutch and kick starter: £7/18 and £44/4.—Crow Bros., 190, High St., Ilford. [5770

NEW Imperial, 1915.—Just received one 2½h.p. 2-speed model, J.A.P. engine, nothing to equal it anything near the price; £36/15.—Layton's Garage Bicester, Oxon. [X6349

NEW Imperials, 1916 models, in stock; light tourist, with 2 speeds, also kick starter models; ladies' machines, prices from 35 gns.—P. J. Evans, John Bright St., Birmingham. [7261

NEW Imperial, lady's, J.A.P. 2¼h.p., countershaft 2-speed gear, kick start, hand-controlled clutch; just delivered from works; £45/3.—Hucklebridge, 133, Shaftesbury Ave., London, S.W. [X6262

1h.p. New Imperial, 1915, J.A.P., 3-speed countershaft, mileage 1,900, 2 lamps, mechanical horn, pedometer, spare belt and chain; cost £67/10, present £54; exchanges.—Ideal Cycle Co., Thundersley, Essex. [7210

NEW Imperial, 2½h.p., light Tourist clutch model, 2-speed, variable ignition, £44/4; lady's 2-speed clutch model, kick-starter, £46/6; actually in stock; easy payments 2% only extra.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [7232

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NEW Ryder, J.A.P. 2-speed gear, 3 months old, unused; best offer over £30; seen by appointment.—J.B., c/o "Grocers' Gazette" Office, 71, Eastcheap, E.C. [7038

Norton.

1916 3½h.p. 3-speed Norton, countershaft, 62 gns.; also several 1914 Nortons in stock, £48.—Barker and Son, St. Ives, Hunts. [7306

NORTON, 1915, 3½h.p., 3-speed countershaft, Binks carburetter, not run 300 miles; £60; exchanges. Ideal Cycle Co., Thundersley, Essex. [7212

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O.K., 2¼h.p., new, accessories, everything necessary; offers.—H., 23, Grantham St., Coventry. [X6351

O.K., 3-speed, like new, with all accessories; £26/10.—Colmore Depot, 31, Colmore Row, Birmingham. [7140

O.K. Junior, 1914½, 2-speed, splendid condition throughout, all accessories; £21.—Cowling, 24, Tannycroft Rd., Leicester. [X6204

O.K., 1915, 2½h.p., 2-speed, J.A.P. engine, splendid condition, spare Clincher tyre; £25.—Jaller, Post Office, Gomshall, Surrey. [X6114

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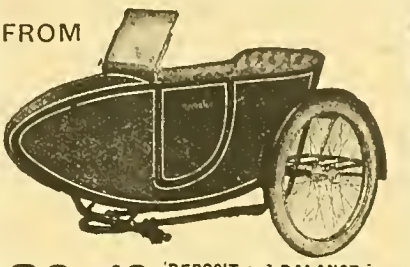

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SUN Sidecar, luxurious Empress pattern body, 4-point attachment £13 13

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O.K., 1915, 2h.p., 2-speed, new June; trial willingly; lamp; £26, or offer.—Furlonger, Woodford, All Saints Rd., Weston-super-Mare. [6986

O.K. Junior, 1915, 2-speed, in splendid condition, very little used; original price £33/10, to be cleared at 23 gns., very great bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X2346

Omega.

OMEGA, 1915¾, 3h.p., 2-speed, 20 miles, absolutely unscratched; nearest £33.—Webb, Belmont, Surrey. [7253

P. and M.

P. and M. Coachbuilt Combination, 1913, perfect condition, speedometer, mechanical horn; £37.—Osborne, 177, New Park Rd., Brixton. [7060

P. and M., 1911, and sidecar, 2 speeds, speedometer, etc., good running order; £23.—Arthur Mylam and Co., 197, London Rd., West Croydon. [7298

1913 P. and M. and coachbuilt sidecar, lamp and spares, in excellent condition; must sell; what offers?—Box 9,748, *The Motor Cycle* Offices, Coventry. [X6136

P. and M., late 1912, 3½h.p. combination, 2 speeds, free engine, excellent condition throughout, speedometer, Lucas lighting set, all accessories; £36.—Lester, Leckhamstead, Buckingham. [6983

Peugeot.

7-9h.p. Peugeot, wicker sidecar, N.S.U. 2-speed, Bosch, Olundel-Hudson; £25, or nearest.—Seen at Mid Surrey Motor Garage, Addlestone. [7061

7-9h.p. Peugeot Twin Engine, extra outside flywheel, suitable for cycle car, £6; pair 650 cycle car wire wheels, with belt rims, new, 17/6; light bevel driven back axle and differential, small bevel damaged, £2/10; complete steering gear, £1.—138, Catherine St., Leicester. [X6244

Precision.

3½h.p. Precision, condition perfect, new tyres, 2-speed 4 gear; £25.—Rayleigh Garage, Rayleigh. [7269

PRECISION Pup, 2½h.p., 1915, 2 months old, 2-speed, unscratched, complete; £22/10.—18, South Bruton Mews Bond St., W. [X6061

PRECISION, 3½h.p., 1914, as new, not run 150 miles; cost £36, accept £30; exchanges.—Ideal Cycle Co., Thundersley, Essex. [7211

Premier.

PREMIER, 1913, 3½h.p., 2-speed countershaft, clutch; £28.—29, Hampton Rd., Crabtree, Sheffield. [X6135

PREMIER, 1911, 3½h.p., 3-speed, just overhauled, with sidecar; £30.—Stevenson, 8, Bigby St., Brigg. [X6198

3½h.p. Premier, 3 speeds, as good as new; £30, with P.H. lamp and horn.—The Garage, Whitland, S. Wales. [X6149

PREMIER, 3½h.p., 1912 model, 3-speed gear, really good condition, new Dunlop cover on back; £22.—Chirney, Station Garage, Harpenden. [7074

PREMIER, 3½h.p., 2-speed, and free engine, wicker sidecar, excellent condition; £30.—T. Dodds, Pleasbank Cottage, Plean, Stirlingshire. [X6085

PREMIER, 3½h.p., 3-speed, military type; £66/3; actually in stock; easy payments 2% only extra.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [7235

PREMIER, 1913, 2½h.p., 3-speed, clutch, lamp, horn, just overhauled, re-plated, new tyre, belt, pulley, etc., splendid order; 18 gns.—73, Balfour Rd., Dover. [7279

PREMIER, 1914, 2½h.p., with 3-speed and free engine hub, a charming and almost new machine; cost £46/10, worth easily £36, accept £30.—Layton's Garage, Bicester, Oxon. [X6350

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1912 3¼h.p. Quadrant Motor Cycle, in first-class condition; only £20.—F. E. Wootten, 55, High St., Oxford. [6852

90/- Bargain.—2¾h.p. Quadrant, overhauled, low, fast, mag., B. and B.—Full particulars (stamp), 34, Earl's Rd., Nuneaton. [X6196

4½h.p. Quadrants, latest new 1916 models, chain-cum-belt transmission, B.S.A. 3-speed gear, free engine, and kick start; delivery from stock; price £60; exchange or easy terms.—Wanchope's, 9, Shoe Lane, London. [X6220

Radco.

1916 2-speed Radcos actually in stock; £33/10; easy payments arranged.—Radco Agent, Jones, The Broadway, Muswell Hill. [7046

1915 Radco, absolutely as new, plating and enamelling like new; £17/10, or nearest offer.—Mastin, Gosberton, Spalding. [X6368

RADCO Lightweight, 1915 model, nice condition; £20, complete with accessories and tools.—Wanchope's, 9, Shoe Lane, London. [X6207

Rex.

REX, 3½h.p., good running order; £6/10.—Hill, Bursar School, Cleethorpes. [X6362

FOR Sale, 6h.p. Rex motor cycle. Further particulars from F. Fulcher, Orpington. [X5680

REX, 4h.p., 2 speeds, F.E., clutch, S.E. sidecar; £27, or offer.—271, Fulham Palace Rd., S.W. [7051

MOTOR CYCLES FOR SALE.

Rex.

3½h.p. Rex, B. and B., Hellesens ignition, requires tuning; £8/10.—145, Henniker Rd., Stratford. [7030

REX 5-6h.p. Twin, fast, and powerful, Mabon clutch, just overhauled; £16, or near offer.—Butt, Chapel Av., Boverton, Dorset. [X5948

6h.p. Rex Combination, 1914, 2-speed, Lucas lamps, electric horn; £50, or near offer, bargain.—Montacute, Ilminster, Somerset. [7029

REX 1912 4h.p. Combination, 2-speed, free, good condition, Stewart speedometer, all accessories; £28.—Palmer, 29, High St., Kingston-on-Thames. [X6260

SEMI T.T. Rex, 3½h.p., Bosch, B. and B., m.o.v., spring forks, Watawata belt, good tyres, low, powerful; £15.—Turner, Bower, Birchanger, Essex. [7148

1914 Rex Combination, 6h.p., 2-speed, handle starter, grey coachbuilt sidecar. Pillion seat, been carefully used; £45, or close offer.—93, Blythswood Rd., Goodmayes. [X6193

REX, 1914, complete with all lamps, speedometer, and all accessories, in perfect order, kick starter, footboards, luxurious sidecar; bargain, £47.—Sydney Hall, Stevenage. [X6100

REX, late 1913, 5-6h.p., and 16 gn. Portland sidecar, fitted with Bluemels wind screen, complete machine recently overhauled and enamelled, also adjustable tappets fitted to engine, in splendid order throughout; £40, or best offer.—163, Railway Approach, Shepherd's Bush. [7031

MUST Sell Immediately.—5-6h.p. twin Rex, Bosch mag., studded tyres, just enamelled and overhauled, absolutely perfect; owner joining transport; £14, worth double; carriage paid anywhere; too cheap for approval; references given.—Atkinson, 46, Station Rd., Poulton-le-Fylde. [7015

Rex-Jap.

BRAND New 1913 Rex-Jap, 2-speed, and free engine model, shop-soiled only; £45, if fitted with new Canoelet sidecar £55.—Wauchope's, 9, Shoe Lane, London. [X6221

Roc.

3½h.p. Roc Motor Cycle and torpedo sidecar, 2 speeds; great bargain, £20.—Brown, 554, High Rd., Tottenham. [7013

Rover.

1914 (December) 3-speed (S.A.) Rover, as new, Lucas 3 gn. lighting set; £40.—Carter, The Mount, Shrewsbury. [X6056

ROVER, 4h.p., 1914, 3 speeds, in first-class order and condition; 31 gns.—Percy and Co., 337, Euston Rd., London. [7187

1913 Rover, 3½h.p., 3-speed, clutch, and sidecar, perfect condition, all accessories; £37.—538, Ecclershall Rd., Sheffield. [X6248

ROVER, 1913, 3½h.p., 3-speed, splendid condition, spares; bargain, £30; owner going to Front.—The Nest, Spring Rd., Bedford. [X6109

ROVER, 1914, 3-speed, sidecar, shop-soiled, and unscratched, all accessories; list price £75, will accept £58.—Sydney Hall, Stevenage. [X6102

ROVER, 1915½ T.T., fitted Philipson pulley, very fast; any trial; condition as new; £48.—James, Bread and Cheese Hill, Thunderley, Essex. [7094

ROVER, 1915, 3-speed (countershaft), had but little wear; £55, with accessories, including speedometer.—Colmore Depot, 31, Colmore Row, Birmingham. [7141

ROVER, 1913, 3 speeds, clutch, and sidecar, with lamps, speedometer, and tools; £40; condition new.—Parrott, 187, Garratt Lane, Wandsworth, S.W. [7004

ROVER, 3½h.p., F.E., 1912, just overhanled, new tyres, belt, wicker sidecar, grand condition; no reasonable offer refused.—21, The Avenue, Elworth, Sandbach. [X6291

ROVER, 1913, 3½h.p., free engine, condition as new, very fast, complete accessories; £33, cost £59; trial invited.—Letchfield, 29, Andrews St. South, Bury St. Edmunds. [X6307

ROVER, 1913, 3-speed, and free engine model, fitted with a Rover coachbuilt sidecar; the combination complete, including accessories; 40 gns.—Wauchope's, 9, Shoe Lane, London. [X6222

ROVERS in stock; immediate delivery of T.T. and sporting machines; early delivery of countershaft models.—P. J. Evans, controlling Birmingham agent, John Bright St., Birmingham. [7262

Royal Ruby.

ROYAL Ruby, with Miller's lamp set, as new; £25/10.—Chilton, High St., Watford. [X6274

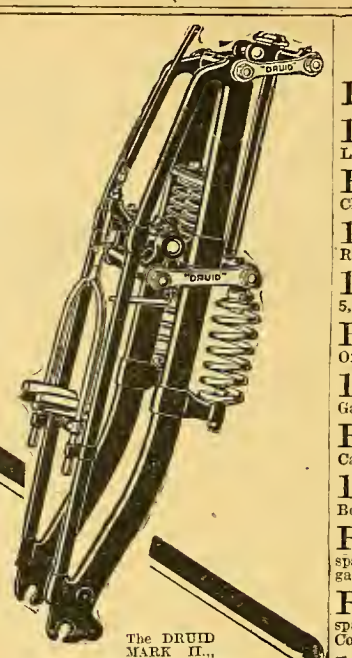
ROYAL Ruby, 4h.p., overhead valve J.A.P., perfect condition, fast, lamp, etc.; £32, or exchange for machine with gear.—Orundy, Queen St., Louth. [X6084

ROYAL Ruby, 2½h.p., 2-stroke, fixed, £29/10; 2½h.p., 2-stroke, 2-speed, de luxe model, £38/15; actually in stock; easy payments 2/ only extra.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [7233

Rudge.

1913 3½h.p. Rudge Multi; £26.—Baines, 166, Belgrave Gate, Leicester. [X6354

3½h.p. Rudge, 1912, clutch model, condition perfect; £25.—Rayleigh Garage, Rayleigh. [7270



The DRUID MARK II., For Solo or Sidecar. Made in three models.

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A. DREW & Co., Ld.

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MOTOR CYCLES FOR SALE.

Rudge.

I.O.M. T.T. Rudge Multi, as new, run only 800 mi very fast; £48.—Russell, Clifford St., York. [7

1912 3½h.p. Rudge, free engine; £27; cash or e terms.—R. E. Jones (Garages), Ltd., Swan London, Cardiff. [07

RUDGE Multi and sidecar, 3½h.p., 1912-13 mo speedometer, lamps; £27; offers.—Speechley Church Rd., Acton. [7

1915 Rudge Multi, not run above 500 miles, lam etc.; £50.—F. J. Bull and Co., 228, Welling Rd., Northampton. [X62

1914 Rudge, 3½h.p., free engine, just overhaul £28, or near offer.—To be seen at Earl's Gara 5, Heath St., Hampstead. [7

RUDGE Multi, T.T., 3½h.p., clutch, excellent con tion, new tyres, all accessories; £27/10.—Est Office, Ferne, Salisbury. [7

1914 5-6h.p. Rudge Multi and Swan sidecar, Mil lamp; £42, or near offer; fine condition.—T Garage, Whitland, S. Wales. [X61

RUDGE Multi, 1913, clutch, new back tyre, b Lucas lamp, splendid condition; price £2 Cardell, St. Neot's, Hunts. [71

1913 Rudge Multi, T.T., Lucas set, just complet overhauled makers, new back cover; £31/1 Box 9,719, *The Motor Cycle* Offices, Coventry. [X5

RUDGE, 3½h.p., T.T. Multi, 1915, 2 months old, d about 200 miles only, head, tail, and generat spare belt; £50.—Brookfield Garage, Swains Lane, Hi gate. [70

RUDGE Multi, 1915, Isle of Man T.T. racer, la Lucas lamp set, horn, and rear light, speedome spares, etc., splendid order; bargain, £45.—Elce a Co., 15-16, Bishopsgate Av., Camomile St., E.C. [04

1914 Rudge, 3½h.p., free engine, tyres Miche front, Dunlop back, as new, latest extension p to silencer, in excellent order throughout, lamp a horn.—A. B. Wright, 29, Amble Grove, Sandiford, N castle-on-Tyne. [X60

Scott.

SCOTT, 1914, 3¾h.p., 2 speede, clutch, and hi starter, exceptionally good condition; £38.—P. Evans, John Bright St., Birmingham. [72

SCOTT, 1912, and cane sidecar, re-enamelled a plated, good tyres; any trial; Binks; £33, offer.—3, Beech Grove, Ashton, Preston. [X62

SCOTT, 1914 model, fitted with Mills-Fulford coac built Corvette sidecar, smart and reliable co bination; bargain at £55; inspection invited.—Wa chope'e, 9, Shoe Lane, London. [X62

SCOTT Combination, latest model, 1915, perfect, wi Scott sidecar and cover, new tyres, Lucas lam and accessories, Binks carburetter; £75; may be se by appointment in Birmingham.—H. Brown, Wcott Wawen, near Birmingham. [X62

Sheffield Minor.

SHEFFIELD Minors.—Immediate delivery of this e ceptionally fine 2¼h.p. 2-stroke single-speed, gns.; 2-speed, 33 gns., including 1916 improvements Colmore Depot, 31, Colmore Row, Birmingham. [X23

Sparkbrook.

SPARKBROOK, 1915¾, 2¾h.p., 2-stroke, 2-spee 40 miles, absolutely as new, unscratched; neare £33.—Webb, Belmont, Surrey. [72

Speed King.

SPEED King, model 1914, 2½h.p., Binks carburett just been overhauled, owner going in for high power; £25, or nearest.—Wragg, 22, Lyndhurst S South Shields. [X59

Sun.

1914 2½h.p. Sun, 2-stroke; £16/10.—Baines, 16 Belgrave Gate, Leicester. [X63

1914 Sun-Villiers 2-stroke, fitted with lamp, hor tools, etc.; £23.—F. E. Wootten, 55, High S Oxford. [68

SUN, 1914, like new, 2½h.p. Villiers engine, and s cessories; £22/10.—Colmore Depot, 31, Colmo Row, Birmingham. [71

1915 Sun-V.T.S., 2-speed, run about 400 mile £28/10.—F. J. Bull and Co., 228, Wellingt Rd., Northampton. [X63

SUN-VILLIERS, 1914 model, 2¾h.p., Dunlop studd tyres, practically new, P. and H. lamp; £20.— W. Herbert, 26, Mostyn St., Llandudno. [X62

SUN-VILLIERS 2-speed, T.T., little used, new cond tion; £26, or see Exchange advert.—Bartter, S James's Rd., Kingston-on-Thames. 'Phone: 1701. [71

Sunbeam.

1915 3½h.p. Sunbeam, as new, not done 1,500 mile £58.—Rose's Garage, Uxbridge. [72

SUNBEAM, 1916, new 3½h.p. T.T. and stands models actually in stock.—Moss, Wem. [X62

SUNBEAM, 1916 model, 3½h.p., just delivered; gns., cash, or exchange.—Chirney, Sunbeam Agen Harpenden. [70

2¼h.p. Sunbeam, 1914, 3 speeds, clutch, kick starte excellent condition; £40.—Brothwell, Rhos-o Sea, Colwyn Bay. [X56

MOTOR CYCLES FOR SALE.

Sunbeam.

SUNBEAM, 1916; £73/10. Can I help you from what you have now to the very best obtainable? ...s or cycles wanted.—Bunting, Harrow. [7319

1916 3½h.p. Sunbeam, with the latest improvements, in stock; immediate delivery; exchanges ...tertained. 'Phone: 388. 'Grams: Bicycles.—Robin...n's Garage, Green St., Cambridge. [6865

SUNBEAM, 1914, 6h.p., 3-speed, Gloria coachbuilt sidecar, Lucas lamps, a fast and economical ma...ine, outfit in perfect condition; trial invited; must ...l; cost £120, accept £85.—Commander Jones, Admiralty Pier, Dover. [X6250

SUNBEAM, 1914½, 3h.p., all black, Gloria coachbuilt to match, wind screen, hood, Lucas lamps, ...axon horn, speedometer, two new Avon tyres, all in ...endid condition.—2nd A.M., N. Jewell, Royal Flying ...rps, 7, Sloane St., S.W. [6981

SUNBEAM, 1914½, 3½h.p., 3-speed, kick starter, clutch, Gloria sidecar, 3 Lucas lamps, extra ...te's outer cover new, speedometer, complete set of ...ls, some spares, fully insured until next May, splen...l condition; £70.—Clay, 120, Villa Rd., Handsworth, ...rmingham. [X6275

FOR Sale, 3½h.p. Sunbeam motor cycle, 3 speeds, free engine, new September, 1914, only run 1,432 ...les, all in first-class order; this machine belonged to ...officer who fell in France; proceeds of sale will go ...wards endowing a bed in British Hospital in France. ...Apply, G. Blane, Allton Down, Nairn. [X6108

...1h.p. New Sunbeam, latest model, countershaft 3-...2 speed gear, and chain drive, still in crate, just ...delivered from makers, price 70 gns.; also a magnifi...nt second-hand 1915 Sunbeam, 3-speed countershaft ...del, and chain drive, fitted with speedometer, lamp, ...rn, and tools, etc.; £67/10 cash; extended payments ...exchange.—Wauchope's, 9, Shoe Lane, London. [X6223

Triumph.

...1h.p. Triumph, perfect condition, Klaxon, lamps, ...2 etc.; £26/10.—24, Mountfield Rd., Ealing. [7312

1911 Triumph, 3½h.p., free engine model, splendid condition; £23.—Hussey, Grocer, Totton, Hants. [X6053

TRIUMPH, Baby, August, 1915, practically new, superb condition; £38.—Donkin, Shrewsbury. [X6134

1912 Triumph, 2-speed, and F.E., lamps, tools, etc., good condition; 26 gns.—9, May Mount, Leeds, E. [X6373

1914 T.T. 4h.p. Triumph, F.E., first-class condition; £42/10.—Baker, Donington, Wylde Green. [X6301

TRIUMPH, 1914¾, 4h.p., roadster, 700 miles, per...fect; nearest £40.—Webb, Belmont, Surrey. [7251

1914 Triumph, 4h.p., new condition, lamps, speedometer; £38.—105, Shakespeare Crescent, East ...am, E. [X5672

1915 Triumph Junior, little used, and in lovely condition; £36.—Crow Bros., 190, High St., ...uildford. [6879

TRIUMPH, 1913, Millford torpedo cane sidecar, ac...cessories; £38.—Capt. Bird, Marne Lines, Black...own, Farnborough, Hants. [7122

NEW 2-stroke Triumphs, delivery from stock; £42, plus 5%; cash, exchange, or easy terms.—Wau...hope's, 9, Shoe Lane, London. [X6231

1912 3½h.p. Triumph, free engine model, with lamp and horn, new Dunlop tyre and belt, fine machine; ...24.—The Garage, Whitland, S. Wales. [X6150

...ATE 1914 4h.p. Triumph and Millford family sidecar, 3 lamps, horn, spares, perfect condition; £55. ...Phillips, Sunbury, St. Cross, Farnham. [7026

1913 3½h.p. 3-speed Triumph, with Canoelet coachbuilt sidecar; £50, cash or easy terms.—R. E. ...ones (Garages), Ltd., Swansea, London, Cardiff. [0734

TRIUMPH, 4h.p., 30/- spent on magneto, all accessories, good tyres and belt, everything like new; ...23.—S.E., 42, Elm Park Rd., Church End, Finchley. [7150

...1h.p. Triumph, 1913, delivery Feb., 1914, 3 speeds, ...2 Alldays basket sidecar, lamp, horn, splendid combination; £35.—30, Station, Ashley Down, Bristol. [X6276

1909 Triumph, recently renovated and overhauled, all in perfect condition, lamps, horn, and Dun...ps; £18.—Heather, 83, London Rd., Bromley, Kent. [7200

TRIUMPH and Sidecar, 3½h.p., late 1909, 2-speed, good tyres, new belt, smart; seen after 6 p.m.; ...cept £25, or offer.—"Norman," 67, Effra Rd., ...rixton. [7243

TRIUMPH Junior, 1915, 2 speeds, as new, 2,000 miles only, speedometer, and every accessory; ...38.—Arthur Mylam and Co., 197, London Rd., West ...roydon. [7297

...h.p. 1914 Triumph, 1914 model, in nice condition ...throughout, fast machine; £45; also a 1907 Triumph and sidecar, £22/10.—Wauchope's, 9, Shoe Lane, ...ondon. [X6224

1915 4h.p. Triumph, countershaft, Bonniksen speedometer, Lucas horn, many valuable spares, absolutely perfect condition; £63.—Treliever, Quinton Rd., ...oventry. [X6116

TRIUMPH, 1913¾, T.T. roadster, 3-speed, excellent condition, Lucas lamps, also splendid coachbuilt ...idecar; £45; sell separately.—Treby, 527, Romford Rd., ...orest Gate. [7241

The "IVY" Two Stroke

Programme for 1916

The IVY—during the year 1915 has maintained its splendid reputation, and we are assured by letters from our clients that the little machines are giving every satisfaction. We take this opportunity of thanking those past and present riders of the IVY Two-stroke, whose kind patronage has enabled us to put before the public the aristocrat of its type, and to assure potential purchasers that for 1916, although only improved in detail, it is better than ever.

We are retaining all the models which have been such a success last season, viz.:—Tourist, De Luxe, and Lady's two-strokes, with or without 2-speed gears, and are introducing one new model—a 3 h.p. two-stroke (70 x 90) single-cylinder, which will be sold as a solo machine, and with a sidecar as a lightweight combination. This latter, however, will not be ready for delivery before February, 1916.

Tourist Model Fixed engine **£29 10**
2¼ h.p. (64x70)
Solo Machine. 2-speed **£36 0**

De Luxe Model Fixed engine **£34 0**
2¼ h.p. (64x70)
Solo Machine. 2-speed **£40 10**

Lady's Model Fixed engine **£31 0**
2¼ h.p. (64x70)
Solo Machine. 2-speed **£37 10**

3 h.p. single-cylinder two-stroke, 70 x 90 bore and stroke. Solo machine, and with sidecar as combination, with or without 2-speed gear. Prices not yet fixed; deliveries cannot be commenced before February, 1916.

THE ARISTOCRAT OF ITS TYPE

S. A. NEWMAN, Ltd., Aston Cross, Birmingham.

Advance 1916 Folder post free—Catalogue will be ready shortly.

MOTOR CYCLES FOR SALE.

Triumph.

TRIUMPH, 1914½, 4h.p., 3-speed, clutch, touring model, as new, done 2,000. Millford Corvette sidecar, equipped, spares; £62; will separate.—Bennett, College Farm, Aynhoe. [X5677

3h.p. Triumph, Bosch, B. and B., good tyres, new main bearings, rings, bushes, belt, perfect running order, painted blue; £16, offers.—Hamilton, Ashford, Drumsna, Co. Roscommon. [7072

1914 3-speed Triumph and torpedo sidecar, in splendid condition, Cowey speedometer, Lucas head and rear lamps, horn, and tools; £52.—J. L. Bulmforth, 4, Aughton St., Ormskirk. [7127

1913 3-speed Triumph, with brand new 17 gn. Gloria sidecar, luggage rail, all accessories, perfect; £50 cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0720

TRIUMPH, 4h.p., late 1914, 3-speed, perfect condition, complete with sidecar, new, coachbuilt body, £55; would take as part light 2-stroke.—Sellick's Motor Works, Stantonbury, Bucks. [X6049

1914 Triumph, 4h.p., 3-speed, clutch, lamp, horn, and all tools, guaranteed in sound and splendid condition throughout; accept £40.—Box L213, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7134

TRIUMPH, 1914, 3-speed, pedal starter, new tyres, beautiful order, with sidecar, £55; exchanges, deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7087

TRIUMPH, late 1912, just been re-bushed, re-enamelled and plated, and new 3-speed fitted, new Lucas lamp and long horn, splendid machine, £33.—Firth, 27, Woodbridge Rd., Moseley, Warwickshire. [X6286

1912 Free Engine Triumph, exceptional condition, perfect, low mileage, Lucas 50/- lamp set, horn, and spare belt, tube and case, valve, etc.; £26.—Barretts', Fruiterers, High St., Cheltenham. [7281

TRIUMPH, 1914. 3-4h.p., with Montgomery sidecar, Sturmey-Archer 3-speed, free engine clutch, lamps and accessories, splendid condition, tried by appointment; £55.—Pavitt, Redcot, S Ockendon. [6986

TRIUMPH Combination, 1912-13, 3½h.p., 2-speed, clutch model, kick start, torpedo sidecar, all accessories, recently overhauled, exceptionally reliable; only £39; any trial.—Norfolk Villa, Joseph's Rd., Guildford [7058

TRIUMPH, 1914, 4h.p., 3-speed, with Torpedo sidecar, lamp, horn, speedometer, etc., exceptionally fine outfit, had fine weather use only; price £55, or for quick sale very near offer.—Tollady, Hemingford Bicester, Oxon. [X6325

1914 Triumph, 4h.p., 3-speed, new November last year, only done 800 miles, lamp, horn and all spares, condition throughout as new; owner at Front; £53; carriage paid.—Box L222, *The Motor Cycle* Offices, 20, Tudor St., E.C [7331

TRIUMPH, 3-speed, late 1914, only little ridden, excellent condition; owner going abroad; new heavy Dunlop back wheel, and new Dunlop belt; can be seen in London, price £45.—Lieut. E.M., 11, Kensington Palace Gardens, W. [X6147

TRIUMPH, 1914, 4h.p., 3 speeds, clutch, machine recently overhauled at Coventry, new extra heavy Dunlop tyres, Cowey speedometer, lamps, and usual accessories, excellent condition; £40.—Beresford Garage, Sutherland St., Walworth Rd., S.E. [7055

1911 Triumph, clutch, Grade gear, wicker sidecar with door, mat, storm apron, large P. and H. rear light, Jones trip, new back tyre, horn and spares, good condition; 30 gns, owner on active service.—Cross, 12, Colvestone Crescent, Dalston [7294

TRIUMPH, 1913, 3-speed, magnificent £17 1915 Gloria coachbuilt sidecar, absolutely as new and unscratched, luggage grid, tyres in splendid condition, speedometer, head and tail lamps, horn, etc., whole outfit in magnificent condition and one of the smartest and most luxurious on the road; cost over £83, accept for quick sale 42 gns.—Jnban, Broad St., Reading 'Phone: 1024. [X3143

Williamson.

WILLIAMSON 1913 8h.p. w.c. Combination, had little use; £58, or exchange 4h.p. Douglas combination.—Spurling, The Cottage, 2, Brondesbury Park, N W. [7245

WILLIAMSON, late 1913, 8h.p., with 1914 Williamson sidecar, coachbuilt, complete with hood wind screen, lamps, horn; bargain, £52; exchanges.—Ideal Cycle Co., Thundersley, Essex. [7213

Wolf.

3h.p. Wolf, free engine; £11; wanted, lady's cycle.—Jupp, Horsmonden. [6988

1915 Wolf, 4h.p., 3-speed gear box, as new; £40.—Russell, Clifford St., York. [7132

NEW 4h.p. Wolf-Jap, 2 speeds, clutch, kick start; £47, makers' price £53.—93, Morant Rd., Colchester. [7076

WOLF, 2¾h.p., 1916 model, just delivered, 2-speed, 2-stroke, kick-starter, hand-controlled clutch; £36/19/6; exchanges or deferred payments.—Eagles and Co., High St., Acton, W. [X6257

2½h.p. Wolf Models, 1915.—Delivery from stock of 2½h.p. J.A.P. engine, 2-speed gear, £37/4; 2-stroke 2-speed models, £32/11/9; single-speed models, £25/6/3; cash or extended payments.—Wauchope's, 9, Shoe Lane, London. [X6225

MOTOR CYCLES FOR SALE.

Wolf.

WOLF, 2½h.p., 1914, fixed, second-hand, in really excellent order, complete with head lamp, rear lamp, and horn; £19/19; easy payments 2% only extra.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [7236

Yale.

YALE, 8h.p., never ridden; cost £72; enlisted; £56. —736, Holloway Rd., London. [7283

Zenith.

1911 3½h.p. Zenith-Gradua, recently overhauled, rebushed.—Sams, 120, Coulston Rd., Lancaster. [X6095

3½h.p. Zenith-Gradua, Lucas's lamp set, in perfect condition; £27/10.—Chilton, High St., Watford. [X6236

ZENITH Combination, 1915, 6h.p., 3 weeks old, guaranteed as new; 62 gns.—Percy and Co., 337, Euston Rd., London. [7192

ZENITHS.—P. J. Evans, of John Bright St., Birmingham, for prompt delivery all models. Write for particulars. [7263

ZENITH-GRADUA, 1914, 6h.p. J.A.P., 4th sidecar, lamps, horn, etc., in excellent condition; £45. —D. Prout, Foss St., Dartmouth. [X6058

1915 Zenith, 6h.p., countershaft, kick starter, not run 2,000, accessories, spares, 2 belts; £60.—J. Clegg, Tetney, Bath Rd., Slough. [7172

ZENITH-GRADUA, 4h.p., 1913, and racing sidecar, fast machine, good condition; £27.—Firth, 27, Woodbridge Rd., Moseley, Warwickshire. [X6287

ZENITH, 1913, 6h.p. model, Gradua gear, clutch, kick starter, and torpedo, Phœnix sidecar; £52.—Lieut. Roseveare, Officers' Mess, Baldock, Herts. [X5958

ZENITH Empress Combination, £104/6; deferred payments if desired; exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7082

3½h.p. Zenith-Gradua, 1913, and sidecar, in good running order; £29/10, or £20 cash and gramophone and records.—Hives, 13, George Rd., Guildford, Surrey. [7238

ZENITH-GRADUA, 1916, 5h.p., clutch, kick starter, long horn, lamp, overalls, etc., as new; 60 gns.—Can be seen at Newson's Garage, Park Rd., Hornsey, N. [6984

ZENITH 6h.p. Twin, 1913, with coachbuilt sidecar, speedometer, fully equipped, in perfect order and condition; £36.—Percy and Co., 337, Euston Rd., London. [7190

ZENITH-GRADUA, 6h.p. J.A.P., 1913, sporting sidecar, underslung, lamps, horn, accessories, smart lot; only wants seeing; any trial; £52/10.—89, Queen's Rd., Dalston, N.E. [7019

ZENITH, 1912, splendid condition, with 1914 sidecar, both hardly used for last two seasons; £40, or near offer.—Llanberis, Ridgway, Sutton, Surrey. 'Phone: 1160 Sutton. [X5679

ZENITH, 3½h.p., model A, £62/6; 4-5h.p., clutch model D, £73/18; 6h.p., clutch model F, £84/6; easy payments 2% only extra.—Wm. Whiteley, Ltd., Queen's Rd., London, W. [7229

ZENITH, 1914, 8h.p., 90 bore engine, and sidecar, new tyres and belts, all accessories, excellent condition; any trial; £75, or nearest offer.—Box 9,752, *The Motor Cycle* Offices, Coventry. [X6171

1916 Zenith-Gradua, 4-5h.p., has scarcely done 200 miles, never out in wet weather, would pass as brand new; price complete with accessories 65 gns.—Box L201, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7047

ZENITH (6h.p. twin) Red Combination, 1913, £17 sidecar, new last June, window screen, apron, tools, speedometer, belt (Zilla), tyres, lamp, all new, very fast, just overhauled, perfect condition, fine appearance; £56. —Berry, Rose St., Peterhead. [X6059

ZENITH-GRADUA, latest 1916 models, just received, 4-5h.p. twin, countershaft gear, clutch, and kick-starter; model D 64 gns., 6h.p. model F 73 gns., 8h.p. model H 74 gns., plus 5% increase; exchanges or extended terms arranged.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0491

NEW 1915 Zeniths from stock; 6h.p. and 4-5h.p. countershaft free engine and kick start models; cash, exchange, and easy terms arranged. When dealing with Wauchope's your orders are assured to come satisfactorily through. Wauchope's are the oldest motor cycle dealers, and have a reputation for fair dealing.—Wauchope's, 9, Shoe Lane, London (by Ludgate Circus, City). [X6226

Miscellaneous.

EAGLES.—Rat-Jap, 8h.p. twin, 1912, 2-speed, free engine, coachbuilt sidecar; £33 10.

EAGLES.—N.S.U., 3½h.p., model de luxe, 1913, spring frame, 2-speed gear, free engine; £27/10.

EAGLES.—Calthorpe, 1915, 2¼h.p., 2-stroke model, 2-speed gear, variable mag. control, only used 250 miles, as new; £28/10.

EAGLES.—N.S.U. 3½h.p. Popular, dropped rear frame, T.T. handle-bars, thoroughly overhauled; £16/10.

EAGLES.—Douglas, 2¾h.p., late 1914, 2 speeds, new condition, with accessories; £40.

EAGLES.—Any of the above can be had on approval, *The Motor Cycle* deposit system.—Eagles and Co., High St., Acton, W. Tel.: 556 Chiswick. [6258

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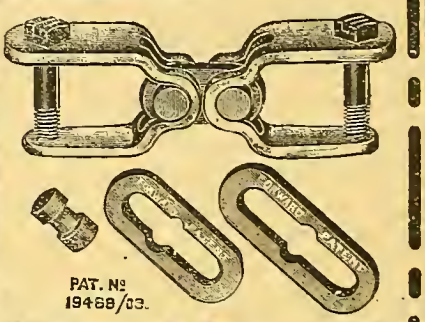
It would be useless, of course, and it is just about the same fitting a cheap fastener, which will wear out quickly, jump apart in use, and probably break at a critical moment.



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Miscellaneous.

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PALMER'S Garage, Tooting.—3½h.p. Brown, £1 2¼h.p. F.N., £10; 2¾h.p. Ariel, £5; 3h. N.S.U., £8; 3½h.p. Triumph, £12 10; 4h.p. Bra bury, £18; 2h.p. Humber lightweight, £16; 4½h. F.N. and sidecar, 2 speeds, £25.

PALMER'S Garage, Tooting.—3½h.p. Humber a sidecar, 2 speeds, clutch; £20.

PALMER'S Garage, Tooting.—Great bargain, 4h. Zenith, J.A.P. engine, m.o.v., Gradua gear; £1

PALMER'S Garage, Tooting.—3½-4h.p. 1913 N Hudson combination, 3 speeds; £32 10.

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LONGMAN Bros., 1, King St., Acton. 'Phon 1578 Chiswick. We have the following bargain

LONGMAN Bros.—1914 3½h.p. twin Zenith, T. actually special machine; £37/10.

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LONGMAN Bros.—Note: We are not keeping o stock to obtain big prices in the spring, con quently now is the time to buy. Write, 'phone, call. [72

6h.p. Sociable, 2 speeds, mag., £12; 3½h.p. Brow £9, quick sale; evenings.—31, Cowper Av., Sutto [X61

IF You Want Bargains in second-hand motor cycl you can get them at Wauchope's, 9, Shoe La Fleet St., London. [56

1913 Scott, perfect condition, £34; 1914 Rover, wi sidecar, £48.—London and Thames Motor C Kingston-on-Thames. [67

£6.—Motor cycle, new mag., new B. and B. carb etter, good tyres, requires fitting up—37, Fur hill Rd., Plymouth. [X60

3¼h.p. Automotor-engined Chater-Lea, perfect ord treimbler coil, dropped frame, good tyres; £5 1 —Railway Garage, Staines. [73

ABSOLUTE Bargains in new and second-hand mot cycles; finest stock in Midlands.—Colmore Dep 31, Colmore Row, Birmingham. [71

MOTOR Cycles, shop-soiled and second-hands, goi at bargain prices, all guaranteed.—Colmore Dep 31, Colmore Row, Birmingham. [71

1915 8B. Combination, lamps, horn, generator, do 3,000; owner going to Front; £60, cost £115. Morgan, Marshall St., Westminster. [70

1911 3½-4h.p. Rex. £15; 3½-h.p. Roebuck and si car, low, spring forks, £12; b th m.o.v.; Mab clutch, 30/-; N.S.U. gear, £3; offers.—39, Westme Rd., Sutton, Surrey. [72

IF You Require a really good second-hand motor cy it will pay you to send us your requirements. W have a good selection to offer at the right price.—T Morris Garages, Oxford. [03

GENTLEMEN wishing to purchase a good mot cycle at a bargain price (over 100 machines select from) should consult Wandsworth Motor E change, Ebner St., Wandsworth Town Static 'Phone: Battersea 327. [X63

FOR a Real Bargain in second-hand motor cycles, cy cars, gears, magnetos, etc., you should call or wr Morgan and Maxwell, the London Motor Mart, 8 High Rd., Streatham, who can positively save y pounds, shillings, and pence. At the moment we ha A.J.S., American Excelsior, Ariel, A.S.L., Rat, Bru bury, Calthorpe, Chater-Lea, Clyno 2 and 4-stroke Douglas, Enfield 6h.p. combination, cheap, F several, Humber, Imperial-Jap, Indian, Ixion 2-stroke Matchless, Moto-Reve, Motosacoche, New Hudso N.S.U. (several), Premier combination, cheap, Rud Singer, Triumph, Zenith; several cheap sidecars; A. Sociable for sale cheap. Hours, 9.30 to 10; Wednesda 1 o'clock. [X61

MOTOR CYCLES FOR SALE.

Miscellaneous.

MUST Clear; last bargains.—6h.p. 4-cyl. bicycle, m.o.v., clutch, chain drive, battery ignition, £10; 1911 3½h.p. Humber, 2-speed, handle starting, £17/10; 1912 ditto Humber, £22/10; sidecar, 35/-, no offers. Please call, Liquidator, 10c, Waylett Place, West Norwood. (Seo Cycle Cure.) [X6386

F. MEDCALF and Co., Colchester. 'Phone: 171.—We have for disposal the following motor cycles: h.p. 1913 Rex-Jap twin and sidecar, £30; 3½h.p. 1914 Rudge, T.T. model, £30; 2¾h.p. 1915 Douglas, 2-speed, £40; 1914 Triumph, 2-speed, 2-stroke, £30; h.p. 1915 B.S.A., 3-speed, chain-cum-belt, £48; 3½h.p. 1913 B.S.A., 2-speed, £30; 2½h.p. 1914 Levis, 2-speed, 2-stroke, good condition, £27; 3½h.p. 1914 Sunbeam, 2-speed, as new, £57; 2¾h.p. 1914 Douglas, 2-speed, £38; 3½h.p. 1914 Premier, with 2-speed countershaft gear, £28; Douglas magneto, £4; 80 soiled motor cycle belts, all sizes, from 3/6 each; Douglas frame, £1; B. and B. carburetter, 23/-; one Bosch magneto, £3; coachbuilt sidecar, £4; several speedometers, second-hand, little used, from 35/- each. We will exchange any of the above motor cycles, etc., for the following, with cash adjustments: Good make 2-stroke engine, motor cycle rims, motor cycle mudguards, head lamp sets cycle or motor cycle lamps, stands, or footrests, car foot pumps, jacks, tail lamps, tyres, Ford parts. [6380

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McKENZIE Coach Sidecar, new heavy Dunlop, just fitted; £5.—Spencer, Draper, Ledbury. [X5953

MYERS' £17/10 Sidecar for Scott, good condition; £8.—52, Lower Hastings St., Leicester. [X6194

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BASTONE'S for Sidecars. See last week's adverts.—228, Pentonville Rd., King's Cross, London, N. [7338

SIDECAR, latest coach, underslung, new, suit any 3½h.p.; £6.—Taylor, 637, Seven Sisters Rd., Tottenham. [7286

RACING Canoelet Sidecar, just delivered, Harley-Davidson finish, and wheel.—Crow Bros., 190, High St., Guildford. [6878

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CHATER-LEA Sidecar, coachbuilt, quick detachables, Kempshall tyre, good condition; £3.—8, Priory Place, Well St., Hackney. [X6240

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SIDECARS.—Several bullet-shaped coachbuilt bodies, with or without chassis, cheap.—Write, Stokes and Holt, Ltd., Belgrave Rd., Leicester. [0718

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WE have Mills-Fulford Empress, Watsonian, Canoelet, Phœnix, Swano, Harley-Davidson, and Montgomery; 30 cars actually in stock.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7090

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MUST Clear.—Three 1913 Autocarriers, from £35.—Call, Liquidator, 10c, Waylett Place, West Norwood. [X6385

BODIES.

CAMBER Coach Bodies, £3/10; lists free.—Bright and Hayles, Church St., Camberwell. [7221

CAMBER Coach Tandem Models, £4/12/6.—Bright and Hayles, 73, Church St., Camberwell. [7223

CAMBER Lightweight Models, weight under 20 lbs.; £3/5.—Bright and Hayles, Church St., Camberwell. [7222

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DOUGLAS, War Office Model	£54 12
DOUGLAS, Model X, lady's	£56 14
DOUGLAS, Model V, 3-speed	£52 10
DOUGLAS, Model V, 2-speed	£50 8
DOUGLAS, Model U, 3-speed	£52 10
DOUGLAS, Model U, 2-speed	£50 8
B.S.A., 4½ h.p., 3-speed, chain drive	£64 0
B.S.A., 4½ h.p., 3-speed, chain-cum-belt	£62 0

Second-hand Bargains.

1914 **INDIAN,** 7-9 h.p., clutch	£42
1914 **RUDGE,** 5-6 h.p., 3-speed	£49
1914 **A.J.S.,** 5-6 h.p., 3-speed Combination	£73
1915 **DOUGLAS,** T.T., 2¾ h.p., 2-speed	£46
1915 **HENDERSON,** and Swan Sidecar	£80
1914 **INDIAN** Combination, 7-9 h.p., 2-speed	£60
1914 **DOUGLAS,** T.T., 2¾ h.p., 2-speed	£43
1914 **RUDGE,** 5-6 h.p., shop-soiled	£45
1914 **LITTLE GIANT,** 2 h.p., 2-sp., lady's	£25
1914 **INDIAN,** 7-9 h.p., 2-sp., and coach S'car	£58
1913 **ZENITH,** 5-6 h.p., clutch and Sidecar	£48
1913 **RUDGE,** 3½ h.p., Philipson pulley	£32
1912 **MOTOSACOCHE,** 2½ h.p.	£15
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1915 **WHITING-GRANT**	£140
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COACH Bodies, semi-underslung, 25/- complete, re painting, exchanges.—Vernon Sidecar Co., 74a, Seven Sisters Rd., Tottenham. [7106

WICKER Body, off 10 gn. sidecar, padded, lined with Pegamoid, side door, spring seat, nearly new; bargain, 35/.—54, Hereford St., Hull. [X6262

CYCLE CARS.

8-10h.p. Duo, 1913, £55; 8-10h.p. L.M., 1912, £35.—Palmer's Garage, Tooting. [7106

A.C. Sociable, complete with lamps, hood, good condition; bargain.—Parker, 68, St. Giles', Oxford. [X6090

HUMBERETTE, 1914, indistinguishable from new; £80 secures.—Percy and Co., 337, Euston Rd., London. [7197

6h.p. 3-wheel Sociable; cash, or exchange for motor and sidecar; bargain.—W.H., St. Decumans, Crowborough, Sussex. [7050

MORGAN, 8h.p. J.A.P., e.c., just overhauled and painted; £50.—Box L212, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7122

A.C. Sociable, just thoroughly overhauled, new hood, screen, 3 lamps; £35.—8, Bloye, 34, Fortis Green Av., East Finchley. [7098

A.C. Sociable, with hood, screen, lamps, tools, and spares, good running condition; £40.—408, Hagley Rd., Birmingham. [X6155

A.C. Sociable, hood, screen, lamps, speedometer, spare, chains and valves; trial; £50, accept motor cycle part payment.—Galley, New Washington, Durham. [X6206

SINGLE Gear Cycle Car, 6h.p. twin Rex, Bosch, 3 speeds, Bowden brake, suit tradesman; £17/10, or near offer.—Bellamy, 12, Melbourne Sq., Brixton, S.W. [X6233

MORGAN Grand Prix, 1915, water-cooled, speedometer, Lucas lamps and horn, perfect throughout; £110.—Arthur Mylum and Co., 197, London Rd., West Croydon. [7297

BEDELIA Cycle Car, 7-9h.p., twin-cyl., hood and screen, £20; also Phanomobile, 7-9h.p. twin, 4-seater, torpedo body, hood, and screen, as new.—Brown, 554, High Rd., Tottenham. [7012

MORGAN 1915 Grand Prix, indistinguishable from new, J.A.P. engine, disc wheels, painted red, hood and screen, fully equipped, guaranteed perfect; £110.—Percy and Co., 337, Euston Rd., London. [7184

NEW Light Car Chassis, complete with 4-cyl. Dorman engine, clutch, gear box, 3-speed, reverse, gate change, Ridley back axle and steering, Sankey detachable wheels; £100.—Baines, 166, Belgrave Gate, Leicester. [X6356

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MUST Clear, following 2-seaters.—20h.p. Stanley, £10; 8h.p. Rover, £70; 8-10h.p. Swift, £45; 9h.p. Baby Riley cycle car, detachable wheels, £50; 14-16h.p. Hurtu, £65; 10h.p. Waverley chassis, 4-cyl. monobloc, enclosed valves, Zenith, Bosch, £85; 14-16h.p. Sheffield Simplex coupe, £110; 10-14h.p. 4-cyl. Renault, £125 15.9h.p. S.C.A.E., sporting, 1913, £165; several 4 seaters, landaulets; list; what offers?—Please call, Liquidator, 10c, Waylett Place, West Norwood. [X6384

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DE DION BOUTON 2-seater, 6h.p., new tyres, hood, screen; £19/19.—1, Ebner St., Wandsworth. [X6321

1915 Lagonda Coupe, 11h.p., practically new, speedometer, clock, 5 lamps, spare wheel, guaranteed sound; £150.—Below.

1914 Calthorpe, 10h.p., hood, screen, 5 lamps, spare wheel, speedometer, just re-painted, splendid order; £150.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0658

G.W.E. Light Car, 1916, latest model, just arrived from works; immediate delivery; £178 10.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7109

CALCOTT, 10.5h.p., 1916, latest model, the leading light car, dynamo lighting set, and dicker seat, just arrived from works; immediate delivery.—Wilkins-Simpson, and Co., 24, Sheet St., Windsor. [7103

DOUGLAS Light Car, 1915, 10h.p., 2-seat sporting body, painted and upholstered red, C.A.V. dynamo lighting set, speedometer, spare wheel; wheels in new condition; price £180.—Gibb, Worcester St., Gloucester. [X6265

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3½h.p. Quadrant Engine, with mag. platform, exhaust lifter; 35/-.—Linfoot, Rumsgate, Stockton-on-Tees. [X6312

1914 7-9h.p. Indian Engine, all complete except magneto, done 1,000 miles; £13/10.—27, Wellington St., Deptford. [7274

TWIN Rex, 6h.p., a.i.v., complete with Bosch, B. and B. carburetter, £9; twin 6h.p. N.S.U., a.i.v., 2-speed N.S.U. gear, geared Bosch, £9.—Bellamy, 12, Melbourne Sq., Brixton, S.W. [X6235

J.A.P. 8h.p. Twin, 1912, for sale, complete with pulley, exhaust box pipes, induction pipe, union nuts, compression taps, spanners, new, never been used; what offers?—Barnett, 72, Edgbaston Rd., Birmingham. [X6097

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PARKER and Rice.—Re-winding, re-magnetising, overhauling, etc.; repairs executed with expedition and unapproachable workmanship; low quotations.

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WILLIAMSON, 8 h.p., and Sidecar, shop-soiled	£89 0
WOLF-J.A.P., 2½ h.p., 2-speed, shop-soiled	£33 10
REX 6 h.p. Sidette. Brand new	£69 10
REX 6 h.p. 1913 Sidette and accessories..	£39 10
QUADRANT, 7-9 h.p., 1913, and Sidecar..	£46 10
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ROVER, 1913, 3½ h.p., 3-sp., Sidecar Com.	£43 10
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REX, 5½ h.p., magneto, twin, spring forks	£13 10
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LEGGATE'S, Edinburgh, for Tyre Value.

LEGGATE'S, Edinburgh.—For great reductions in brand new clearance tyres. See below for approval terms. Prompt despatch guaranteed.

LEGGATE'S, Edinburgh.—Clearance.—1915 new pattern Clincher Dreadnought, 6-ply fabric, extra heavy, rubber studded, beaded covers, 26×2¼ 31/- list £2/7/3; 26×2½, to fit 2¼ rims, 31/6, list £2/7/3; 26×2½ 32/6, list £2/10/10.

LEGGATE'S, Edinburgh.—Clearance.—1915 new pattern Clincher de luxe, heavy rubber studded, beaded covers: 26×2, 21/-; 26×2¼, 21/-; 26×2⅜, to fit 2¼ rims, 25/6; 26×2½, 25/6.

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LEGGATE'S, Edinburgh.—1915 Dunlop tubes, best quality, extra heavy, fully guaranteed, 24×2 6/6, 24×2¼ 7/-, 26×1¾ 6/6, 26×2 6/9, 26×2¼ 7/9, 26×2⅛ 8/6, 26×2½ 8/9, 26×3 9/6, 650..65 10/6, 28×2½ 9/-, 28×3 10/6.

LEGGATE'S, Edinburgh.—These goods are all brand new, and sent anywhere on 7 days' approval against remittance; cash refunded in full if goods not approved of.

LEGGATE and Co., Motor Cycle Specialists, 15, Slateford Rd., Edinburgh. [X5491

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ECONOMIC.—Avon clearance: 26×2 Stonehenge, Druid, and rubber-studded, 16/9; 26×2¼ Druid, Invicta, and rubber-studded, 17/6.

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ECONOMIC.—Kempshalls, special for Douglas and 26×2 rims; 26×2¼ clearance anti-skids, deepened treads, 24/6. carriage paid.

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ECONOMIC.—Kempshall clearance anti-skids, 26×2¼ 24/6, 26×2⅜ 25/6, 26×2½ 27/-, carriage paid.

ECONOMIC.—Clinchers, special for Levis, 24×2 heavy 4-ply de luxe covers 19/6, tubes 5/6, complete tyre 24/-.

ECONOMIC.—Burnett Suction Cup, also rubber-studded patterns, 26×2¼ 15/6, were 17/6; 26×2½ 15/6, were 18/6; 26×3 22/6, were 25/-.

ECONOMIC.—Continental 4-ply heavy Model de Course, 26×2¼ 18/6, 26×2½ 18/-; special to clear.

ECONOMIC.—Kempshall 650×65, steel studs in fibre, fully guaranteed, 55/-; 24×2 Michelin steel stud, 21/-; carriage paid.

ECONOMIC.—Continental Model de Course, 26×2⅛, 2¼, oversize for 26×2¼, 25/-, carriage paid, brand new.

ECONOMIC.—Continental 26×2¼ wired 10/6, 26×2¼ steel stud combination 36/- (listed 50/-).

ECONOMIC.—Continental basket pattern, 24×2 15/6, 26×2 16/9, 26×2¼ 19/6, 26×2⅜ 20/-.

ECONOMIC.—Clincher ⅞in. section in 7ft. lengths, 11d.; two-piece belts cut to any requirements.

ECONOMIC.—Continental beltiug, ¾in. 11d., 1in. 1/3; Shamrock-Gloria, ⅞in. 1/-, 1in. 1/2; Avon, ⅝in. 10d.; fasteners free all belts.

ECONOMIC Tyre Co., 137, Lewisham High Rd., New Cross. 'Phone: New Cross 1393. Special clearance lines. Close 1 Thursday, 8.30 Saturdays. [7219

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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The Influence of Aero Engines on Motor Cycle Design.

AS there are several points in common between aero engines and those used on motor cycles, we make no apology for introducing a feature which some, at a first glance, might consider to be outside our province. A little thought will, however, show that, although an aero engine is a much more ambitious affair, the *desiderata* are very much the same in each case. Light weight is, perhaps, the first point which will occur to the reader, and here what is an absolute necessity for aeroplane work is also very desirable in the case of a motor cycle, for a light engine means also a light frame, with its consequent ease of handling and economy of tyres and petrol.

This brings us to a second desirable point, viz., economy. On a motor cycle the tank capacity is limited, and possibly the rider's purse is limited too, therefore an economical and efficient engine is a *sine quâ non*. In aeroplane practice it is most undesirable that frequent descents should be made for the purpose of obtaining fuel; also it is essential that the initial weight of the fuel should be kept as low as possible.

Engine efficiency is another point which is bound up with the two already mentioned; we allude to power in comparison with cubic capacity as well as power for fuel consumed. This, again, is of equal importance to both sports (if such a word can at present be applied to airmanship). Evenness of torque, an absolute essential on an aeroplane if vibration of the propeller is to be avoided, is also "a consummation devoutly to be wished" on the humbler mount. Here again an economy in tyres and transmission would result, and frames could be made lighter.

On the other hand, there are also many points of difference. The engine frame can be made much lighter for work in the air, and the crank case is not expected to supply part of the main frame. (This is a method of construction with which many motor cycle designers are not in agreement.) Road vibration has not to be considered, and an aeroplane engine, although it may have to work all the time at high pressure, while a motor cycle engine is only called upon to exert its full power at intervals, is yet running under ideal conditions, far removed from dust and dirt; it can, too, have a free exhaust, while a motor cycle engine must be silenced.

At the present time motor cycle designers are, as it were, "resting upon their oars" and improving details only, but the aeroplane world is more active than ever before. Thus it is quite likely that innovations now introduced in the latter sphere may reflect beneficially upon the former in the near future.

A Failing of Sidecar Stands.

ONE of those minor points which are often overlooked in the design of a machine, but which, nevertheless, cause a great deal more inconvenience than one would imagine, is the type of stand which is made to do duty on machines which are intended for sidecar work. With motor bicycles, of course, the legs of the stand must be of equal length, so that the machine stands upright. It is apparently overlooked that when a sidecar is attached, and it is desired to support the bicycle by the aid of its stand, only one leg is brought into operation by reason of the bicycle being pulled out of perpendicular. This quickly strains the stand, and, moreover, loosens the parts, so causing rattle. We have never seen this simple fact dwelt upon in print before, and we are reminded of the shortcomings of the modern stand in use with sidecars in a letter from a very smart mechanic in No. 1—the original—Motor Machine Gun Battery. Is it not time that manufacturers either produced a stand which will support the entire rear portion of a sidecar machine, or, if the present type be adhered to, then a stand with legs of unequal length in order to distribute the strain more evenly?

An Index to the advertisements in this issue will be found on the page facing the back cover

A Dutch-built Motor Cycle.

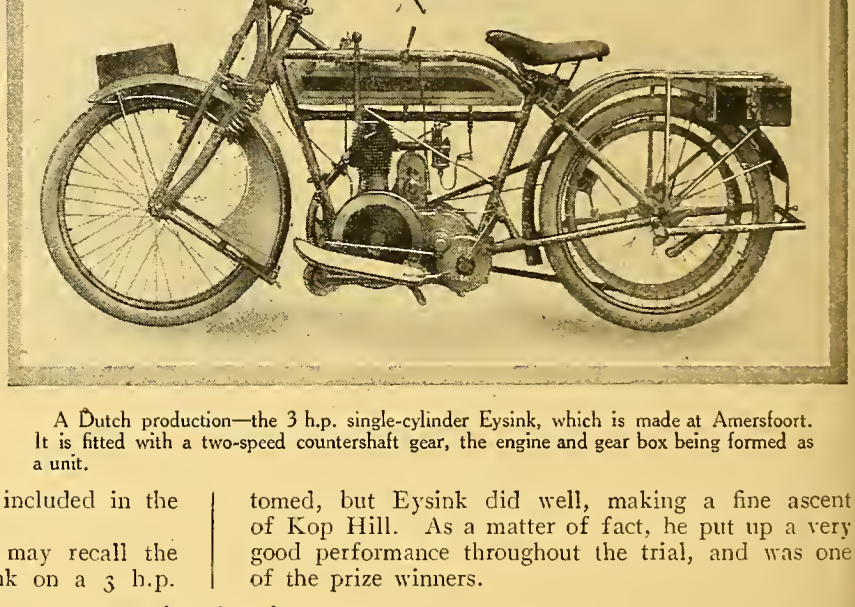
Little Change in Eysinks for 1916.

THE Eysink is not unknown to our readers as a soundly built machine, hailing from Amersfoort, Holland. The 1916 models are little altered from those of 1915, and the illustration that accompanies this letterpress is a typical example of one of the latest machines. It is a single-cylinder model, the engine dimensions being 74 mm. × 85 mm. (365 c.c.), and is rated at 3 h.p. A two-speed countershaft gear is fitted, and drive is by chain and belt, the chain being enclosed. Both engine and gears are manufactured in the Eysink works—a remark that applies to all models.

Another typical Eysink model is the large twin-cylinder 816 c.c. machine. The cylinder dimensions are 74 mm. × 95 mm., and three speeds in conjunction with an all-chain drive are standard.

Two other single-cylinder models complete the list. These are the 2½ h.p. (68 mm. × 85 mm. = 309 c.c.) and the 3½ h.p. (74 mm. × 95 mm. = 408 c.c.) Amac carburetters and other British fittings are included in the specification of all models.

As regards road performance, we may recall the splendid showing made by A. Eysink on a 3 h.p. machine of his make in the Anglo-Dutch trial of 1913. The Dutch riders in this trial did not shine on hills, which was not surprising in view of the flat nature of the roads to which they are accustomed, but Eysink did well, making a fine ascent of Kop Hill. As a matter of fact, he put up a very good performance throughout the trial, and was one of the prize winners.

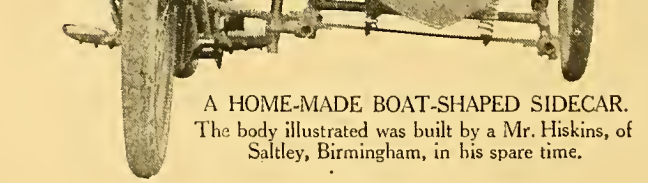


A Dutch production—the 3 h.p. single-cylinder Eysink, which is made at Amersfoort. It is fitted with a two-speed countershaft gear, the engine and gear box being formed as a unit.

A Jump in British Exports.

THE November Board of Trade returns show a very gratifying increase in the amount of British exports in respect of motor cycles. Compared with the corresponding month of 1913 and 1914, last month's figures are appreciably larger, and incidentally expose the fact that a great many more machines are finding their way abroad than the average man supposes. British exports are most necessary in view of the enormous quantity of imports—particularly munitions—against which it is necessary to keep up a balance of trade. Whereas in November, 1913—a peace-time month be it noted—we exported 1,427 machines, and in November, 1914, 1,374, last month's exports totalled 1,690 motor cycles. Including tyres and parts, the respective values were £87,549, £95,233, and £124,543. A good deal of the jump can be ascribed to the fact that Army requirements in respect of motor cycles have been cut down during the last month or two. We have known, too, the wise decision of a number of leading manufacturers to cultivate their Overseas market in preference to distributing the whole of their output in this country. In this connection the export figures relating to British South Africa are of interest, the value of the machines exported to the Union for the months of November in the years 1913, 1914, and 1915 being £19,884, £6,117, and £7,295 respectively.

Imports, too, show an increase, but do not in any way compare with the volume of British exports. The November returns for 1913, 1914, and 1915 show that 61, 12, and 105 motor cycles respectively were imported. With tyres and parts (the value of which exceeds the value of complete machines), the import figures for November were £27,916 in 1913, £2,103 in 1914, and £17,754 in 1915.



A HOME-MADE BOAT-SHAPED SIDECAR.
The body illustrated was built by a Mr. Hiskins, of Saltley, Birmingham, in his spare time.

Safeguarding Tank Stoppers.

There is nothing new under the sun. In our issue of December 2nd, Lieut. Rowlandson described how despatch riders at the Front avoid the loss of their tank stoppers by soldering to them a short piece of Bowden wire. Five years ago I lost three or four tank stoppers in a month from a machine afflicted with a very rigid frame and an ill-balanced engine. I purchased a spare stopper at a small agency in Yorkshire, and the agent showed me his own machine. He had employed the method which Lieut. Rowlandson suggests, but used a leather shoelace instead of Bowden wire. I tried the dodge for the rest of that season and found it also cured petrol spraying from the tank vent.

"Snatching."

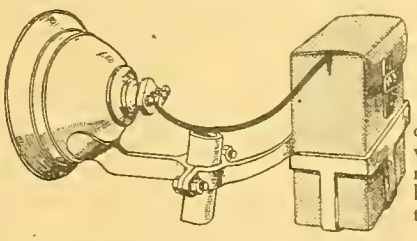
As I have been riding twins and two-strokes almost without intermission since the outbreak of war, I found myself in an unusually impartial frame of mind for testing a big single-cylinder with two-step drive when one came into my hands last week. It is no exaggeration to say I was appalled by the snatchiness of the drive when the engine was running slowly on any gear. Of course, I was well aware that we had sacrificed the delicious elasticity—or, as one would term it in wet weather, accursed slipperiness—of the belt when we began to coquet with chain-cum-belt and all-chain drives; but a prolonged period on twins and two-strokes had allowed me to forget how rough and harsh the average two-step drive really is with a big single-cylinder engine in front of it. I soon accommodated myself to the conditions, and formed the habit of keeping the engine "revving," *i.e.*, I was in much less of a hurry than usual to change up after starting, and in a much greater hurry to change down when a hill hove in sight. These strictures do not apply to all machines. For example, one famous chain-driver has such efficient cushioners included in its transmission that it pulls very smoothly when it is throttled down, though it certainly does not approach the silkiness of a first-grade horizontal twin. In fact, this particular machine (and possibly others of which I have no personal experience) is really less snatchy than the average chain-cum-belt single, because it has cushioning devices, and the belt is falsely regarded as a sufficient cushion in the alternative design. The limit in snatching is experienced when a two-stroke with two-step drive is four-stroking at low speeds, or when a four-stroke twin engine is firing on one cylinder only.

Two Alternatives?

I wonder which way the pendulum will swing on this point. Will this tendency to snatch ultimately kill the big single-cylinder now that two-step drives are practically universal? Or will the single-cylinder survive, being toned down by the inclusion of cushioned hubs or spring pulleys? The superiority of the twin, and especially of the horizontal twin, is so marked that one is tempted at first sight to prophesy the early disappearance of the single. On the other hand, the job of re-tuning the 500 c.c. single is infinitely simpler than that of re-tuning a 500 c.c. twin, be it a V or a horizontal; and it is not easy to see how the horizontal twin can ever be so mounted that its accessibility can compare with that of a first-class single. I fancy our stanch single-cylinders will play their part in future developments; but the rougher makes stand in crying need of a smoother transmission, and run heavy risks of losing their customers when the war is over and the public discovers how harsh some modern drives can be. If the 250-350 c.c. horizontal twins go on improving their efficiency at the present rate, they may ultimately rank as the most popular all-purpose mount of the future.

The Life of Dry Batteries.

I commented recently on the respective merits of various lighting systems, and a member of the trade considers that I over-emphasised the maintenance costs of a dry battery set. His remarks are naturally partisan, but I quote them on the chance that some more experienced user may be able to confirm them. He asserts that a first-class dry battery, costing about 8s. 6d. under the present war conditions, should light satisfactory head and tail lamps for from 80 to 100 hours in intermittent use. It would not, of course, last so long on a straightaway consumption, for it is a charcteristic of dry batteries that they recover during brief periods of disuse. If the lamps are used, say,



DRY BATTERY ELECTRIC LIGHTING.

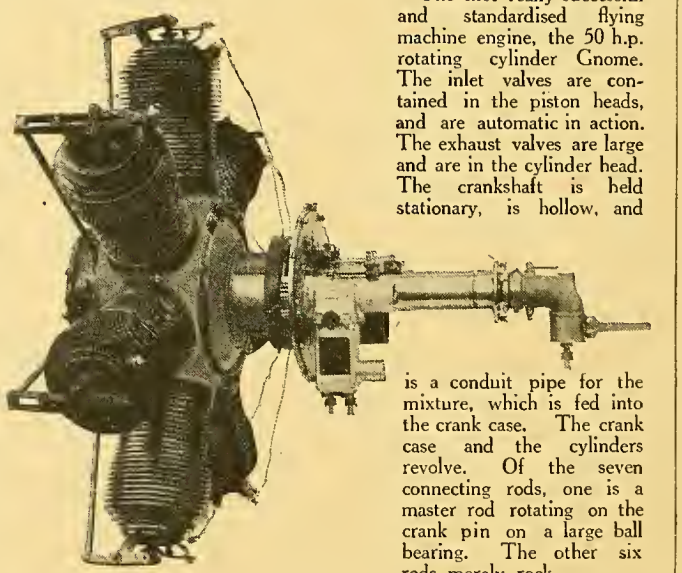
A neat method of carrying a dry battery which should recommend itself to riders having many short trips to make.

for four hours per week, and the four hours are distributed over two or three evenings, the single 8s. 6d. battery should last from four to six months, *i.e.*, through the best part of the winter; and the running cost will be about 1d. or 1¼d. per hour for the pair of lamps. In peace time, when the batteries cost but 6s., the maintenance was plainly cheaper. The usual mistake consists in using the wrong kind of bulb; a bulb which takes from a half to one ampère is obviously wasteful, when the battery dealers can supply special high efficiency, low consumption bulbs, taking no more than .3 ampère. It is, of course, a further extravagance to use current at this rate, and dim the lamp by painting the glass, or slipping a "tulip" dimmer over the bulb.

THE AERO ENGINE:

HOW WAR-TIME DEVELOPMENTS MAY HELP MOTOR CYCLE DESIGN.

STANDARD practice in construction must not be regarded as a fetish, but, on the other hand, to depart from the usual in design just for the sake of being original is equally a mistake, since it must not be forgotten that standard practice generally has been arrived at from bitter experience. In order, therefore, to approach more closely to one's ideals, or rather to a better compromise—since it is of engineering that we write—it is imperative to tap all sources of knowledge that are available. What is common knowledge in one branch of engineering frequently is almost unknown to another closely allied industry, and therefore a close acquaintance with the standard practice of similar branches of engineering, as, for instance, the construction of the automobile, the aeroplane, the motor lorry, the motor boat, and the motor cycle, may lead to the avoidance of mistakes, besides producing in the mind a better balance as regards the true worth of improvement. No other excuse, therefore, is necessary for the devotion of space in *The Motor Cycle* to the subject of the aeroplane engine. It is possible that the motor cyclist may borrow from the aeroplane as the motorist does to-day in discharge of the debt which the areoplane owes to the motor car.



The first really successful and standardised flying machine engine, the 50 h.p. rotating cylinder Gnome. The inlet valves are contained in the piston heads, and are automatic in action. The exhaust valves are large and are in the cylinder head. The crankshaft is held stationary, is hollow, and is a conduit pipe for the mixture, which is fed into the crank case. The crank case and the cylinders revolve. Of the seven connecting rods, one is a master rod rotating on the crank pin on a large ball bearing. The other six rods merely rock.

When the Wright Bros. turned their dream of flight into a reality they were only able to do so because of the existence of the petrol engine, which alone was capable of producing the necessary power under a great limitation of weight. Not that the four-cylinder engine employed by Wright Bros. was light, as petrol engines go, but the evolution of the motor car enabled them to produce something sufficiently light for their purpose. Directly flight became possible owing to the stage of development of the petrol engine a new field for the engine was at once opened up. The cry of the aeroplane designer has been, and continues to this day to be, for greater power and less weight. It is true that red herrings have been drawn across the scent which the aeroplane engine designer followed, but of recent years the fact has become patent to every student of the aeroplane that the power-for-weight problem is as pressing as ever.

The Importance of Speed.

Simply from the point of view of safety, without taking into account any military qualities, it must be obvious that the greater the speed range possessed by an aeroplane the safer it must be. By speed range one means the capacity of the same machine to fly slowly as well as fast. For instance, a good modern machine may be capable of flying in safety at 35 m.p.h., and obtaining a maximum speed of eighty or more miles an hour. The high speed means that the machine is less at the mercy of atmospheric disturbance, and the low speed means that it can be got off the ground or landed with far less danger of breakage and without a long run being necessary. The aeroplane engine must, therefore, be as light as possible in order that the complete aeroplane may not be over heavy per square foot of its supporting surface. It is of very little use, however, to produce a light engine unless it is also an efficient engine, using the term efficiency in its correct sense, that is, unless the engine can produce the maximum power for the minimum fuel consumption. The Gnome engine can be used as an illustration of this fact, and will be referred to later in this connection.

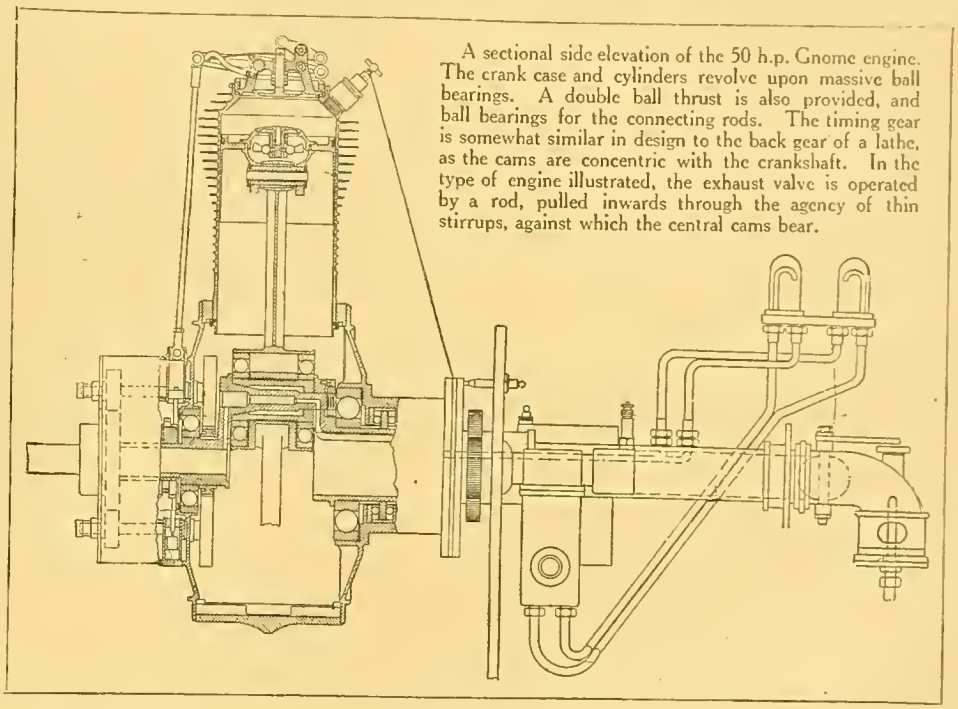
The Advantage of Light Weight.

The aeroplane and the motor cycle have one great feature in common—the lighter they can be made the better they will be. In the case of the aeroplane for the reasons given; and in the case of the motor cycle for the reasons that the heavy machine is more difficult to steer in grease, more tiring to handle, and more expensive to run than a light one. This, by the way, must not be taken to mean that we regard the lightweight motor cycle as being superior to the heavy touring variety. This does not by any means follow. A touring machine is well up to its work, and the lightweight machine is excellent for "to-ing

The Aero Engine.—

and fro-ing," but what one would like to see would be the lightweight machine with the power of the touring variety. There is also in favour of the lightweight machine its economy in fuel. This, it is true, is not a matter of saving any considerable amount of money, but, on the other hand, in these days particularly, the saving, however small, is worth effecting.

We have then arrived at a point that a constructional similarity between the aeroplane and the motor cycle does exist—both needs must be as light as possible. It is true that the parallel cannot be drawn too closely, because the motor cycle has to ride upon the road and is subjected to road vibration applied through two points, *i.e.*, the points of contact of the wheels with the road, whereas the aeroplane rides upon air and is subjected to extreme and violent buffeting rather than to vibration, this buffeting being applied to the machine as a whole rather than to any particular part of it. Again, the motor cycle by itself was originally intended to carry one person, or at the most two, whereas the aeroplane will extend from the single-seater machine up to a limit so far unguessable in the matter of size, since already there are machines capable of carrying ten or twelve passengers.



A sectional side elevation of the 50 h.p. Gnome engine. The crank case and cylinders revolve upon massive ball bearings. A double ball thrust is also provided, and ball bearings for the connecting rods. The timing gear is somewhat similar in design to the back gear of a lathe, as the cams are concentric with the crankshaft. In the type of engine illustrated, the exhaust valve is operated by a rod, pulled inwards through the agency of thin stirrups, against which the central cams bear.

Engine Attachments.

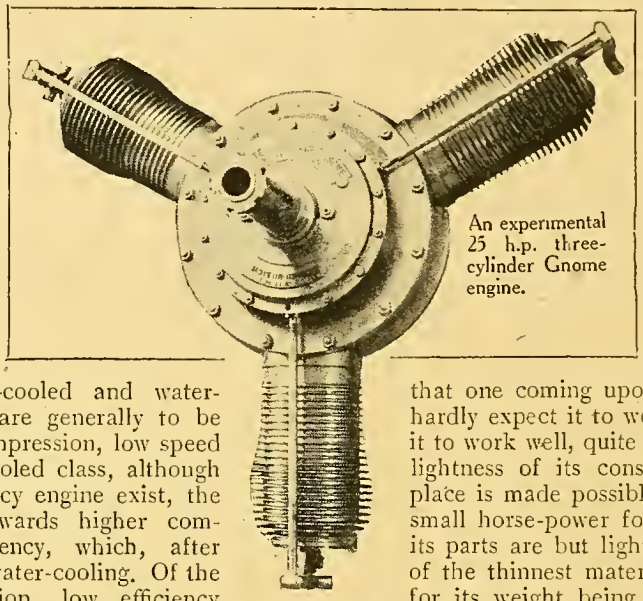
Before coming down to the individual design of aeroplane engine, perhaps a word or two concerning the way it is attached to the machine may be of interest. The lightness of the fastenings never fails to strike one as extraordinary. In the majority of cases the engine carrying arms, pressed steel plates, or wooden bearers, are built into a framework consisting of four ash longitudinals extending from the nose of the machine to the tail and forming the fuselage, these ash members being in the neighbourhood of 1¼in. square section and cross braced with steel wire. Upon this light framework will be found engines capable of developing anything from 100 to 150 h.p., and weighing, perhaps, 400 lb. To stand by one of these big engines going all out on the test bench driving a big propeller which creates a draught that one can lean against, it seems hard to credit that these few small pieces of ash are sufficient, yet in practice they are perfectly satisfactory. The reason, of course, is not far to seek. The work done by the engine is done against a medium of great elasticity, *i.e.*, the air. At least one would imagine it to be elastic when compared with the hard road, although as a matter of fact one would suppose that the tip of a propeller blade 8ft. 6in. in diameter, rotating at 1,200 r.p.m., having actually a speed approaching 350 miles an hour, finds the air anything but elastic. Since the work of the engine is smooth, therefore, one great difficulty in mounting is avoided. The problem is still further eased if the engine itself be designed to give an even torque and if the greatest care is devoted to its balance. That is why the tendency is all the time towards a multiplicity of cylinders, more cylinders being added as greater power is required, the size of the bore remaining much the same. The large number gives the even torque, and the comparatively small size means that the individual reaction of each cylinder is not heavy, and therefore a massive mounting is not necessary. The limit of size of the aeroplane engine cylinder seems at the present time to lie somewhere between 130 mm. to 150 mm. bore, more power being obtained by using more cylinders.

The Limitations of Price.

It may be advanced that it is all very well to bring up arguments in favour of the multi-cylinder engine for motor cycle work when the motor cycle lies under a commercial restriction from which the aeroplane does not suffer, that is, the restriction of price. So far as the aeroplane is concerned it is, of course, true that, within certain limits, price is of no consideration whatever at the present time. One must have the best material disposed in the best possible way irrespective of the cost. This fact may not hold good when the aeroplane becomes a commercial proposition, but at the present time it can hardly be said to be a commercial proposition. The public do not buy it, and it is sold only to Governments who buy it for war work, and for war work in these days price cannot be considered. However, it seems reasonable to suppose that if com-

The Aero Engine.—

mercial difficulties of manufacture could be overcome, the employment of the multi-cylinder engine for the motor cycle might assist in a general decrease of weight. How far this may be true is a matter for argument. It is hard to say at what point the small cylinder becomes too small to be practical, and also how light the framework of the machine may be made, seeing that the road shocks are probably more serious to the engine mounting than any vibration or torque of the engine is likely to be.



An experimental 25 h.p. three-cylinder Gnome engine.

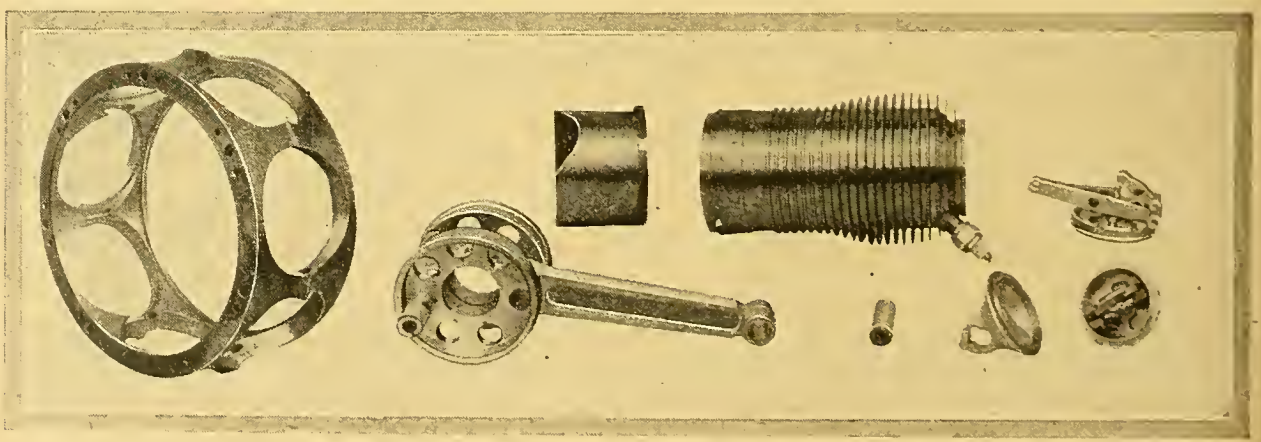
Air v. Water-cooling.

Aeroplane engines generally can be split up into two classes, *i.e.*, air-cooled and water-cooled. In the first class are generally to be found low efficiency, low compression, low speed designs, and in the water-cooled class, although examples of the low efficiency engine exist, the greater proportion tend towards higher compression and higher efficiency, which, after all, is made possible by the water-cooling. Of the slow speed, low compression, low efficiency engine, the Gnome is an excellent illustration. There is no doubt that the Gnome engine in the past has done more to make flying an accomplished everyday matter than any other individual engine. There are many reasons for this, the outstanding one being that the Gnome engine was, and still remains, the lightest design per brake horse-power ever produced. It should be noted that the words "per brake horse-power" are used, and not "per brake horse-power *per hour*," which implies a very different thing, and which is the real criterion of excellence.

It is well-known that the petrol consumption and castor oil consumption of the Gnome are very high, so that if the Gnome engine is required to fly a machine for more than three to four hours the total weight of the power plant becomes greater out of all proportion, so that it exceeds that of an initially heavier engine which has a higher efficiency and a better consumption.

From time to time one hears people say that the Gnome engine is dead as a modern aeroplane power plant, but the fact remains that until somebody can produce an engine of less initial weight, and having a better consumption, the Gnome will always be assured of a place as the engine for "stunt" flying purposes. Practically all the world's flying records have been won with Gnome engines initially. As a triumph of engineering skill it is hard to beat. The design of it is such that one coming upon it for the first time would hardly expect it to work, and certainly not expect it to work well, quite apart from the extraordinary lightness of its construction, which in the first place is made possible because it develops a very small horse-power for its capacity, and therefore its parts are but lightly stressed and can be built of the thinnest material. The strongest material for its weight being steel, the Gnome engine is built almost entirely of steel, parts being machined all over and very highly finished.

There is another reason besides that of its weight which has caused the Gnome engine to be regarded with great favour by designers of flying machines, and in explaining this reason it is possible also to explain how it is that the four-cylinder engine for flying machine work is extinct. The Gnome engine, by virtue of its excellent balance and extremely even torque, forms an excellent motor for turning round an air propeller. In the earlier days it was found that if the 50 h.p. Gnome engine was taken out of a standard type of machine, such as the original box kite Henry Farman, and a four-cylinder engine of actually greater brake horse-power put in, that the new engine did not possess the same power to fly the machine as



Some of the parts of the 50 h.p. Gnome engine. On the left is the crank case shell, next the master connecting rod with one of the subsidiary big end pins in place, next a gudgeon pin, and then the bracket in which the ends of the gudgeon pin are carried and which is screwed into the piston head. On the extreme right is an inlet valve which screws into the piston head from the top, whilst above can be seen one of the pistons with its single ring, next to it one of the thin steel cylinders and an exhaust valve.

The Aero Engine.—

did the Gnome (of which the effective horse-power is generally supposed to be about 38). The reason was that the more sharply defined impulses of the bigger four-cylinder engine caused vibration in the blades of the propeller to be set up, and this vibration seriously interfered with the efficiency of the latter. This phenomenon was generally referred to as propeller flutter, and even if the four-cylinder engine drove the propeller through the agency of a 2 to 1 reduction gear the results were still unfavourable to it, partly owing, perhaps, to the additional weight of the gearing. It is true that the four-cylinder engines used in the Wright machines, which drove twin propellers at comparatively slow speeds through the agency of chains, were fairly efficient, but, on the other hand, those same machines if equipped instead with a Gnome engine at once became very much better performers, leaving on one side, of course, all question of long distance flying. As almost everybody knows in these days, in the Gnome engine the cylinders and crank case revolve whilst the crankshaft is held stationary, a reversal of the usual procedure, which has the effect of giving an excellent balance whilst at the same time dispensing with the weight of the flywheel. This is of interest to the motor cycle designer, inasmuch as the flywheels on motor cycle engines represent a very large proportion of the total weight of the engine; also the machine on which the flywheel weight is cut down is by no means so comfortable to ride. However, it would hardly be possible to make a single cylinder rotating engine; conceivably the very minimum number of cylinders for a rotating engine is three, whilst, on the other hand, it is questionable whether the extra complication of three cylinders is worth while for a motor cycle, even supposing that the difficulties of silencing a rotating engine were overcome in a satisfactory manner. The Gnome Co. did, however, at one time build an experimental three-cylinder engine, of which we reproduce an illustration, but exactly what happened to it the company alone know. The fact that it never became well known may have been due merely to the fact that it was of too small a power to be sought after for aeroplane work, and of too high a price to be needed for any other purpose.

(To be continued.)

Varying the Power of Electric Light.

RIDING IN FOGGY WEATHER.

TWO letters have recently appeared in the correspondence columns which should be of considerable interest to those motor cyclists who have to ride at night. Both letters refer to lighting regulations at present in vogue. The first, from Mr. M. W. Goldstone, suggests the use of a 7½ volt bulb with a 4 volt accumulator or dry battery giving 4½ volts. This has a two-fold advantage: it reduces the light where necessary and economises current to a very considerable extent; but it has the disadvantage that the light cannot be varied from the saddle when one leaves the town where the lighting restrictions are in force, and finds oneself in the open country where a brighter light is necessary. The second letter, from Mr. H. E. H. Palairet, suggests a valuable bulb of ingenious construction, excellent in itself, but requiring structural alterations in the lamp, or bulb holder, even if such a bulb were on the market.

A Practical Suggestion.

Personally, I should advise any motor cyclist who is thinking of installing a cheap electric lighting outfit to purchase a 6 volt accumulator of fairly large size and good quality and wire it up to a two-way switch placed on the top tube in such a way that all three cells, or two only, could be made to supply current to the 6 volt bulb in the lamp. The wiring could be changed occasionally, so that the same cell would not always be cut out, and the "idle" cell could be made to light the rear lamp. In this manner 4 volts could be used in town and 6 volts in the country, the change could be made in a moment without dismounting, no apparatus is required which is not already on the market, there would be a saving in electricity, and no harm could be done to the bulb in switching on and off, as might be the case when switching on a fresh bulb—a bulb is said to be rather brittle at the moment of heating up—while in motion. A 6 volt lamp supplied with electricity by a 4 volt current will give but a moderate light, and the full voltage will be instantly available when wanted.

Winter Fog.

All electric lamps should be made capable of being focussed, partly because this enables the rider to obtain the kind of beam best suited to his purpose, partly because it gives him another method of complying with the aforesaid regulations, for a beam which illuminates objects at a distance of more than thirty yards (the limit in some districts) can be cut down and diffused, and partly because of its great convenience when riding in a fog. All riders know that a powerful and concentrated beam has the effect of so illuminating a thick fog that it looks like a white blanket, and nothing can be seen but the fog itself. It is often the case that the fog is lying very thickly upon the surface of the ground but has no great depth, and it is quite likely that the moon and stars may be visible. In such cases if the light be turned off it is at once apparent that the road can be seen, though indistinctly, for a moderate distance, but if the light be turned on again it at once vanishes in the lighted fog. When such conditions obtain it is advisable to throw the lamp out of focus by bringing the bulb nearer to the parabolic reflector. This has a double effect: it reduces the light upon the fog in front and enables something of the road to be seen—though perhaps not much—and it lights up the sides of the road to some extent, thus enabling a rider to locate his position with more ease and confidence. It is, I suppose, hardly necessary to point out that, under such conditions, it is as well to proceed with the utmost caution and at a slow speed.

It may interest readers to know that I have just had a Fuller Block accumulator purchased in September, 1914, charged for the *second* time.—AURIGA.

A Week in the West Country

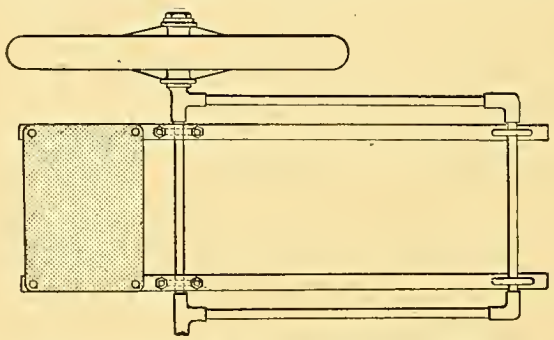
An Enjoyable & Economical Holiday on a 3½ h.p. Sidecar.

A FRIEND and myself in the late summer enjoyed a very pleasant and interesting trip in the West Country and on the South Coast. During the trip we carried our own food, only paying for suppers, beds, and breakfasts in hotels; this we found a considerable saving of time and expense.

We commenced our first day's run from the North of London and made our way through the lanes to Cranford Bridge, where we experienced our only trouble; this was caused by a 3in. nail penetrating the outer cover and punching several holes in the tube. To prevent delay we fitted a spare tube. From Cranford we made for Newbury and thence to Bath (109 miles), where we stopped for lunch. After leaving Bath we headed for Wells, Glastonbury, and Bridgwater, which ended our first day's run, a distance of about 150 miles. From London to Bridgwater we only had to use middle gear on two occasions, and only used the lower gear for starting purposes. Monday morning broke with it raining in torrents, which continued until after mid-day, so as this was a pleasure tour we postponed our start until afternoon, when it abated somewhat. We then made for the North Devon Coast and spent Monday evening at Minehead. We were now considerably behind our programme, our original intention being to reach Ilfracombe, but owing to the heavy rain and the Porlock-Lynton section being within a few miles we decided to go no further that night. The weather was again dull and threatening as we left Minehead for the 1912 Six Days terror, viz., Porlock. Just before entering Porlock there is a very bad left-hand hairpin bend downhill, with the road sloping away to the outside, which, when wet, is a positive death trap. We were told that two cars and a sidecar combination had been smashed here just before we arrived. This bend is the making of a lot of repair work for the motor repairer in Porlock village.

Now began the long climb up Porlock; to the first bend we used middle gear, changing down to low at the bend itself, and so continuing for the rest of the climb; the second bend is the worst part of the hill, but we suffered very little wheel slip, keeping up an even speed of about 8 to 10 m.p.h. It is wonderful how a 3½ h.p. engine pulling a heavy sidecar and passenger will run uphill for mile after mile on the lower gears without overheating! We continued over the top of Porlock to Countisbury without stopping, dropping down into Lynmouth very carefully, as Countisbury Hill was in a very wet and slippery condition.

The writer, F. J. Watson, and his companion, with the 3½ h.p. three-speed Ariel sidecar used on the trip.



How the author of the touring article reproduced on this page increased the luggage-carrying capacity of his sidecar. The small board platform was fixed to battens by four nuts and bolts. The battens were fitted over and under the chassis, so making the platform a tight fit, and only requiring four clips to keep it from moving.

Up Lynton Hill.

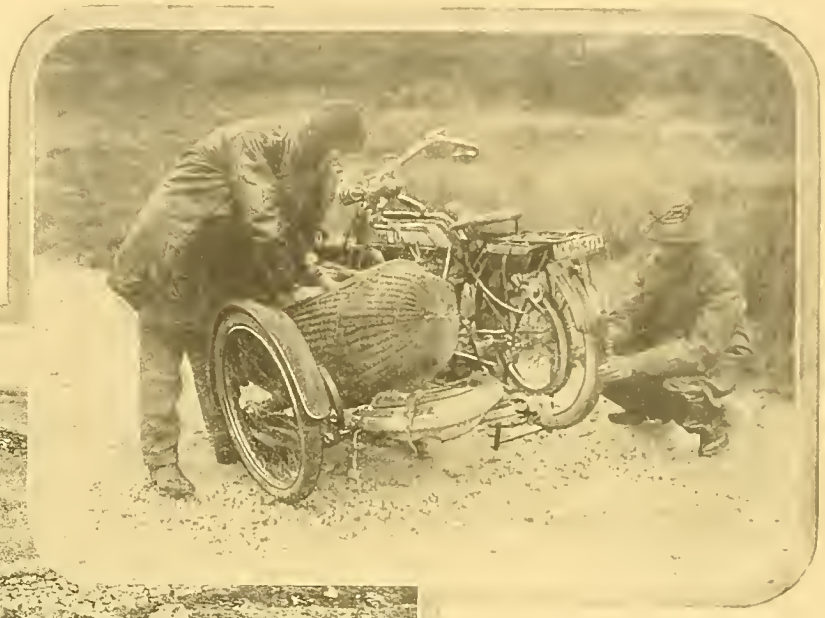
We stopped in Lynmouth whilst the passenger bought postcards, and while I was waiting for him at the foot of Lynton Hill an 8 h.p. twin and sidecar of late design fitted with a countershaft gear started up the hill with a roar, taking a flying start from the bridge. However, the driver did not succeed in his attempt; his speed seemed to be the cause of his failure, for his wheels refused to grip, and he came to a standstill about half-way up with the rear wheel tearing a hole in the road.

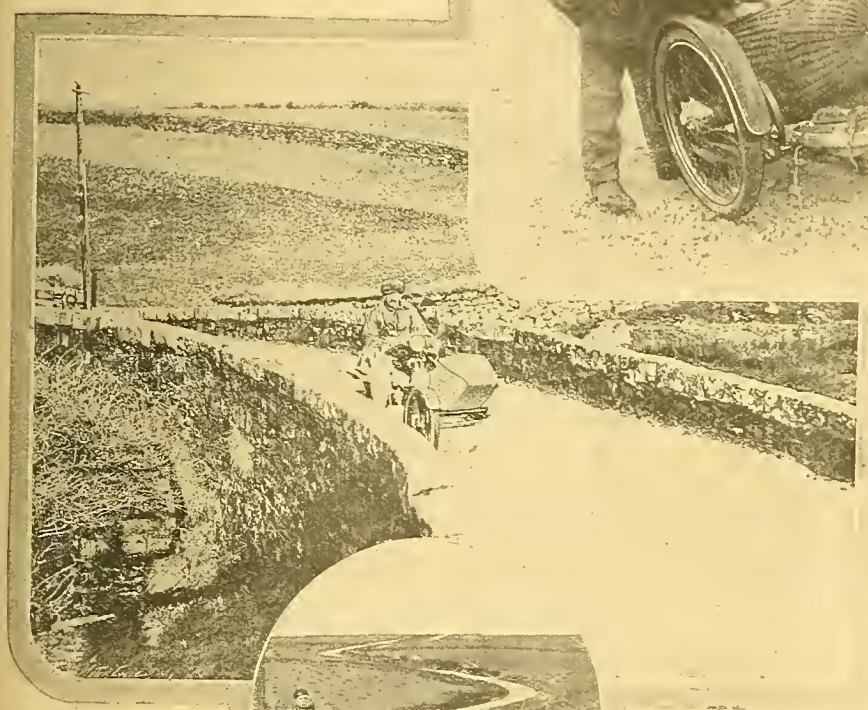
After this I was greatly pleased at being able to make a clean climb on the low gear with hardly a sign of wheel slip, although the engine had literally to lift the sidecar wheel through the ploughed up stones of which the hill is composed: a narrow strip on the off side is the only place where grip for the motor cycle wheels can be found. The drag of the sidecar was so great up this hill that the front wheel had to be held pointing over to the right to keep the machine straight, and more was taken off the front tyre than the rear; this is remarkable, but was easily noticeable at our next stop at Parracombe. I am sure the success of my 3½ h.p. passenger outfit was a great surprise to those on the hill, who ran up after us evidently expecting that we should want a push, but they were disappointed, as we went right up at an

A Week in the West Country.—

even speed; the hill was wet and in as bad a condition as I have ever seen it.

We then pursued our way *via* Parracombe, Ilfracombe, Barnstaple, Bideford, Holsworthy, Launceston, to Bodmin, where we stayed the night. On Wednesday morning we went through Probus and Truro, staying an hour to visit relatives, and then to Penzance, where we had lunch, and in the afternoon spent a very enjoyable time at the Land's End. Thursday was wet, so we amused ourselves as best we could in the town, and started the return journey on Friday morning, taking the M.C.C. course through Tavistock, over Dartmoor, *via* Two Bridges, Dartmeet Bridge, Holne Chase, Ashburton, and Exeter, then to Lyme Regis, which was our halt for the night. On Saturday our way lay through Bridport, Dorchester, Bere Regis, Bournemouth, Lyndhurst, and Southhampton; then *via* Botley to Poole, Havant, Chichester, and Arundel, where we stayed the night.





(Top) A roadside stop to mend a puncture.

(Left) Crossing over a bridge between Tavistock and Two Bridges.

(Below) A fine open road in Devonshire.

On Sunday, the last day of our trip, we rode into Brighton, and, after spending a few hours on the front, made for London *via* Cuckfield, Handcross, Reigate, and Wimbledon, which finished the run.

The distance covered during the eight days was, roughly, 730 miles, our average for a full day's run being 140 miles—as on the Monday, Wednesday, and Thursday, owing to the rain, we only did a small mileage. We had not the slightest trouble, with the exception of the cut tyre mentioned, and we had the satisfaction of covering a course which would cause the throttle of a big twin to be well opened. Single figure gradients abound on the stretch from Porlock to Ilfracombe, the most notable being Porlock and Lynton hills; there are also two steep hills at Parracombe. Countisbury was descended on this trip. The second trying piece of road is that between Tavistock and Ashburton with its long single figure climbs at Moorshop and from Merrivale Bridge. There is a sharp descent to Dartmeet Bridge, followed by an equally sharp and longer rise; beyond this place the worst hills were taken in the downward direction. We did not ride at any time after six o'clock in the evening, and our summary of daily runs is as follows:

	Miles.
Sunday (fine).—London to Bridgwater ...	150
Monday (wet).—Bridgwater to Minehead ...	30
Tuesday (dull).—Minehead to Bodmin	140
Wednesday.—Bodmin to Land's End and back to Penzance	60
Thursday (very wet).—No riding	0
Friday.—Penzance to Lyme Regis	150
Saturday.—Lyme Regis to Arundel	120
Sunday.—Arundel *via* Brighton to London ...	80
Total	730

I must say a good word for the 1915 Ariel 3½ h.p. combination, which never gave a moment's trouble during the entire run. F.J.W.

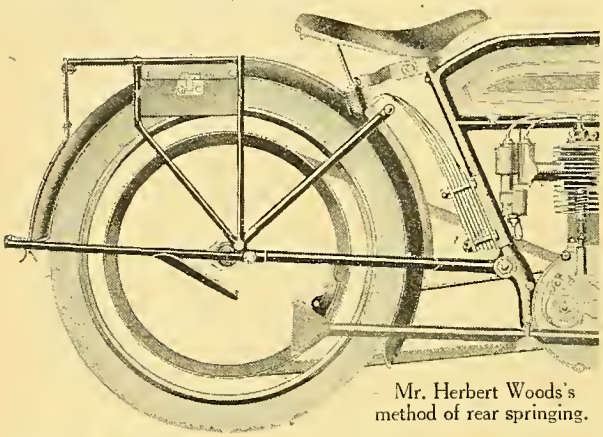
THE SPRING FRAME PROBLEM.

SOME FURTHER PROMISING ATTEMPTS AT ITS SOLUTION.

Designers, both amateur and professional, are still busily occupied with the spring frame campaign of "The Motor Cycle," and new ideas reach us almost daily. On this page we illustrate four of the more recent arrivals.

Simple and Sound Design.

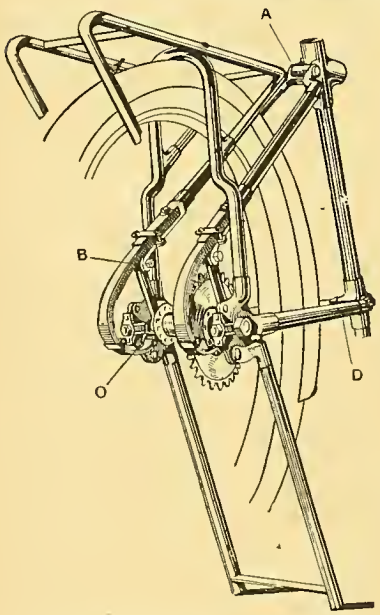
MR. HERBERT WOODS employs one leaf spring attached more or less vertically to the bottom of the saddle-pillar; the rear wheel is carried in a rigid rear frame composed of the usual two pairs of stays having a fixed connection at the axle end, while immediately outside the mudguard is placed a



Mr. Herbert Woods's method of rear springing.

curved down tube brazed to the bridge pieces, thereby ensuring absolute rigidity. This construction does not interfere with the removal of the rear wheel, and is excellent in the matter of lateral play or roll, while moving joints are reduced to a minimum.

A Flexible Rear Frame.

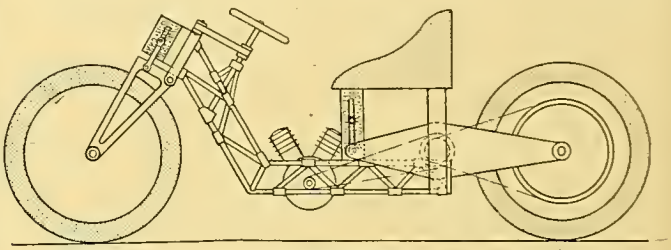


The Arlett spring frame. The lettering is referred to in the text.

IN the design sent by Mr. J. S. Arlett, the seat-pillar, chain stays, rear fork stays, and connecting link form a quadrilateral pivoted at all its four corners A B C D. Now if the back wheel meet an obstruction it will rise in relation to the saddle, and the angle A B C will be reduced. Springs are so placed that they tend to open the angle A B C. This system is novel, but contains rather a large number of joints, which should be avoided if possible. On the other hand, the lateral rigidity should be good.

An Original Design.

A VERY original design is that of Mr. W. R. Mackay. The rear wheel is carried in a separate frame which takes the form of a lever of the first order pivoted in the centre of the main frame. The front end of the lever is attached by links to a cross head controlled by spiral springs held in a casing under the seat. The springs are adjustable to any tension by screws which are not

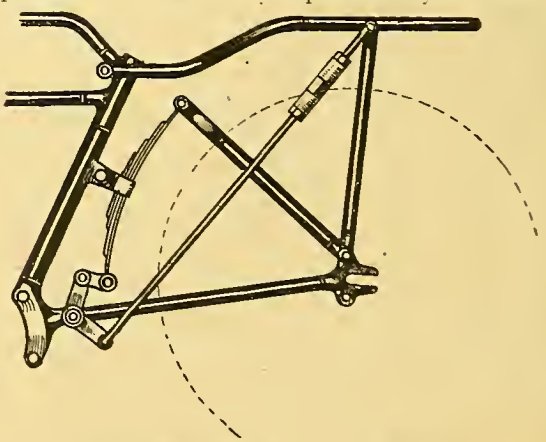


Novel design of motor cycle embodying a spring frame. The originator is Mr. W. R. Mackay.

shown in the sketch. Leaf springs can be employed, but adjustment is not so easy. The lever frame is made of sufficient width to clear a gear box, and the driving shaft is concentric with the pivots on which the frame swings. An inspection of the sketch will show that the whole machine possesses many novel features.

A Grasshopper Spring.

THE patent of Mr. G. F. Shimmin outlines quite a new and original method of rear springing. The leaf spring is mounted on a pivot midway between the saddle and the bottom bracket; the upper end is connected by a pair of stays to the rear



Spring frame patented by Mr. G. F. Shimmin.

wheel, while the lower end is similarly stressed by the weight of the machine and by obstacles met with on the road by means of diagonal stays and bell-crank levers. This system should give easy springing, but, as in many other designs, the carrier is unsprung and the pivots are somewhat numerous.

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£75 7 H.P. 3-Speed Chain Drive.

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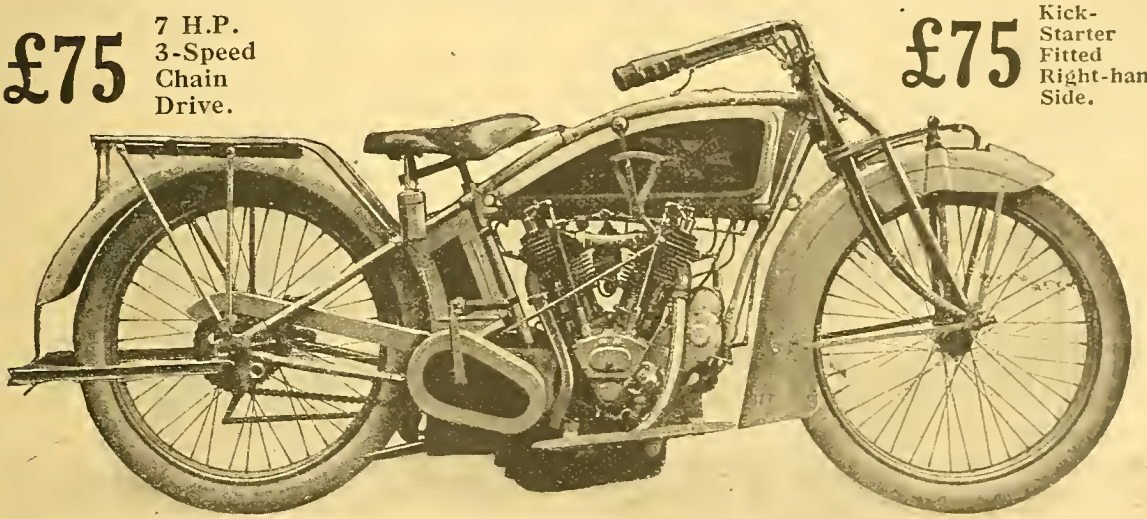

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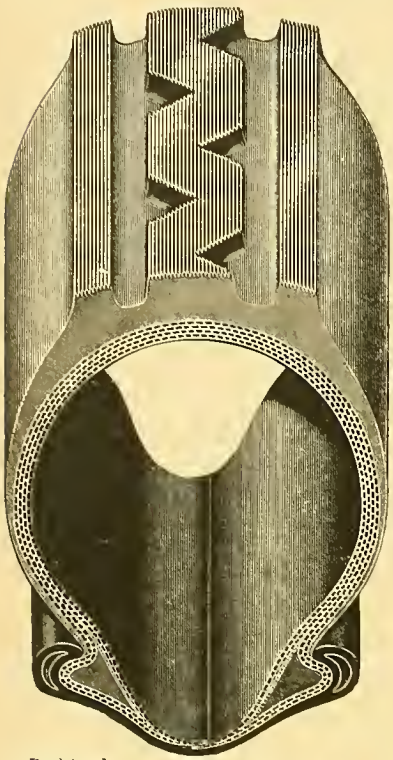

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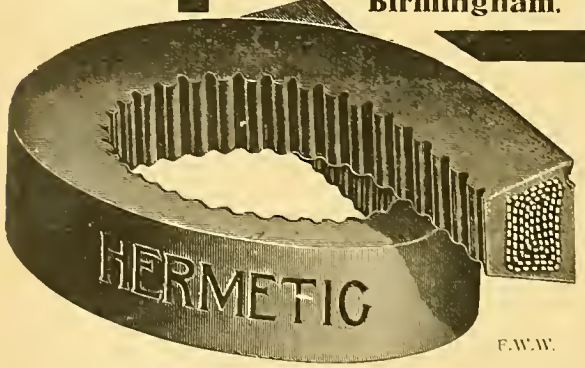

F.W.W.

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The coat is double-breasted and cut on smart lines. The Trouser Overalls are also lined camel fleece, and have a strap at the ankle.

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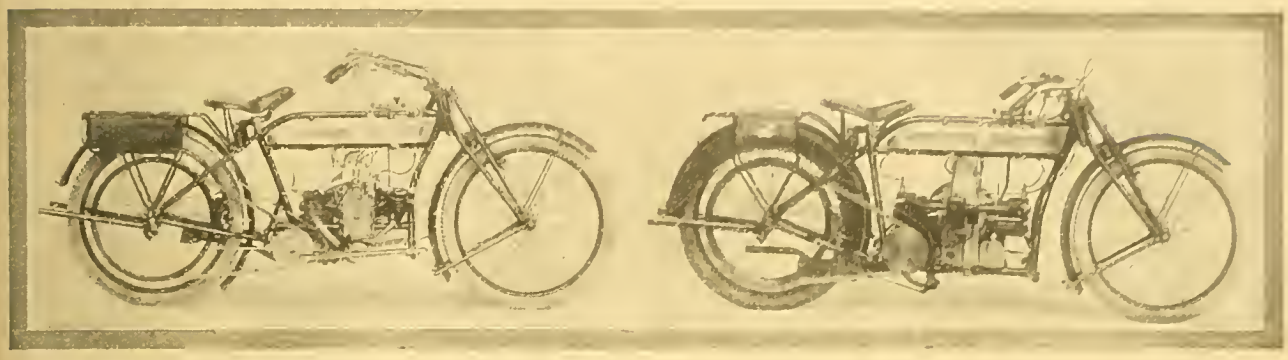
DOUGLASES FOR 1916.

Many Detail Improvements learnt from War Service Experiences.



(Left) The model W 2¾ h.p. Douglas, which is a full touring model, but without clutch or kick starter. (Right) The 4 h.p. Douglas, a machine intended for solo or passenger work.

THAT the war has resulted in the running of the finest and most valuable reliability trial in the world is amply proved by a careful study of the latest W.D. Douglas. Writing to us from the Front, an officer holding an important post at G.H.Q. is loud in his praises of this popular machine, though he does not hesitate to criticise when criticism is necessary. His remarks, with others, have been taken to heart by Messrs. Douglas Bros., with the result that the War Office model is as nearly as possible perfect for despatch riding.

Before dealing with the improvements *seriatim*, we will enumerate the models which will be on the market for the ensuing season. These, as usual, are designated by letters, the meaning of which is here explained. These are: The Model U, which is of the semi-T.T. pattern; this model has a two or three-speed gear, but footboards instead of footrests, and upturned touring handlebars. Thus it is an ideal touring machine, but without the extra weight and complication of a kick-starter and a clutch, which are hardly necessary. The Model V, the genuine T.T. pattern—a fast light model, but with T.T. handle-bars, footrests instead of footboards, and a two or three-speed gear. This type is a universal favourite. The W, or touring model, fitted with kick-starter, clutch, touring handle-bars, footboards, and wider mudguards. The spring frame model, which is identical with the above, but with the addition of the newly adopted spring frame, which was described in our issue of November 25th, and the Model X, which is the much appreciated lady's Douglas. We now come to the 4 h.p. machines, of which there are two models—A, which is the touring pattern; and B, the sidecar combination.

Now the particular and favourite product of the Douglas firm is the 2¾ h.p. medium weight machine, the success of which has made the name of Douglas a household word, and it is therefore not surprising to hear that the lessons learned on the 2¾ h.p. in "The Great Reliability Trial" over the water have resulted in improvements which will be embodied, where possible, in all the models. We will take for our standard the perfected W.D., which, in its turn, is a perfected Colonial model. The most important lessons of all have been taught by two things—mud and *pavé*. To save wear, mud, which means grit, had to be excluded, and parts had to be strengthened enormously to withstand the shocks and bumps of the *pavé*.

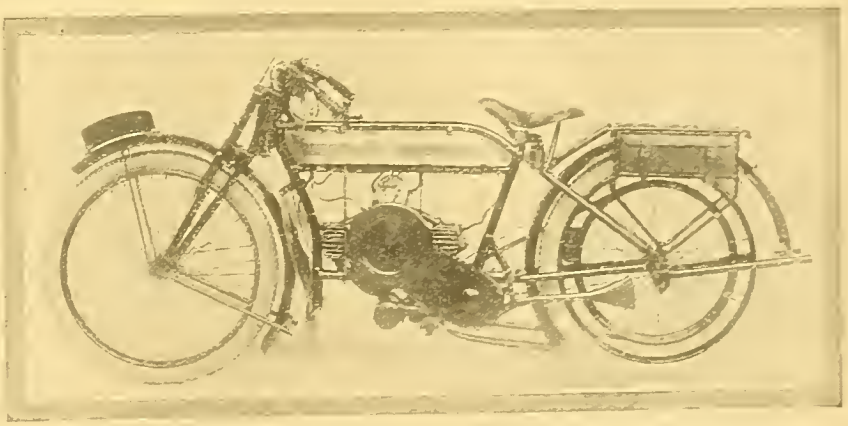
Strengthened and Improved Front Forks.

We noted, with great interest, the very wide hubs, which are behaving in a most exemplary manner "over there," and the immensely improved front forks, which have been greatly strengthened, and, so far, made more efficient, that they not only add to the rider's comfort, but save the frame from shocks which might ultimately result in breakage. The side links and the tube which forms a bearing for the spindle are now integral. This gives much greater strength, and ensures a much larger bearing surface, while large grease cups are provided, which serve to lubricate the moving parts and thus prolong their life. These grease cups are hexagonal in shape, so that when stiff, as may well happen when using a thick grease in cold weather, they may be turned by means of a spanner. Each side of the fork is a complete unit, and if one is damaged its replacement is a simple matter. Much larger springs, which in the Douglas forks are in tension, are now fitted, and the eyelet at each end is screwed into the spring. To absorb the heavier shocks a special device is fitted to the top links. A casting is situated behind the head, and in this there are two sets of springs, between each pair of which are blocks which carry the pins at the end of the links. This is a most excellent device, which may be fitted to existing machines of this year's date.

This design of fork is quite devoid of sideplay, has a special light cross member in front, which acts as a bracket for the front brake adjuster, and special holes in which the new forked lamp bracket is carried.

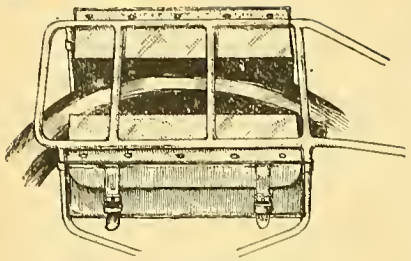
Extra Mudguard Clearance.

The mudguards are very wide, and, as can be seen from the illustration, the clearance between guard and tyre is exceptional, this being due to the fact that the Flanders mud often clogged the mudguards to such an extent that the wheels refused to revolve. The mud-



War Office model 2¾ h.p. Douglas, the result of actual experience with hundreds of machines on active service. Note large pannier bags, mudguard clearance, and supplementary front guard attached to down tube.

Douglases for 1916.—



Douglas carrier, showing extra long metal-covered tool bags.

guards are bolted direct to lugs brazed on to the frame. A most efficient front stand is fitted, which pivots on the ends of the front wheel spindle. The unusual width of the back forks is very noticeable.

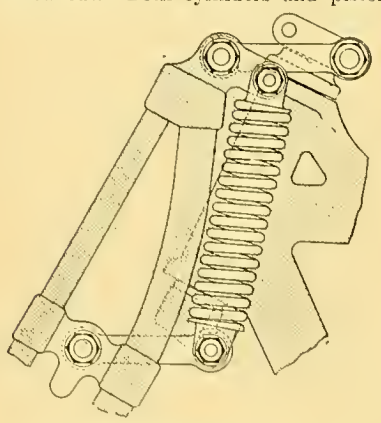
The rear brake is a great improvement over existing patterns. Its pedal is carried on a bracket separate from the footrest, and it is actuated by one rod running direct from pedal to brake shoe. This latter acts in the groove of the belt rim, and is compensating, so that on full pressure being applied the shoe is directly square and true with the belt rim. The front brake shoes are now far more accessible than in previous models.

The tank has been slightly altered in shape, and its appearance has been improved by rounding the edges, while both filler caps have been placed right forward, thus leaving room for a bag or parcel to be fastened to the top tube. Very large metal-cased tool bags extending the full length of the carrier are now fitted.

As regards the lubrication, the oil pipe from the drip feed to the engine now passes neatly through the tank.

Many Detail Engine Improvements.

It might not be thought possible that the Douglas engine was capable of much improvement, but really quite important alterations for the better have been carried out. Both cylinders and pistons



New design spring fork on the 1916 Douglas, showing strengthened links.

are entirely new. The former have greater radiating surface, the shape of the ports has greatly facilitated the admission of the mixture and the passage of the exhaust, and much unnecessary metal has been removed, thus making the engine lighter and yet considerably increasing its efficiency. The evils caused by the arch-enemy mud and grit have been combated by making the valve guides detachable. They are simply a driving fit in the cylinder, and in the event of an inlet guide being so badly worn as to prevent even running at slow speeds a replacement may be quickly and easily effected. Again, grit causes severe wear in the tappets, and this has now been prevented by fitting metal shields over these, which completely cover that part of the tappet which is continually moving in and out of the tappet guide.

A Lighter Piston.

The new piston is much lighter, but its strength is increased by the provision of four webs. An improved Amac carburetter is now fitted, in which the vaporising chamber is very adequately warmed by a tube leading from the front cylinder exhaust pipe to the large hot air jacket, whence the gases, having done their work, pass out through another tube to the silencer.

The silencer has been altered for the better, and the exit pipe, which now carries the gases from the top of the expansion chamber, is of large dimensions and has a fish tail end. Other improvements are a detachable back to the frame, so that in case of damage this portion may be easily replaced, while the spring frame may be substituted at any time should the owner desire it; also a new and most efficient belt guard and detachable footrests. Altogether, the latest W.D. Douglas is a delightful machine, and calculated to stand the hardest work in its country's service.

For 1916 all $2\frac{3}{4}$ h.p. Douglases may be had with either two or three-speed gears. The principal improvements in the 4 h.p. model were dealt with in the issue of October 7th.

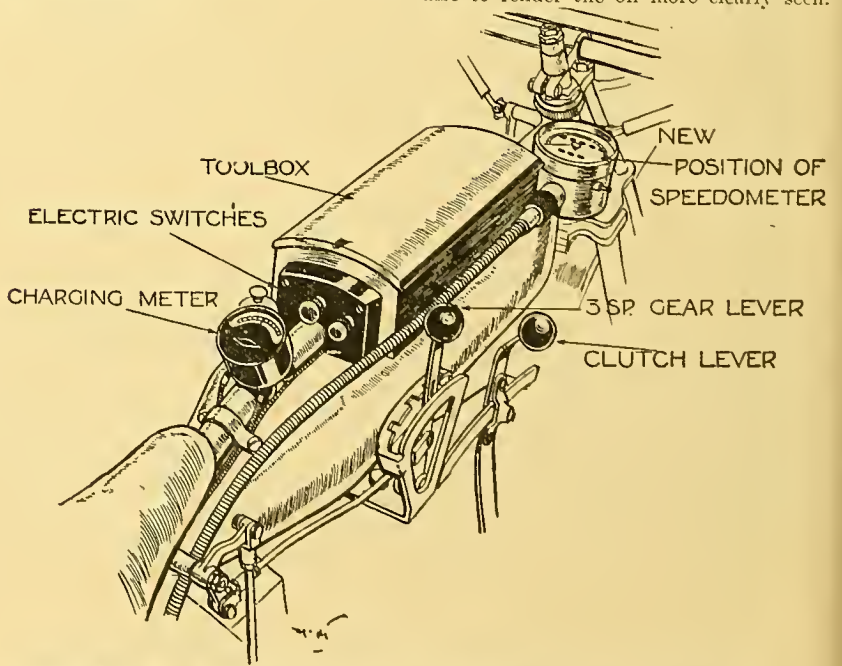
SOME FEATURES OF THE NEW 7 h.p. INDIAN.

WE have already dealt with the new 7 h.p. side-by-side valve long stroke Indian for 1916 (see issue October 21st), and the two accompanying sketches show the latest innovations on this model. The view of the top tube gives a very clear idea of the general arrangement of the

New position of mechanically operated pump in base of timing gearcase on the 1916 Indian engine.

electrical fittings and the new position of the speedometer, which can be now far more easily read than before.

The second illustration shows the arrangement of the oil pump. Note the screw at the back of the pump, which can be opened when it is desired to see if the oil is flowing freely, and that there is a total absence of air locks, which would otherwise interfere with its satisfactory working. There is a glass gauge (seen at the bottom) behind which is a tin disc to render the oil more clearly seen.



1916 Indian tank, showing location of tool box, speedometer, electrical controls, etc.

MILITARY NOTES.

A Couple of War Veteran Motor Cycles. News of Well-known Riders.

"FIVE BIG ONES."

THE following is an extract from the diary of Captain A. H. Loughborough, R.G.A., who is the brother of the secretary of the A.C.U.: "November 18th. At the park met Colonel Lindsay-Lloyd of Brooklands fame. . . . Lloyd and Loder turned up and stayed to tea, during which five big ones came over, apparently going in the direction of rest billets—no damage done."

PULLING HIS LEG.

A DESPATCH rider who recently enlisted was told by an officer and some men that the casualties among the D.R.'s were between 85 and 90%. In military parlance he got the wind up so badly that he wrote and asked us if it were true. We were able to comfort him by telling him that the casualties by shot and shell were comparatively small, but those due to tumbles and collisions, owing to carelessness and reckless driving, were considerably greater.

FOURTEEN MONTHS' DESPATCH RIDING ON THE SAME MACHINES.

WE hear a great deal of the short lives led by some motor cycles at the Front, and it is a decided relief to hear of machines still running that have been over in France since practically the beginning of hostilities. An instance of the latter is brought to light in one of the welcome letters we often receive from readers on active service. In the letter referred to, Despatch Riders D. Maple and F. N. Foster tell us that they are still riding 3½ h.p. Triumphs that have been in constant use under most trying circumstances for some fourteen months. Both mounts are running splendidly, and the engine of each has only been taken down once; the only trouble experienced has been the occasional snapping of the front springs due to frequent night riding over shell-holed roads.

THE RAW RECRUIT.

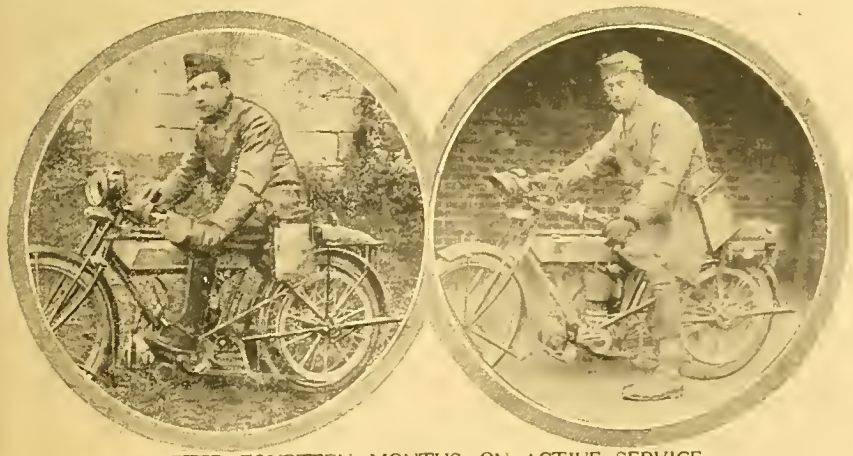
A group of R.E. despatch rider recruits photographed when joining a training centre. Shortly after the photograph was taken the men were put into khaki. Observe the "blue cover" in the foreground.

HOME AGAIN.

SERGT. HAROLD KARSLAKE, of the R.F.C., who has had nine months in the most advanced aerodrome in Northern France, has returned home and been appointed instructor at Reading University for the R.F.C.'s Officers' School of Instruction. Karslake is glad of the change, as conditions where he was located were never particularly pleasant.

A COMPARISON.

IT is interesting to compare the two pictures on this page, and in doing so it is difficult to realise that the war-stained veterans in the lower one were, only fifteen months ago, in the similar garb to those above. The seasoned riders look none the worse for their long service, and they are undoubtedly pleased with the splendid running of their mounts.



AFTER FOURTEEN MONTHS ON ACTIVE SERVICE.

A couple of 3½ h.p. Triumphs ridden by Corporals F. N. Foster and D. Maple.

WATER IN THE TRENCHES.

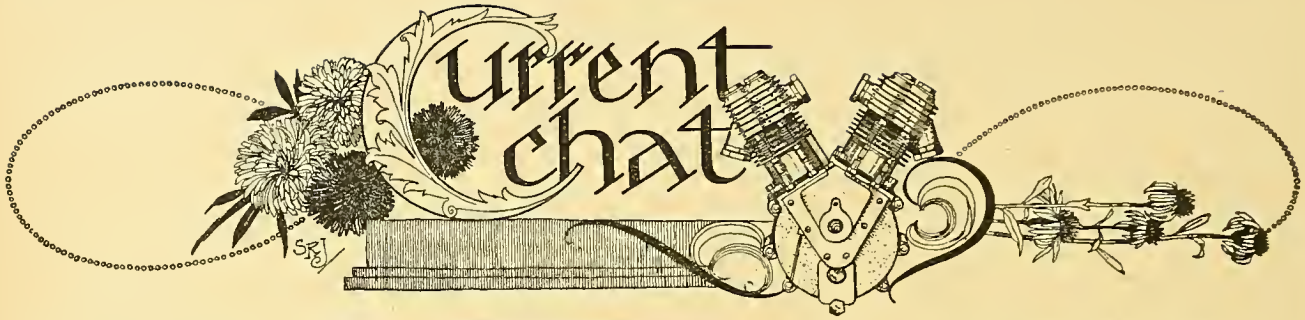
WE have received a letter from M. C. Breese, who was formerly a competition rider of B.S.A. machines. He writes: "I recently received my commission in the 8th North Staffs. Regiment. I have been out here despatch riding since January last, and have had my share of experiences in that line. I am now, however, having my turn in the trenches, and with water up to the top of my Hutchinsons the whole time it is not very pleasant. How I am looking forward to a bit of peace time riding! This is among the many things I am arranging for that happy time *après la guerre*."

COMMISSIONS FOR WELL-KNOWN RIDERS.

WE notice from *The London Gazette* that the following members of the Motor Cyclist Section of the Royal Engineers have been appointed Second-Lieutenants:

J. Erskine. G. T. Gray.
H. H. Dommett. H. R. Davies.

G. T. Gray is the well-known Rudge rider; he served with the 7th Middlesex in Gibraltar and later as a despatch rider in France. H. R. Davies has figured with great success on Diamond and Sunbeam machines, his most notable achievement being in the Tourist Trophy Race of 1914 on a Sunbeam, when he tied for second place, averaging 48.39 miles an hour over the course of 225 miles.



TIMES TO LIGHT LAMPS

GREENWICH TIME.

Dec	16th	.. ...	4.49 p.m.
,,	18th	... ...	4.49 ,,
,,	20th	... ...	4.50 ,,
,,	22nd	... ...	4.51 ,,

In London half an hour earlier.

Which is the Worst Road?

A significant message from a well-known motor cyclist, writing from Crewkerne, is as follows: "Worst road in England is Salisbury-Shaftesbury. Just been over it!"

High Hedges on Corners.

A few months ago two motor cyclists were involved in an accident on the road between Barton and Broughton station (near Broughton village and Garstang), where a high hedge at a dangerous corner had already been the cause of danger to many road users. The A.A. patrol on duty on that road reported the full circumstances to his headquarters, and the owner of the land was subsequently approached. The need of improvement was urgently put forward, and the owner has now had the hedge cut down to a safe height.

Maker sees his Machines on War Work.

Mr. W. W. Douglas has just returned from an interesting trip in the war zone. The visit was connected primarily with the Douglas motor cycle, and after visiting the various bases and personally examining the actual conditions under which despatch riders and other users of motor cycles have to work, he is more than surprised at the present results the authorities are receiving. Mr. Douglas speaks in glowing terms of the capabilities of the D.R. as a motor cyclist, and he assures us that the past deeds of civilian experts are every day occurrences in the firing line. "Why," he says, "those fellows who went on strike in the last Six Days' Trial, when, you will remember, our machines were so successful, had an armchair ride to the trial of this great war! To see the riders dodging in and out long lines of transport trains for mile after mile, on shell plastered roads, furrowed twelve and eighteen inches deep by the overloaded lorries; to watch them sliding on the slimy mud, first here, then there, mastering just by an hairsbreadth an otherwise fatal skid that would leave them a crushed muddle of man and machine, not once, but time after time, until it almost becomes a monotonous series of thrills, makes one wonder how on earth any of the older hands exist to-day."

Lamps on Policemen.

The policemen at Eastbourne on point duty at night now wear red lamps on their belts back and front. Those who smiled at our hint that policemen would soon be provided with tail lights should note that the practice is growing.

Age Limit of Drivers.

The R.A.C. in conjunction with the Commercial Motor Users' Association propose to approach the President of the Local Government Board on the question of a reduction of the minimum age of holders of driving licences. The object is to meet the difficulty of the present shortage of drivers. It is suggested that the age limit for car drivers be reduced from 17 to 16 or 15.

Motor Cycle Mudguards.

After the unusually dry weather of November, a member of our staff was caught on a recent wet morning with his splashguards at one end of his daily journey and himself and his machine at the other. The roads were awash with rain which had fallen during the night, and consequently his feet were deluged with cold water which dropped from the front mudguard. The splashguards were refitted that day, and will remain in position until the spring brings dry roads again, for equally wet journeys have since been undertaken without any discomfort from road splashings. These splashguards extend from the top of the tank to the front of the footboards.

One of the uses of *The Motor Cycle* Buyers' Guide. The photograph was taken at the North Wales Motor Exchange, Wrexham.

SPECIAL FEATURES.

HOW WARTIME DEVELOPMENTS OF AEROPLANE ENGINES MAY AFFECT MOTOR CYCLE DESIGN.

A TOUR IN THE WEST COUNTRY.

Still Plenty of Petrol.

10,254,496 gallons of petrol were imported into this country last month. The figures for the same month of 1913 and 1914 are 8,629,174 and 10,614,143 respectively. Figures such as these are almost staggering, and convey better than anything else an idea of the gigantic proportions that motoring has reached.

Average Prices.

We give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model the average for the past week is quoted. If there were not at least two advertisements, then the last occasion on which they were quoted is given.

Make.	Year.	H.P.	Average for last week.	Latest weekly average obtainable
A.J.S.	1915	6 3-sp. sidecar ..	—	£90
,, ...	1914	6 3-sp. sidecar ..	£70	—
,, ...	1913	6 3-sp. sidecar ..	—	£55
,, ...	1915	2¾ 3-speed	—	£48
Allon	1915	2¾ 2-speed	—	£36
Ariel	1914	3½ 3-sp. sidecar ..	—	£53
Bradbury ..	1914	4 3-sp. sidecar ..	—	£47
B.S.A.	1915	4½ 3-sp. sidecar ..	—	£70
,, ...	1914	4½ 3-sp. sidecar ..	£52	—
,, ...	1913	3½ 2-sp. sidecar ..	£43	—
,, ...	1913	3½ 2-speed	£33	—
Calthorpe ..	1914	2 2-speed	£18	—
Clyno	1914	6 3-sp. sidecar ..	—	£63
,, ...	1913	6 3-sp. sidecar ..	—	£50
Douglas ...	1914	2¾ 2-sp. kick start	£40	—
,, ...	1914	2¾ 2-sp. T.T.	£38	—
Enfield	1915	6 2-sp. sidecar ..	£75	—
,, ...	1914	6 2-sp. sidecar ..	£63	—
,, ...	1913	6 2-sp. sidecar ..	£49	—
,, ...	1915	3 2-speed	—	£45
,, ...	1914	3 2-speed	£37	—
H.-Davidson	1915	7 3-sp. sidecar ..	£75	—
Indian	1915	7 3-sp. sidecar ..	£78	—
,, ...	1914	7 2-sp. sidecar ..	£62	—
,, ...	1914	7 T.T. free eng.	—	£44
James	1915	4½ 3-sp. sidecar ..	£63	—
New Imperial	1915	2½ 2-speed	—	£30
,,	1914	2½ 2-speed	—	£26
O.K.	1915	2 2-speed	£25	—
P. & M. ...	1913	3½ 2-sp. sidecar ..	—	£43
Premier ...	1914	3½ 3-sp. sidecar ..	—	£49
,, ...	1913	3½ 3-sp. sidecar ..	—	£44
Rex	1914	6 2-sp. sidecar ..	£48	—
Rover	1915	3½ 3-sp. sidecar ..	—	£56
,, ...	1914	3½ 3-sp. sidecar ..	—	£45
,, ...	1913	3½ 3-sp. sidecar ..	£40	—
Rudge	1913	3½ Multi	£29	—
Scott	1913	3¾ 2-sp. sidecar ..	—	£44
Sunbeam ..	1914	6 3-sp. sidecar ..	—	£80
,, ..	1915	3½ 3-speed	£63	—
,, ..	1914	3½ 3-speed	—	£52
Triumph ...	1914	4 3-sp. sidecar ..	£56	—
,, ...	1914	4 3-speed	£45	—
,, ...	1913	3½ 3-sp. sidecar ..	£45	—
,, ...	1913	3½ 3-speed	—	£38
Williamson	1914	8 2-sp. sidecar ..	—	£65
,,	1913	8 2-sp. sidecar ..	£55	—
Zenith	1914	8 Gradua sidecar	—	£67
,, ...	1914	6 Gradua sidecar	—	£54

Next Week's Issue.

In accordance with our usual practice, the next issue of *The Motor Cycle*, which will be published two days before Christmas, will contain articles of a seasonable nature.

The Benefit of Special Experience.

The new Douglas machines are illustrated and described in this issue. They are notable for the many improvements which have been effected solely as a result of experience in the war zone.

Motor Cyclists and Army Commissions.

We hear that commissions will not be granted to men who have not enlisted under the Group scheme, and, moreover, men who have served six months in the ranks and are under thirty years of age will receive preference. The new War Office scheme puts an end to the work of Officers Training Corps.

An Appeal to Motor Cyclists.

Many appeals have been made to motor cyclists, and the latest is one for a few men for evening work in the neighbourhoods of Westminster, Charing Cross, Piccadilly Circus, Middlesex Hospital, Covent Garden, Paddington, King's Cross, Whitechapel, Dalston, Poplar, and Southwark.

Unusual Cause of Accident.

It is seldom one hears of the breaking of a belt causing an accident, but a case of this kind occurred a few days ago, the victim being Lieut. Rex Brass, a member of the Durham M.C.C. Lieut. Brass was returning to duty by road, when the belt broke and became entangled in the back wheel. He sustained severe injuries to his right arm and shoulder, but is now progressing in a favourable manner.

The National War Funds.

At the week-end the principal relief funds stood as follow :

The Prince of Wales's National Relief Fund (£2,793,000 distributed)	£5,650,852	0	0
The *Weekly Dispatch* Tobacco Fund	92,000	0	0
The Times Fund for the Sick and Wounded	2,599,411	0	0
The Queen's Work for Women Fund	167,340	11	6
Daily News Xmas Pudding Fund	25,361	0	0
Daily Chronicle Xmas Gift Fund	20,485	0	4

Motor Cyclist Recruits.

During the past week many enquiries have reached the Editor from readers desirous of enlisting as motor cyclists in the Army, and enquirers have been recommended to enlist under Lord Derby's Group Scheme, notifying the recruiting officers that they are desirous of enlisting in a motor cyclist section when one is open. There is no guarantee that a man in the Group System can be accepted for a motor cyclist section, as there may be no positions open at the time the group is called up; but it is unlikely that the authorities will overlook the claims of experienced motor cyclists, at any rate, seeing that motor cycles form a standard part of the equipment of every division, and the more men there are enrolled the more motor cyclists will be required. As soon as motor cyclist sections are opened again for recruits announcements to that effect will appear in these columns as heretofore.

Well-known Motor Cyclist Killed.

While chatting with Mr. W. W. Douglas who has recently returned from a visit to the British Headquarters in France, we were informed of the sad news that Victor Wilberforce, a well-known Douglas rider who had joined the R.N.A.S.,

The late Victor Wilberforce, yet another well-known motor cyclist who has given his life for his country.

had been killed. Those who knew him as a good rider, an excellent sportsman, and a motor cyclist of the best type, will greatly regret his loss. Unfortunately, we have received no information as to how he met his end.

Rapid Promotion for Well-known Motor Cyclist.

As an example of rapid promotion, Staff-Captain W. B. Little is remarkable. He joined the Army just over a year ago, and he is now appointed on the staff of the 151st Brigade in the 2nd Army in France. He was one of the few survivors of the Durhams, who were so badly cut up in April last at Ypres. Except for being gassed in this engagement, he has come through scatheless thus far.

Staff-Captain Little, who will always be remembered for his motor cycle hill-climbing record in Lakeland and for his first ascents of Skiddaw, Helvellyn, and Sty Head Pass, has just finished a week's

Staff Captain W. B. Little.

holiday in his native county of Cumberland. Military duties have taken him from the motor cycle to the horse and the motor car.

In these days, when pessimism is apt to be much in evidence, it is encouraging to meet one with staff authority who is entirely optimistic. Staff Captain Little holds strong opinions that affairs in the Balkans are merely a "side show," and that the war will be settled in France. He has not the slightest doubt that we shall be able to break through when the time comes. That should be in the early summer, when, with full equipment of men and material, the banks of the Rhine will, at least, be reached. At present the weather bars everything. The same energy, indomitable pluck, and determination which carried the famous motor cyclist over Sty Head, Helvellyn, and Skiddaw will doubtless serve him and his country well in the onerous future which lies ahead.

A Manchester Police Decision.

On account of the danger to the public, the Manchester Watch Committee has framed a new regulation prohibiting motor and other vehicles overtaking tramcars on the near side when the latter are discharging or picking up passengers.

An Important Decision.

We learn that a certain popular section of the Army will obtain any further recruits it requires from time to time direct from existing sections. In other words, there will be no further civilian recruiting for this branch.

Subscriptions to the A.C.U.

Subscriptions to the A.C.U. will be shortly due, and it is to be hoped that all members will renew for 1916. The only body devoting its attention solely to motor cyclists is worthy of support from all those using motor cycles, and the withholding of a subscription to the Union is *not* an economy which we advise motor cyclists to exercise.

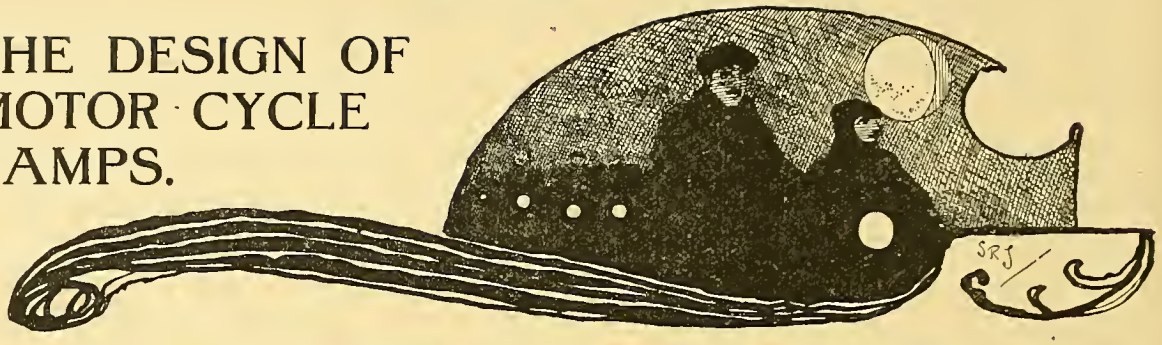
The A.C.U. and the War.

Since the outbreak of war the Auto Cycle Union has dealt with over 4,000 applications for motor cyclists desirous of enlisting as despatch riders, and of these 489 were passed as being suitable for this class of work, thus showing that considerable discretion was exercised in selecting the men. The secretary of the A.C.U., Mr. T. W. Loughborough, is also secretary of the London Motor Cyclists' Reserve Committee, and in one capacity and another is doing a great amount of useful work on behalf of his country.

The Value of Direct Observation.

Months ago motor lorry manufacturers were permitted to send representatives to the Front to observe the conditions under which their products were used in the hope of valuable lessons being gained. We commented favourably upon this commonsense decision at the time, but it is only during the last fortnight that motor cycle manufacturers have obtained permission to visit the different bases in France in order to observe their machines in active service. Mr. W. W. Douglas's impressions after a visit to the Front are given in this issue.

THE DESIGN OF MOTOR CYCLE LAMPS.



THE efficiency of a motor cycle acetylene lamp depends primarily on its optical construction, and secondarily on the candle-power of its light. The chief faults of a badly constructed lamp are undoubtedly due to loss of light, either by diffusion or absorption. Perhaps loss by diffusion is rather a general term, and waste of light by allowing it to fall or pass where it is not useful should be substituted.

There is very little absorption of light in the lamp, for all the interior parts are well polished, and light, like heat, is reflected by shiny surfaces, whilst it is absorbed by dull or black surfaces. It is a well-known fact that if the polished parts of a lamp are allowed to become dull its efficiency is thereby reduced. It would, perhaps, be advisable to explain here that the efficiency of a motor lamp means the ratio of the light emitted through the transmitter to the total light emitted by the source of light. (The front glass through which the light is transmitted is called the transmitter for convenience.) In well designed lamps most reflected light, including that which is lost in badly designed lamps, is collected and thrown out in a straight, well-defined beam of light. This kind of light is most essential for country roads, but it is unsuited for town work, being too "harsh" and blinding. The kind of light most suited for town use is a soft light with no particular penetrating powers. This, no doubt, will suggest some mechanical device by which the light emitted from the lamp may be adjusted to give this soft diffused light or the "harsh" penetrating beam at will, and it is actually effected on some of the later type of lamps by a small adjusting screw at the back of the mirror to move it nearer to or further away from the source of light.

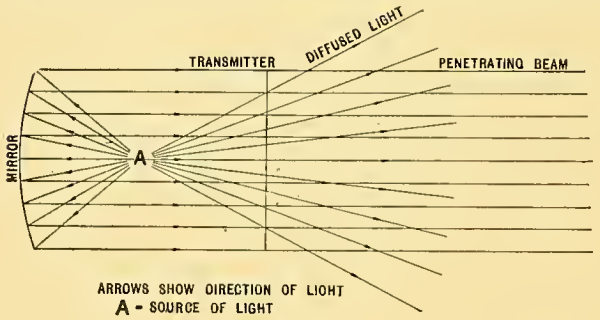


Fig. 1.

A Comparison of Metal and Glass Mirrors.

The most important points in the optical construction of a lamp are the mirrors, lenses, and their arrangement. These vary in quality proportionately to the price paid, from those ground optically correct to metal mirrors. Those which are ground optically correct are usually silvered glass, and are the most expensive. They are ground so that each is part of a true parabola, and the nearer they are to being parts of true parabolas the better are the results obtained from their use, consequently the more efficient are the lamps to which they are fitted.

Metal mirrors do not possess such good reflecting powers, neither can they be made so near to being optically correct as the silvered glass. Thus, with a metal reflector more light is absorbed, more light is diffused, and therefore more light lost.

Standard Constructions.

There are several standard optical constructions in lamps familiar to the motor cyclist, some simple and some complex. The simple type usually consists of a concave mirror for a reflector and a plain glass transmitter. The complex type usually consists of a concave mirror reflector and a transmitter composed of a convex lens set in the centre of a circular piece of plain glass.

Let us consider the light from a source of light emitted in the form of rays, and the rays represented by lines. Then the light emitted from a lamp with a simple optical construction is shown in fig. 1.

It will be noticed in this figure that all direct rays diverge from the light, diffuse over a large area, and are very soon lost, whilst the reflected rays are parallel and are thus collected together in one straight beam of light.

How to Find the Focus.

There is only one position of the light, with regard to the concave mirror, when all reflected rays are parallel, and that is at what is termed the Principal Focus of the concave mirror. This point may be obtained for any concave mirror by taking a source of light which will give practically parallel rays such as the sun, and fixing a paper screen in front of the mirror so that an image of the sun is focussed clearly upon it. Measure the distance between the screen and the centre of the mirror, and this distance, known as the focal length, will be the correct distance of the acetylene light from the mirror in the lamp, for if all rays of light from the sun incident on the mirror are reflected to this point, then all rays of light from this point incident on the mirror will be reflected back to the sun. Therefore, following this line of reasoning, the distance that a beam of light so reflected will travel is proportional to the candle-power of the light.

The Design of Motor Cycle Lamps.—

The complex type of acetylene lamp is rarely used by motor cyclists, and even on cars it is not so much in evidence as the simple type. The light emitted from a lamp of the complex type is represented in fig. 2. The source of light is so placed

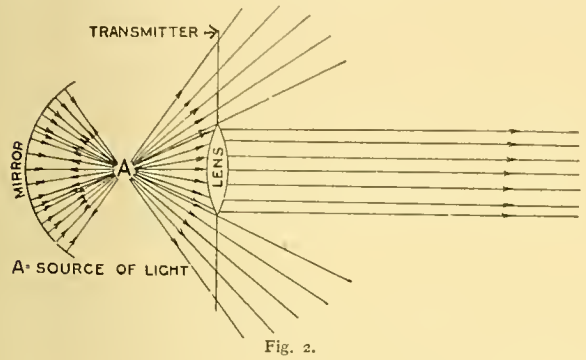


Fig. 2.

that all direct rays of light which fall on the small convex lens will be transmitted in parallel rays, and all reflected rays will be reflected along their own paths, consequently those reflected rays which finally fall on the lens will be transmitted in parallel rays, whilst all direct and reflected rays which fall on the glass will diverge and diffuse. This gives a smaller but more penetrating beam of light, and a stronger diffused light on the surroundings. It is apparent that the size of penetrating beam depends upon the size of convex lens used in the transmitter; in fact, it is possible to convert all the rays of light emitted from the lamp into parallel rays by having a convex lens for the complete transmitter. An experiment was once conducted on these lines by the author, and a tremendously powerful penetrating beam of light was obtained, but there was practically no light on the immediate surroundings, and it would have been dangerous to have ridden at night with the lamp as a sole means of light. The point at which the light is placed in a complex type of lamp is the principal focus of the convex lens.

Why Mirrors should be Truly Ground.

It is now fairly obvious why mirrors and lenses should be ground accurately, *i.e.*, in order that all rays of light shall traverse the path they are intended to traverse. Supposing, for instance, that a given

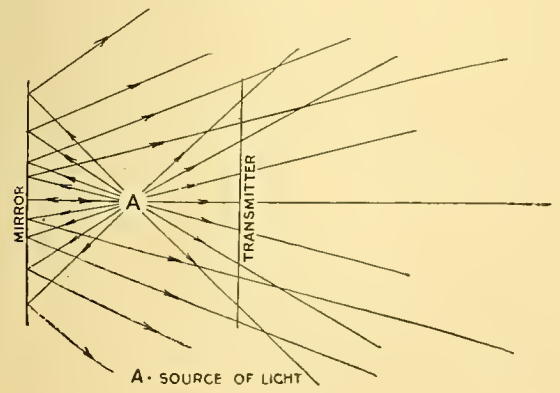


Fig. 3.

concave mirror was not truly ground but had small flats or bumps, each of which constitutes minute portions of different spheres, then the principal focus of each of these minute portions and the main sphere would not be coincident, consequently all rays of light incident on the given mirror would not be reflected in parallel rays—there would be diffusion, and the beam would not be so penetrating.

Some readers will be wondering why a plain glass mirror would not serve equally well. A cursory glance at fig. 3 will suffice.

Approximately 66⅔% of the light incident on the mirror is reflected to the top and bottom of the lamp, whilst there is no penetrating beam which is so essential for country driving. So much for acetylene lamps.

Electric Lamps.

Now let us consider the electric lamp, the lamp which has great possibilities before it. Not only is the electric lamp a reliable, convenient lamp, but as regards efficiency nearly 100% of the total light is

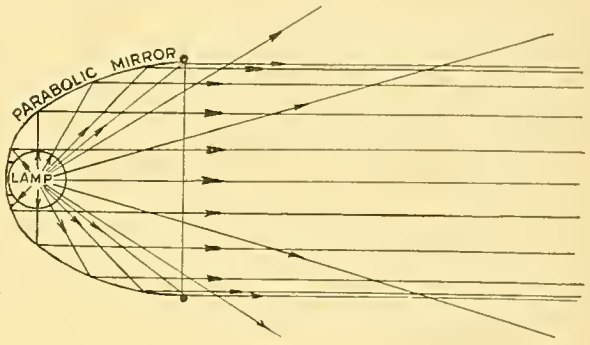


Fig. 4.

emitted from a good electric lamp, whereas, in its rival acetylene, there is loss of light by absorption and contra reflection. The modern electric lamp consists of a parabolic mirror made of metal or optically ground correct silvered glass, with the light set at the focus of the parabola (see fig. 4).

This parabolic mirror is a concave mirror whose surface is generated by revolution of the arc of a parabola about its axis, and so constructed that all rays incident on its surface are reflected in parallel rays giving the necessary penetrating beam, whilst the diffused light to show up the surroundings is given by the direct rays. It is obvious from fig. 4 that all the light is either reflected, or passes direct through the transmitter, and that loss of light can only occur by absorption, which is, as aforementioned, practically negligible. As in the acetylene type, an adjusting screw is fitted to some of the later types of electric lamps, so that the penetrating beam may be diffused at will for town riding. This is usually connected to the electric bulb itself, so that it can be moved, as it were, "out of focus," and if the light be brought nearer to the reflector the rays will be more scattered.

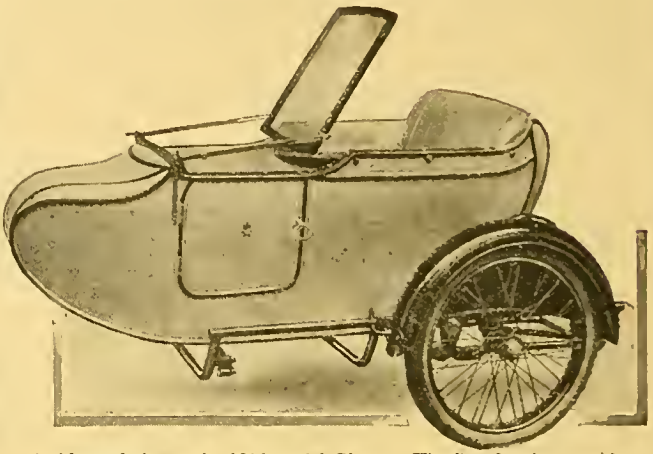
Summarising, one might say that the best light for town driving is a diffused light, whilst for country driving sufficient diffused light to show up the immediate surroundings and a penetrating beam which should show up objects at least 100 yards away is most desirable.

LUX.

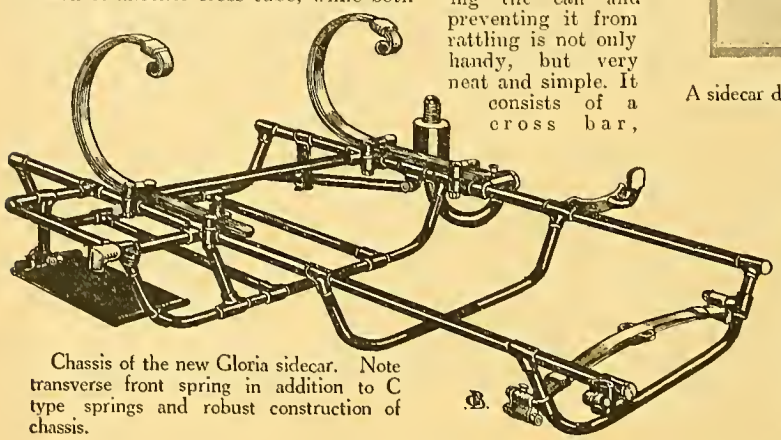
A New Design Gloria Sidecar.

All Fittings Brazed—Luxurious Suspension.

THOUGH the Gloria Cycle Co. are in much the same position as most other large manufacturers—that is, their chief energies are devoted to the manufacture of munitions—yet they are able to devote some little time to their usual work, and the latest pattern Gloria sidecar has many attractive features. The alterations, however, from previous models are in detail only. The chassis has been improved and strengthened in several ways, perhaps the most notable being that all the fittings are brazed to the frame instead of being clipped as previously. Other points also have received attention. The main frame has still further been stiffened by the addition of another cross tube, while both the luggage carrier and spare petrol tin carrier have been strengthened. The luggage grid is formed by an extension of the chassis, and is now constructed of heavier tubing. The petrol tin carrier is situated in the space between the rear cycle connection and the bicycle, and the method of securing the can and preventing it from rattling is not only handy, but very neat and simple. It consists of a cross bar,



A sidecar de luxe—the 1916 model Gloria. The line drawing on this page shows the luxurious springing employed.



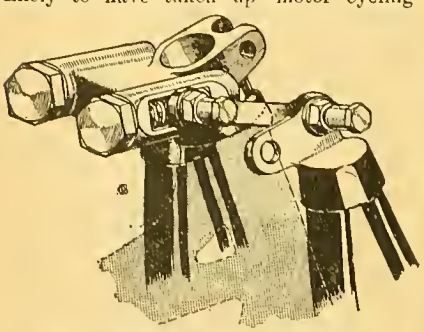
Chassis of the new Gloria sidecar. Note transverse front spring in addition to C type springs and robust construction of chassis.

which is held by a single wing nut. The spring wheel that has proved so satisfactory for the past three years has, of course, been retained, and has not been altered except that the bearing on which the arm supporting the wheel is attached is now of the ball-bearing type. Four-point attachment is used, and all joints are capable of being rapidly detached.

The rear spring axle passes right through the body, and is connected to the springs by shackles. Several novel features are incorporated in the body. Padded arm rests are now provided. There is ample room for storing tools and spares, as lockers are arranged behind the seat and also under the cushion.

Drop in Second-hand Prices.

AS usual, the advent of winter has had the effect of reducing the prices asked for second-hand motor cycles, and there is no doubt that the present uncertain times, with so many of the men who were likely to have taken up motor cycling

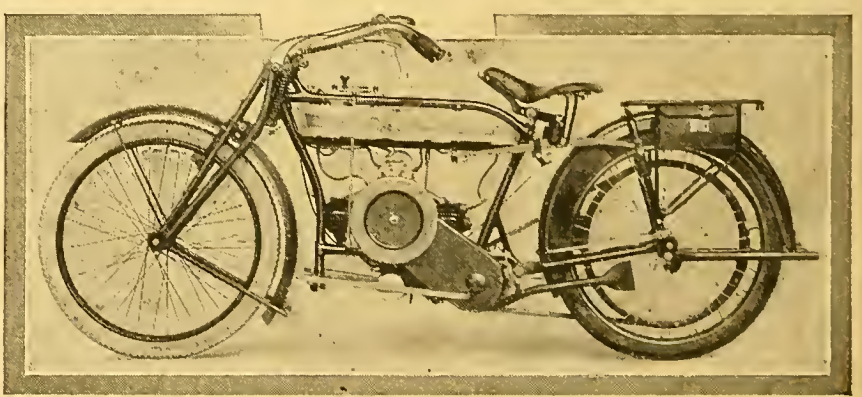


In the new Douglas front fork provision is made for backward and forward movement, as shown in this sketch, in addition to upward and downward movement. (See pages 607 and 608.)

having either already enlisted or been attested under Lord Derby's scheme, have assisted in still further reducing the average prices of 1914 model machines.

In comparing the average second-hand prices quoted for this week with an average taken for August and September it is interesting to find that in sixteen well-known machines selected at random the average drop in prices is £4 per machine. In three cases the drop is to the extent of £7, £10, and £12 respectively. On the other hand, three makes, namely, two models of Triumph, Scott, and Indian, have gone up slightly, the Scott and Indian having gone up to the extent of £2 (the latter no doubt due to the new tariff), while Triumphs have gone up £1—possibly owing to the difficulty in obtaining deliveries due to war requirements.

The advent of spring, with finer weather and, let us hope, more settled conditions, will no doubt again have the effect of sending the prices up. Even in times of peace it is never wise to sell at the end of the year if it is possible to hold over to the following spring.



The 2¾ h.p. spring-frame Douglas, showing entirely enclosed chain and latest design silencer outlet pipe. The Douglas spring frame was described in *The Motor Cycle* of November 25th, and the 1916 models will be found on pages 607 and 608 of this issue.

LETTERS TO THE EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents.
All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Carburetter Adjustment.

Sir,—I notice in the issue of December 9th two letters asking how to get a good m.p.g. from a Scott. I possess a 1912 Scott, to which I have fitted a 1915 Binks three-jet carburetter. Most of my riding is short distances, but in six weeks in August and September last I did 900 miles on eleven gallons of Pratt's No. 1, i.e., 82 m.p.g., of course without a sidecar. About 500 miles of this was in Wales. I use Nos. 0, 3, and 7 size jets, and generally ride with the extra air slightly open and ignition fully advanced. Using the two pilot jets, I can get about 30 m.p.h. on the level and climb anything in reason.

I should strongly advise Messrs. Yearsley and Stanley to read, mark, learn, and inwardly digest the excellent hints on tuning a Scott given in your issues of July 15th and 22nd, particularly in reference to sealing up the transfer ports. (Rev.) J. M. PHILPOTT.

Sir,—In reply to the letters from V. B. Yearsley and J. F. Stanley. For a long time I was only getting 45 miles to the gallon with the sidecar attached, or 50 with very careful driving. I tried quite a number of different needle positions, but must say the adjustment of the needle never made more than 10 miles per gallon difference. Anyway, I found the most economical and efficient position of the needle, and then found that there was one economical position of the petrol and extra air lever which gave really extraordinary results. This position gives me a speed of

Mr. Hockney's Scott passenger outfit. See letter on this page concerning petrol consumption.

30 m.p.h. on the level with sidecar, and I keep the levers in this position as far as possible.

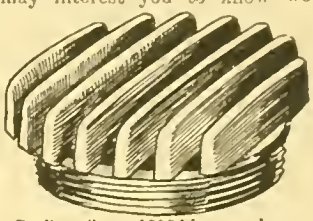
I have just measured the position of the levers, and the throttle lever is 2in. from the fully closed position (measured on the extreme radius of the lever), and the air lever is 1¾in., so that they are almost equally open. The air lever is then central with the handle, and the petrol lever ¼in. off the centre. I find that if I open the petrol lever beyond the position indicated I have to close the air lever considerably, and yet get no more, and in fact less, power, until the petrol lever is opened considerably more.

W. HOCKNEY.

Valve Cap Cooling Devices.

Sir,—In view of the article *re* valve cap cooling in your issue of December 9th, it may interest you to know we introduced a radiating cap for Norton machines during 1909, and forward one of a pair used in the I.O.M. during that year.

NORTON MOTORS, LTD.



Cooling ribs on 1909 Norton exhaust valve cap

Sir,—I note in your leading article on "Cooled Valve Caps" the last paragraph, which reads as follows: "Improvement in running can directly be ascribed to the complete and even cooling of the hottest parts of the engine, viz., the cylinder heads, by the elimination of valve caps."

I would like to suggest that the hottest part of an engine is the exhaust valve, and if provision can be made to cool this important part the engine will not overheat. This had been proved without any shadow of a doubt with the De Lissa air-cooled exhaust valve as used on a 3½-4 h.p. Motosacoche machine.

This valve also does away completely with the exhaust valve cap which you state is the hottest part of the engine, so you can quite imagine, with an air-cooled exhaust valve and no valve cap, there is no reason why an air-cooled engine should get hot.

On all other engines provision has been made to cool the cylinder, but no provision has been made to cool the valve, which is undoubtedly the hottest part, and the accumulated heat spreads to the piston, as it is always on the exhaust valve side that the rings are carboned up and burnt. Moreover, this dries up the oil and then heat from friction begins, which causes seizing up and the general overheating troubles. MOTOSACOCHE, LTD.,

Osborne de Lissa, Managing Director.

The Lady Motor Cyclist—A Protest.

Sir,—Your correspondent "Logistes" seems a bit spiteful when she expends such an effusion of satirical remarks on high heels, stays, and the hobble skirt.

She is wrong when she says that a lady's motor cycle is more difficult to dispose of than a man's. The demand for a lady's second-hand model of a good make is tremendous, and I have found over twenty buyers for each of my machines. But, of course, there are motor cycles and motor cycles, and perhaps your correspondent had one to dispose of which had not a reputation.

"Medico" should try an up-to-date lady's mount of medium weight, plenty of power, and perfect construction, and he will find that it is possible firmly to hold the handlebars of some ladies' mounts at over 20 m.p.h. Why, my mount will do over 50 m.p.h., and, being of the horizontally-opposed type, there is not the slightest vibration at this speed, and I am willing to back it against any man's machine for comfortable riding and absolute absence of vibration.

Furthermore, if knee grips are so essential to the rider's steadiness and safety as "Medico" endeavours to suggest, can he reconcile the fact that knee pads are not to be found on 5% of men's models. MARY REID.

Scott Lubrication.

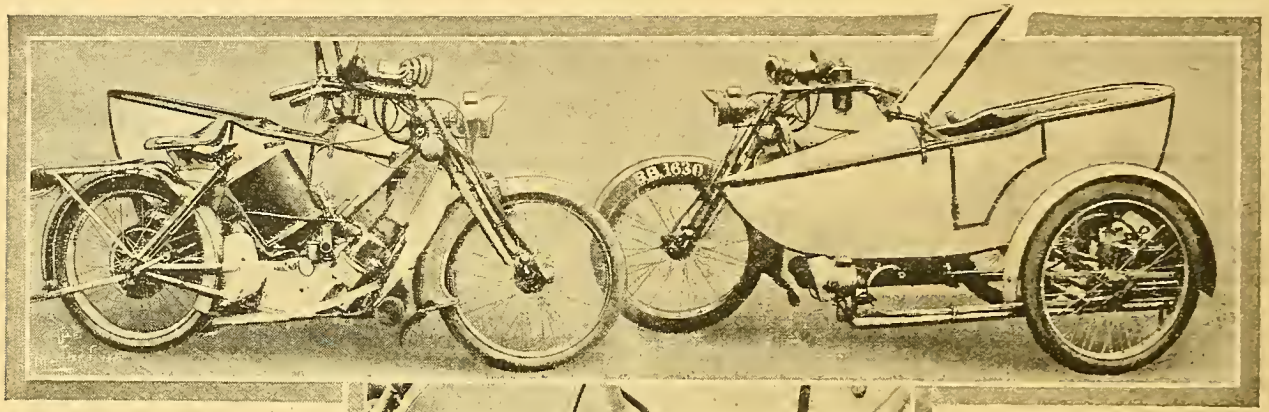
Sir,—I have ridden a Scott for a long time, and was always dissatisfied with the oiling arrangements, both the pump and the single drip feed. My objection was that one could never get each cylinder to take an equal share of the oiling I remedied this by cutting off the single drip feed arrangement and fitting a Best and Lloyd drip feed to each cylinder, using the ordinary spring pump to supply it.

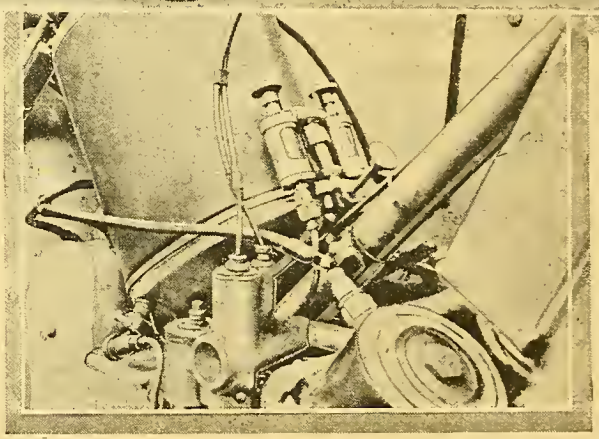
I may say since fitting the above I have never had any oiling troubles, and before I had several seize-ups. I should also like to state that I ride with a fairly heavy coachbuilt sidecar, and the petrol consumption comes out between 55 and 60 m.p.g., Binks carburetter fitted.

I enclose a photograph of the machine, which shows very plainly an aluminium chain case which I made to replace the Scott one, which I did not like. The machine is a 1913, with all the latest improvements, and is enamelled French grey. The sidecar was made entirely (except chassis) by one of my lance-corporals. It is made with an ash framing, covered with three-ply wood, enamelled French grey, and upholstered with green Rexine, and is quite light. The total cost, including chassis and tyre, and £3 which I gave the man for his work, was £8.

My only regret is that Messrs. Scott do not build a machine about 800 c.c., because for comfort I think Scotts are unsurpassed, and I have ridden a few makes.

J. W. DODDS (CAPT.).





The lubrication system on a reader's Scott—the outfit referred to in the letter on this page from Capt. Dodds.

A Good Climb.

Sir,—The following may possibly be of interest to you. Parbold Hill is a well-known test hill just north-east of Ormskirk, near Liverpool, and was in the early days the test ground for motor cyclists before variable gears came into vogue. Even to-day car manufacturers and agents quote performances at Parbold as a guide to the capabilities of their vehicles.

Having recently purchased a second-hand 6 h.p. water-cooled horizontally-opposed twin Humber, and fitted a sidecar, I decided to run along there and see what the machine would do. To my intense astonishment, I climbed the hill on the top gear—4¾ to 1—without slipping the clutch, or other assistance—a fair and square steady pull.

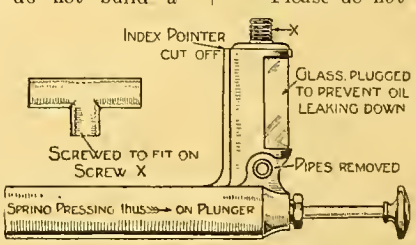
The sidecar is coachbuilt, fitted on to a heavy Millford chassis. I had a passenger (with rug), and we were both of us clothed for very frosty weather.

I have not yet done 100 miles on the machine, and went up the hill with the ordinary jet as supplied by the makers.

I have made enquiries, and cannot hear of anyone who has got up this hill with a sidecar on a gear of 4¾ to 1, irrespective of the horse-power. It, therefore, appears to me to constitute a record.

As you well know, the engine is only a 745 c.c., and the whole machine is exceptionally heavy for its size. On the same day, in a speed test, I touched 48-50 m.p.h., using the same gear and jet.

S. W. PHILLPOTT.


INDEX POINTER CUT OFF
X
GLASS PLUGGED TO PREVENT OIL LEAKING DOWN
SCREWED TO FIT ON SCREW X
PIPES REMOVED
SPRING PRESSING THUS → ON PLUNGER

Alteration to Scott lubrication system carried out by Capt. Dodds. The larger sketch shows the standard Scott oil pump and the smaller one the adapter.

Dangers of Darkened Streets.

Sir, — Your correspondent, "Sole Member for the Society for Illuminating London," tells us many things but proves none of them. The darkening of the streets was not expected to prevent the Zeppelins from reaching London; the object was to prevent them from picking out any particular object. Our own airmen reported that they could no longer discern important buildings and places, and this led to the further darkening order.

Also, if we allowed motor vehicles to use powerful lights, it would be comparatively easy for a Zeppelin to pick out an important London street by the number of bright lights proceeding along it.

Please do not think that I am a bigoted non-motorist, for I own both car and motor cycle. I fully appreciate the difficulty of night driving, but think it is one of the things due to the war which we must accept cheerfully.

C. BINGHAM, JUN.

Sidecar Windscreen.

Sir,—In reply to the correspondent "A Nine-year-old Reader," I do not use a windscreen during the summer months. The rough weather of winter is the only time that I consider justifies the wind resistance of a screen. Still, I believe my fitment is devoid of the defect "A Nine-year-old Reader" complains of. With regard to the screen the reader fitted, it an increased current of air was just behind the passenger with the screen close, would not moving the screen further forward bring the draught in the passenger's face? This was my experience with the shield I first had fitted. Probably my screen is larger and more gradually sloping upwards, and the meeting of the currents of air from it is, therefore, thrown much farther behind.

MAY WALKER.

"THE TYRE WITH NINE LIVES."

C. R. COLLIER

says:

"Matchless" HUTCHINSON OVERsize TYRES

are Matchless.

O. C. GODFREY

says:

"Indian" HUTCHINSON OVERsize TYRES

are the best he has ever come across.

J. R. ALEXANDER

says:

his

"G.W.K." HUTCHINSON OVERsize TYRES

have done 7,000 miles and look like repeating this same mileage.

There's a tyre for every purpose at ——————
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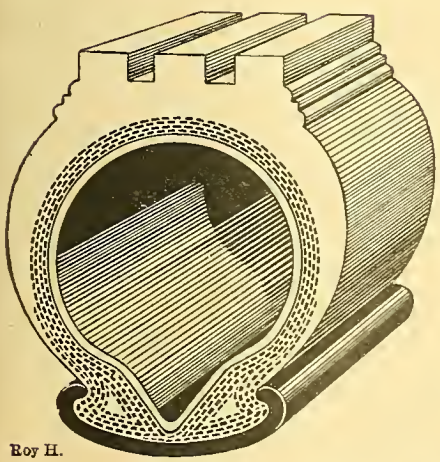
LONDON——————E.C.



Roy H.

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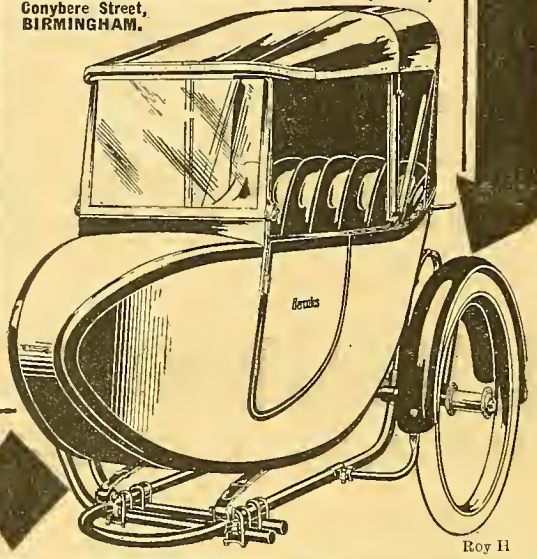

Roy H

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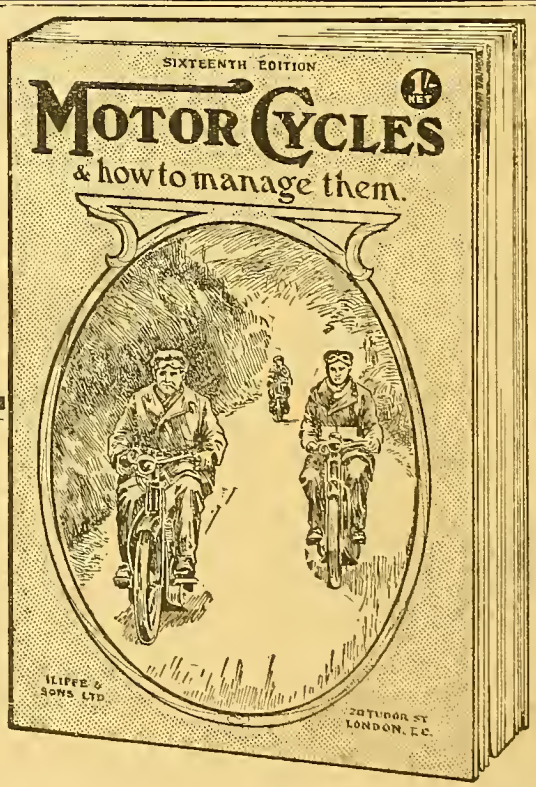

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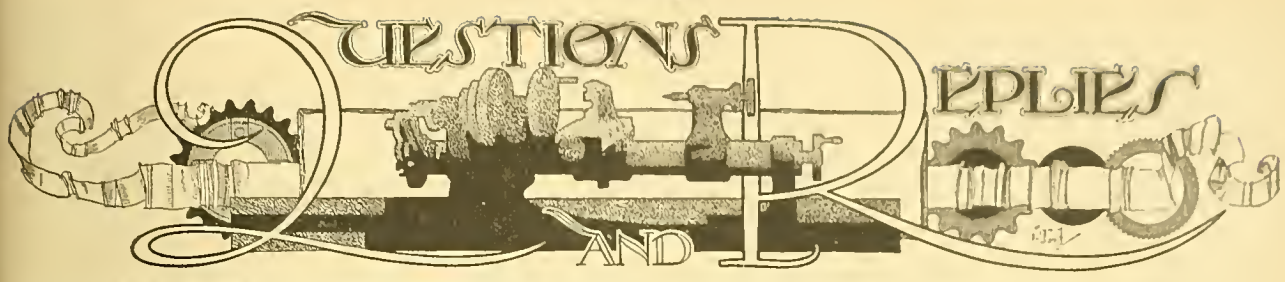

A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

An Extraordinary Allegation.

Recently I hired a motor cycle, and on taking it back to the dealers they accepted it, but the next day sent me a letter saying that I had removed the original piston and replaced it with one of another make. They are claiming from me the price of a new piston. Have they any claim?—G.S.K.

To accuse you of having removed the original piston and put in another one is certainly a serious allegation to make, and we should advise you to ask them what proof they have that the piston was removed while the machine was in your possession. Unless they have any proof the garage people certainly have no claim upon you.

Sluggishness in Starting

Can you tell me why I have difficulty in starting my motor bicycle? It is a 2½ h.p. four-stroke. It is chiefly when the engine is cold that I find difficulty in starting. I have done about 500 miles on it, and have been continually troubled in starting the machine.—S.H.I.

If the machine is difficult to start, owing to its being stiff to push when cold, it is due to the oil in the engine becoming congealed owing to the cold. It can be freed to a great extent by injecting a few drops of petrol or paraffin through the compression tap before trying to start, turning the engine over once or twice to enable it to work past the rings. In order to get an easy start you should have the following adjustments correct: Contact breaker points clean, and separating .4 mm., and you should make sure the rocker arm is not sticking. Carbon brush on magneto should be free from oil or dirt. Plug points should be clean, and with a gap of between ½ and 1 mm. Valve tappets should have a clearance when cold of about $\frac{1}{32}$in., and the carburetter should be clean. In most machines the usual setting of the levers for starting is air closed, throttle about a quarter open, and spark fully or nearly fully advanced. If the carburetter is any make except a Senspray it is advisable to flood it slightly before starting by depressing the plunger on top of float chamber. If you follow these instructions there should be no trouble whatever. You would find "Motor Cycles and How to Manage Them" a useful book.

Notice of Intended Prosecution.

Please tell me if it is a fact that notice of intended prosecution must be given before the expiration of twenty-one days from the time the offence was committed, namely, exceeding the speed limit, or is this only a legal quibble, conviction following nevertheless. I was trapped, told my speed, particulars were taken, and my address confirmed, but nothing has since happened, and seventeen days have already elapsed. No mention was made of the summons even verbally at the time of the offence. —F.W.F.

In the case of an offence for exceeding the speed limit notice of summons must be given at the time the offence is committed or within twenty-one days, otherwise a conviction cannot be obtained. This is usually done at the time verbally by the policemen working the trap. If they did not do so on this occasion it was probably an oversight.

Unevenly Worn Cylinder.

My motor cycle is a 1912 3½ h.p. I have purchased two new piston rings from the makers, believing that soon I shall require them. The piston head has two rings at the top, consequently the bottom of the cylinder is not worn at all where the rings do not reach when the piston is at the bottom of the stroke. Therefore I cannot get the new rings into the bottom of the cylinder, being too tight, but no doubt they would fit better a little higher up where the cylinder is worn. Will you kindly advise what had best be done? —H.W.H.

If your cylinder is so badly worn that you are unable to get the piston rings in at the bottom of the cylinder, yet they fit easily when at the top of the stroke, the only remedy is to have the cylinder rebored and a new piston and rings fitted. You should carefully measure the cylinder with a pair of callipers, and if the difference between the top and bottom of the bore does not exceed, say, one or two thousandths of an inch, there is little need to have it rebored for some time, in which case, to make the rings fit, you should file a little off the ends, so as to allow them to compress a little more. There should be about ½ mm. clearance between the ends when the ring is placed absolutely squarely in the cylinder.

Loss of Compression.

I have a 1914 4¼ h.p., single cylinder, and up to the present it has been running well, but it is now losing compression. Could you please tell me the cause of the trouble and how to cure it? The cylinder has not been taken down and cleaned yet, so would this be the cause?—S.G.D.

Loss of compression is due to the valves requiring to be ground in, or valves not closing properly owing to the valve tappets requiring adjustment, worn piston rings, or piston. If you take the cylinder off to clean the piston and cylinder head of carbon deposit, also remove the rings and clean the carbon deposit from behind these, and see that the valve springs are strong enough.

Knocking.

I have a 4 h.p. two-speed machine which, after running a few miles, starts to knock on slowing down. Shutting off the air sometimes stops this, but on opening the throttle again it knocks very badly for a few minutes, but generally leaves off on the level. If I run at a greater speed than twenty miles an hour the engine gets hot and starts knocking. In climbing nearly every hill I have to shut off the air. If I am climbing a long hill the engine pulls well on top gear, but knocks badly all the time, and even changing into low gear does not stop the knocking. The result is that the engine overheats and generally stops at the top. After cooling down it starts up quite well again in low gear. There is not much carbon deposit. I give plenty of oil.—S.H.T.

The trouble is probably due to the use of a sparking plug which does not suit the engine. A good single-point plug of first-class make should be used. It is not uncommon to have to close the air a little to prevent the engine knocking on hills. We presume the machine is not geared too highly? You might also look to the tappets and make sure the clearance is not too great; $\frac{3}{32}$in. is about right. Too small a jet would also cause knocking. If a general tune up does not remedy the trouble, you should take the cylinder off and make certain the rings are quite free in their grooves, that the piston is quite true and not binding, and the bearings in order.

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Registration of Second-hand Machines.

I have bought a second-hand machine. (1.) Do I have to get a new number, or can I use the old one? (2.) What steps do I have to take for insurance?—P.D.T.P.

(1.) If the previous owner is willing you can have the existing registration number transferred to your name at a cost of 1s. If he is not, you must obtain a new number from any county or borough council office at a cost of 5s. (2.) You should write to the Insurance Manager, *The Motor Cycle*, Hertford Street, Coventry.

Broken Overhead Valves.

I have an 8-10 h.p. machine with overhead valves. Now I do not like the idea of the valves breaking and dropping in the cylinder. Do you think I could lessen the risk of that if I had touring cams put in the timing gear in place of the racing ones, and would it stop a lot of the clatter? The above are the only faults that I have against it, as the machine is simply grand. I fitted a sidecar to it, which caused it to knock at times, but I have overcome that by fitting two $\frac{1}{16}$in. plates between the cylinder and the crank case, but I am always afraid of a valve breaking and falling into the cylinder. It is not because of the price of a new one, but perhaps the fitting of a new cylinder might alter the running of the machine.—E.A.

The fitting of touring cams would undoubtedly lessen the risk of broken valves, and would probably reduce the clatter to some extent. There are quite a number of ideas for preventing the heads of broken valves falling on to the piston and causing damage. Probably the best is to fit three hooked metal pegs into the cylinder head round the valve, the hooked portion being far enough away not to interfere with the opening of the valve. If the valve should break, the head is caught by the hooks of the three pegs. The chief disadvantage of this method is that, unless the pegs are fairly substantial, they might cause pre-ignition by becoming incandescent. Another method more or less satisfactory is to drill the stem of the valve and fit a steel wire in, riveting it at each end, the idea being that if the valve should break the wire would hold the valve head from falling into the cylinder while the machine is being stopped. There is no doubt that this method weakens the valve very considerably. It is, moreover, we believe, patented.

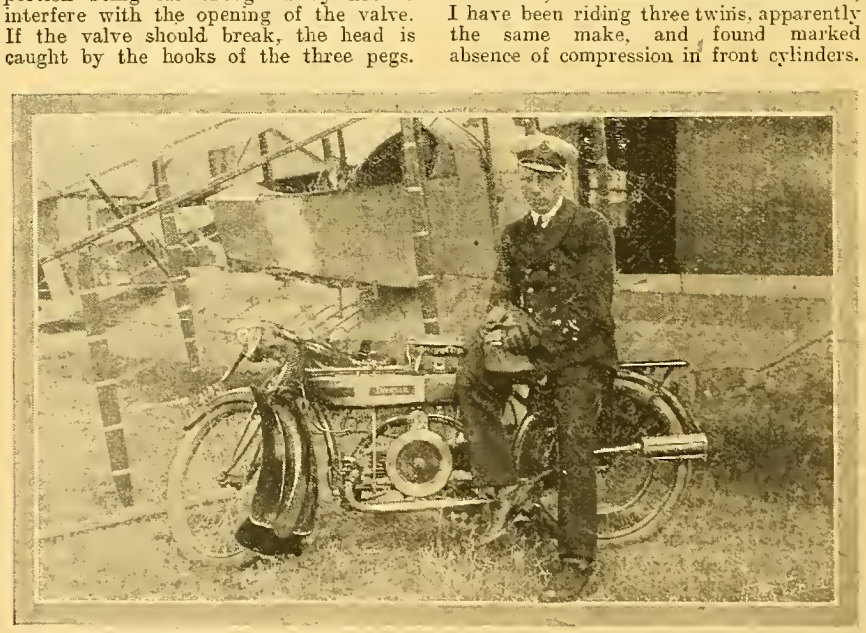
READERS' REPLIES.

Misfiring.

In answer to "L.C.F." in *The Motor Cycle* of November 25th *re* his 1915 machine with 1915 B. and B. carburetter misfiring on long hills, I have had the same trouble with my 1915 Calthorpe Junior, Precision engine and 1915 B. and B. carburetter. I ran same for 800 miles with a lot of trouble, and always seemed to misfire on long hills. I tested everything, and at last sent it to my engineer, who had the engine, etc., right down, but could not find any fault, and it was just as bad when I got it home again. It was not long after that I found out the cause in the B. and B. carburetter. One slide (throttle) faces the engine and the air slide faces footboard, and the calf of my leg covers up the slide, only allowing a little air to be drawn in, which causes misfiring. I have remedied this by altering footboards, and have never since had any trouble, although I have ridden 1,500 miles. I have only got to shift my leg a little, and I have the old complaint, so I think that if "L.C.F." tries my idea he will not be troubled again from misfiring.—A. MORGAN.

Tuning Up.

In reference to your correspondent "O.W.Y.," of issue of November 25th, I have been riding three twins, apparently the same make, and found marked absence of compression in front cylinders. I ground in the valve, etc., but found no improvement even after fitting new ring. I submitted the difficulty to an expert, who said it was probably due to warped valve seating, and that a new cutting would be required to effect a cure. The cylinder did not appear to have been starved of oil, and I had even removed the baffle plate. I then simply flooded the machine with oil, and was surprised to find my lost compression had come back. I tried the same experiment with an almost new model of the same make with the same result. The radical cure seems to be to fit a special oil inlet to the front cylinder. I may also mention that a liberal mixture of oil with petrol produced a marvellous effect until the carburetter showed signs of choking. I see that the makers are fitting the extra oil inlet on the 1916 model.—J.D.



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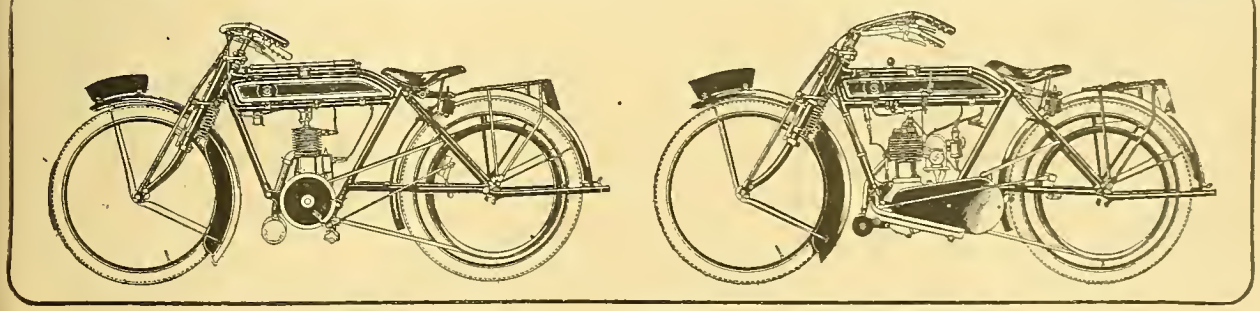

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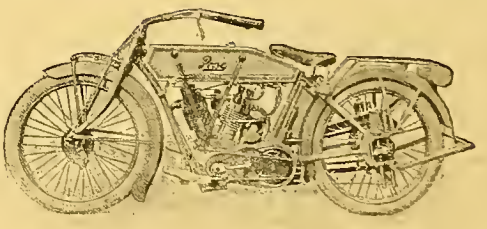

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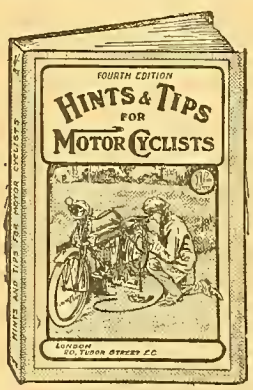

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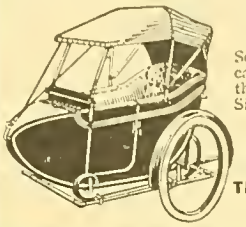

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LATE 1915 B.S.A., model K, Roseon rims, Mountgomery wicker sidecar; £75 cash, £80, as good as new.—Box 9,785, *The Motor Cycle* Offices, Coventry. [X6730

B.S.A., 1913, 3½h.p., 2-speed, and nearly new [illegible] built sidecar, new Kempshalls, lamps, and horn, bargain, £43.—L. Henderson, 223, London Rd., Sheffield. [X6925

1915 4½h.p. B.S.A., model K, under 3,000 miles, [illegible] lamp set, knee grips, pure valve and spring, etc., unscratched; flat cheque over £51.—Pilsbinger, Elmfield, Calne, Wilts. [X6895

£38.—Late 1913 B.S.A., coachbuilt sidecar, 2-speed, free engine, lamps, horn, Cowey speedometer, guaranteed perfect; owner on active service.—Call or write, 156, Gt. Portland St., W. [7567

1913 3½h.p. B.S.A., clutch model, overhauled by makers, 2 new tyres, new belt, pan seat, lamps, horn, spares, as good as new throughout; £32, or near offer.—Waltons', Dawson Sq., Burnley. [X6485

B.S.A., 1914, T.T., 3½h.p., perfect condition, excellent hill-climber, slow running, fast, tyres and belt very good, P. and H. lamps, horn, tools, spares; £34.—N. Albon, Sunnyside, Hitchin. [7565

B.S.A. 1916 Models actually in stock; another, H. and K and sidecar, expected momentarily; deferred payment if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7397

B.S.A., 1916, model K, 4h.p., chain-cum-belt, 3-speed; Layton's can deliver to-day; do not delay; deliveries for forward dates cannot be guaranteed; buy now; price £62.—Layton's Garage, Bicester, Oxon. [X6982

B.S.A., 1913, 2-speed, free engine, chain drive, art cane sidecar, Lucas King of the Road head light, Jones speedometer, mirror, etc., new tyres, chain guard; £50, or near offer.—186, Wandsworth Bridge Rd., Fulham, S.W. [7056

B.S.A., 1914, model H, chain drive, 3-speed, kick start, combination, B.S.A. coachbuilt sidecar with wind screen, perfect outfit, sound in all respects, excellent appearance, 2 lamps, big horn, etc., worth over £60; will accept £56.—Tollady, Hemingford, Bicester, Oxon. [X6983

B.S.A. 1916 Models just received from works; 4½h.p., 3-speed countershaft gear, chain drive, model H, £64; chain-cum-belt, model K, £62; exchanges or extended terms arranged; now is the time to buy sidecars in stock to fit.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0491

Calthorpe.

1915 Calthorpe, 2-stroke, 2-speed, lamp, and generator; £25.—Ramsgate Motor Works. [7368

CALTHORPE Junior, late 1914, little used; £17/10, bargain.—Church, 342, Baker St., Enfield. [7421

1915 Calthorpe-Jap, 2¾h.p., Enfield 2-speed, F.E., almost new; £30.—Keast, Springfields, Allet, Truro. [X7104

CALTHORPE-J.A.P., 1915, 2¾h.p., 2-speed, not ridden 400 miles; £28.—Pearce, Deptist, Henley-on-Thames. [7385

CALTHORPE Junior, 2-speed, first-class condition; first £15 secures.—W. Dawson, 24, Melbury Rd., Weymouth. [7413

1915 Calthorpe-Jap, 2-speed, shop-soiled; 30 gns.; very great bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X4886

CALTHORPE, latest 2-speed lightweight models in stock; cash or exchange; no waiting.—Eagles and Co., High St., Acton. [X6995

1915½ Calthorpe-Jap, 2¾h.p., Enfield 2-speed, very little used, as new, very fast; £30.—T. S. Pearson, Royal Military Academy, Woolwich. [X6921

CALTHORPE-J.A.P., 2½h.p., 2-speed, bought new 3 months ago, only done 300 miles; cost £40, accept 25 gns.—Longman, King St., Acton. [7520

1915 Calthorpe-Jap, 2¾h.p., 2-speed, only done 20 miles, like new; £30; approval against cash.—John Jones, Cycle Agent, Llanerchymedd, Anglesea. [X6426

1915 Calthorpe-Jap, complete with lamp, horn, rear light, and speedometer, in splendid condition; £28.—Colmore Depot, 31, Colmore Row, Birmingham. [X6840

CALTHORPE-J.A.P., 2¾h.p., Enfield 2-speed gear, free engine, electric head lamp, horn, tools, new last May.—Underwood, 14, Warwick Row, Coventry. [X6909

CALTHORPE-J.A.P.'s, 2 speeds (3 models in stock); deferred payments, exchanges, liberal allowances.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7403

CALTHORPE Junior, 1914, 2-speed, excellent condition and running order; £17.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [7621

CALTHORPES for 1916 include lady's and combinations. Send your name for new catalogue, ready shortly; easy payments arranged.—Storey's, 118, Gt. Portland St., W. [0647

CALTHORPE-J.A.P., 2¾h.p., latest models in stock, 2-speed Enfield gear, ideal lightweight for winter riding; 35 gns. cash, or £9/15 deposit and 12 monthly payments of 45/- each.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. 'Phone: Avenue 5548. [0551

MOTOR CYCLES FOR SALE.

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CALTHORPE Junior, late 1914, 2-speed, P. and H. head light, toolbags, footboards, excellent tyres, not done 600 miles; bargain, £20.—15, Cleveland Mansions, Chapel St., Brixton. [7351

Campion.

1914 6h.p. Twin Campion Combination, large lamp, generator, and saddle, horn, and spares, 3 speeds, handle starter; only wants seeing; £55.—C. Baker, Crowland, near Peterborough. [7592

CAMPION-J.A.P., 4h.p., Armstrong heavy 3-speed gear, new Britannic coachbuilt sidecar, Cape hood, glass screen, apron, lamps, gear and tyres as new; bargain, £48.—A. Wood, 48, High St., Windsor. [6993

Chater-Lea.

8h.p. Chater-Lea Combination, with 25 gn. Gloria car and accessories; £40.—Colmore Depot, 31, Colmore Row, Birmingham. [X6849

CHATER-LEA, 1912, No. 7, 3 speeds, Lucas head lamp, with spring wheel sidecar; £49.—Fishwick, Brook Lane, Alderley Edge, Cheshire. [X6438

1913 Chater-Lea, 8h.p., 3 speeds, handle starter, coachbuilt sidecar, large head lamp, Lucas horn, condition as new; £47/10.—697a, Old Kent Rd., S.E. [7485

CHATER-LEA and Sidecar, 1915, 2-seat., wicker body, Lucas dynamo lighting set, perfect condition; £75.—Stag Motor Works, East Finchley, London, N. [7505

CHATER-LEA, 1913, 8h.p., 3-speed gear box, with Turner sidecar, hood, wind screen, lamps, etc., all in good condition; £60.—Parker, 43, Hampden Rd., Hornsey, London, N. [7606

CHATER-LEA, 1911, 6h.p. twin J.A.P., 2-speed P. and M. gear, with large 2-seater coachbuilt sidecar; a bargain, £27/10.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [7620

Chater-Singer.

ABOUT 1907 Chater-Singer, 2¾h.p., mag.; £7.—Particulars, Shefratt, Victoria View, Uttoxeter. [X6828

Clarendon.

2¾h.p. Clarendon, B. and B., Hellesen, low machine, drop back frame, spring forks, engine in splendid order, guaranteed in perfect condition; £7, no offers. —71, Stanbury Rd., Peckham, S.E. [7487

Clyno.

CLYNO Combination, 1912½, 6h.p., 2-speed, lamp, speedometer, spares; bargain, £31.—Edmonds, 24, Trinity Rd., Weymouth. [X6940

CLYNO, 2-stroke, 2-speed, and hand clutch, accessories, perfect order; £31.—Box L274, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7385

CLYNO 1915 Combination, 6h.p., spring drive, spring saddle pillar, spare wheel, wind screen, lamps, horn etc.; £85.—150, Lea Rd., Wolverhampton. [X6927

CLYNO Coachbuilt Combination, 6h.p., countershaft 2 speeds, kick start, Bosch, fully equipped; sacrifice £28.—Speechley, 45, Church Rd., Acton. [7613

CLYNO 6h.p. Coachbuilt Combination, 3 speeds, clutch, and kick starter, spare wheel and tyre, usual accessories, new condition; £65.—P. J. Evans, John Bright St., Birmingham. [7444

CLYNO, 6h.p., late 1913, cane sidecar, engine perfect order after overhaul, 1915 pilot B. and B., tyres perfect, speedometer, spares, accessories, 65 m.p.g., 46 m.p.h., better value than a new machine, property of a flying officer; £47.—Appointment to Stack, 5, Tavistock Rd., Croydon. [X6922

Connaught.

CONNAUGHT, 2¾-3h.p., late 1915 miniature, almost new; £24/10.—A. Wood, 48, High St., Windsor. [7599

CONNAUGHT, 1915, standard, 2-stroke, 2¾h.p.; cost £36/17, accept £21, or nearest offer; F.R.S. head light and horn included; must sell.—Waddams, Gaia Lane, Lichfield. [X7004

CONNAUGHT, 1916 models in stock; immediate delivery of miniature and standard models, with 2 or 3-speed gears, also single-speed models.—P. J. Evans, John Bright St., Birmingham. [7440

Diamond.

1915 Diamond 2-stroke, perfect, lamp, etc., complete; £26.—Rich, Shifnal, Salop. [X7013

TWO Diamond 1916 2-stroke single-speed Models, actually in stock.—Sole District Agents, The Walsall Garage, Walsall. [7629

Douglas.

DOUGLAS, W., 2-speed, clutch, kick-starter; £39.—F. Lycett, Burslem. [X7016

NEW Douglas, model U, 3-speed, in stock; 50 gns. —Cross, Agent, Rotherham. [X7023

1910 Douglas, 2-speed, with lamp, horn, etc.; 19 gns.—Julian, Broad St., Reading. [X5539

DOUGLAS, 1914, T.T., 2-speed, lamp, horn, little used; £37.—359, Wimbledon Park Rd., S.W. [7434

1912 Douglas, just overhauled, splendid condition throughout; £21.—16, Beechcroft Rd., Bushey. [X7021

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JAMES 4½ h.p. 3-speed Combination	£80 0
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ALLON, 2½ h.p., 2-speed countershaft.	£42 0
ZENITH, 4-5 h.p., 1916, countershaft.	£68 7
ROYAL RUBY, 2½ h.p., 2-sp., 2-str.	£36 10
J H., 4½ h p., 3-speed, M.A.P., engine.	£67 0
ENFIELD 6 h.p. 1916 Combination ..	£89 5
B.S.A., 1916, 4½ h.p. Combination....	£80 18
B.S.A., 4½ h.p., 1916, "K"	£62 0
ALLDAYS-MATCHLESS, 2-str., 2½ h.p.	£27 10
ALLDAYS-ALLON, 2-str., single speed	£34 0
SUN-VILLIERS, 2½ h.p., 2-str., single-speed	£29 10
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INDIAN, 7 h.p., Model C	£78 0
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INDIAN, 5 h.p., 3 speeds, Model B ..	£70 0

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REX, 1914, 8 h.p., Spacke engine, 3-speed	£58
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HARLEY, 1915, 7 h.p., Millford Sidecar .	£72
ZENITH, 1914, 8 h.p., clutch, Millford ..	£71
BAT, 1913, 6 h.p., 3 speeds and Sidecar	£56
V.S.-J.A.P., 1913, 8 h.p., 2-speed, coach-built Sidecar	£32
JAMES, 1914, 4½ h.p.. 3-sp. Combination	

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BAT, 1915, 4½ h.p., twin, 2-speed, T.T...	£43
DOUGLAS, 1915, 2¾ h.p., Colonial, T.T.	£47
REX, 1909, 3½ h.p., 3-speed, handle start	£25
ENFIELD, 2¼ h.p., 1910, belt drive	£17
ENFIELD, 1915, 3 h.p., T.T., 2 speeds ..	£48
BLACKBURNE, 1914, 3½ h.p., 3 speeds ..	£53
REX, 1910, 3½ h.p., 3 speeds, take Sidecar	£25
HUMBER, 1914, 2 h.p., 3-sp., open frame	£25
INDIAN, 1914, 7 h.p., T.T., clutch.....	£50
O.K., 1915, 2½ h.p., 2 speeds, chain drive	£29
F.N., 1912, 2½ h.p., 2-sp., shaft drive ..	£24
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P. & M., 1914, 3½ h.p., 2 speeds, little used	£58
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INDIAN, 1914, 7 h.p., electric equip., 2-sp.	£52
P. & M., 1913, 3½ h.p., 2-sp., handle start	£45
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NEW HUDSON, 1915, 2½ h.p., 2-stroke ..	£28
DIAMOND, 1914, 2¾ h.p., 2 speeds	£34
JAMES, 1915, 2½ h.p., 2-speed, 2-stroke .	£35
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T.M.C., 8 h.p., 3 speeds, spring frame	£14

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DOUGLAS, 2¾h.p., good tyres and running orde Whittle belt; £15.—Smith, Plumber, Wivenho Essex. [751

DOUGLAS, 1915, 2 speeds, clutch, accessorie faultless; sacrifice, £42.—124, Walton Rd., Ea Molesey. [X701

1914 T.T. 2¾h.p. 2-speed Douglas and accessorie in good condition; £42.—Seen, 223, High Rd Kilburn. [75

DOUGLAS, 1914, T.T., £40; a 1913, as new, speeds, £30.—Percy and Co., 337, Euston Rd London. [752

1915 T.T. 2¾h.p. 3-speed Douglas and accessorie in perfect condition; £45.—Seen, 223, High Rd Kilburn. [75

1915 4h.p. Douglas and Sidecar, Lucas lamps, horn etc., complete; £72; like new.—Cross, Jewelle Rotherham. [X702

DOUGLAS, 1914, 2 speeds, clutch, kick starter; £3 footboards, excellent condition.—Peart, Mark Harborough. [X688

1914 Douglas, delivered March, 1915, 2¾h.p., speeds, property officer; 36 gns.—331, Fulha Rd., London. [75

1913 T.T. Douglas, 2-speed, new tyres, lamp, hor speedometer, good order; £35.—Anderson, Dr Hall, Kilmarnock. [X69

DOUGLAS, 1911-12, 2 speeds, foot clutch, fine m chine, speedometer, etc.; £23.—Speechley, 4 Church Rd., Acton. [76

1915 4h.p. 3-speed Douglas Combination and acce sories, in good condition; £63; seen any time. 223, High Rd., Kilburn. [75

DOUGLAS, 1915, immediate delivery any 2¾h. model, including War Office black Douglas Moffat, Yeovil. Tel.: 50. [92

DOUGLAS.—Immediate delivery from stock; a agents only, but Douglas experts and specialist —Gibb, Gough, Gloucester. [X35

DOUGLAS, 1913, 3-speed, semi-T.T., perfect orde accessories; £34.—F. Halsey, 199, Uxbridge Ro Mill End, Rickmansworth, Herts. [75

DOUGLAS, 1912, clutch, speedometer, accessorie excellent engine, good condition, privately owne —Fry's Garage, Lee Terrace, Blackheath. [X69

2¾h.p. Douglas, 2-speed, U model, all accessories, pe fect condition; any trial; £35; owner boing car.—P. Eve, Cranham Hall, Upminster. [73

FOR Sale, late 1914 Douglas, 2¾h.p., 2-speed, re fast, all accessories.—Apply, V.E.C., c/o F. Bennett, Ltd., 24-7, Orchard St., London, W. [73

1914 Douglas, 2¾h.p., T.T., 2 speeds, ridden 4 miles, new tyres, lamps, horn; £40, no offers. Lieut. Maltby, 1, Marlborough Rd., Watford. [X68

1913¾ Douglas, 2-speed, new Dunlop tyres, bel accessories, excellent condition; £29; appoin ment.—Cpl. Dovaston, Penny Lane, Liverpool. [X70

1915 Douglas, 2¾h.p., 3-speed, footboards, head a tail lamps, horn, full equipment, only run 1,6 miles, as new; £45.—33, Liverpool Rd., Southport. [72

DOUGLAS, Douglas, Douglas.—Immediate delive model V, 2-speed, £50/8, and war model £54 actually in stock.—Alexander's, 115, Lothian Rd., Edi burgh. [70

DOUGLAS, 1914¾, T.T. model V, new condition, accessories, not used since March, perfect; own in France; 39 gns.—Mrs. E., Rinkside, Penrhyn E Kingston. [76

2¾h.p. Twin Douglas-Fairy, Bosch, B. and B., XL saddle, enamelled khaki, lined green, complete overhauled; £10/10.—56, Cuthles Rd., Balham Hi S.W., after 7. [75

DOUGLAS, 1915, T.T., 2-speed, done 3,000 mil only, lamps and all accessories, perfect conditio as new; £42/10 cash; active service.—2nd Lieut. Butl 1, Mentone Place, Leeds. [73

DOUGLAS, 1910, good order, just overhauled, Stew speedometer, pan saddle, lamp, and rear ligh 2 toolbags and tools, Fluxite case; £18/10.—Turner, Berkeley Rd., Westbury Park, Bristol. [X69

DOUGLAS.—We can deliver from actual stock; waiting, no disappointment. If you want a Dou las, we are the people to get into touch with.—The C more Depot, 31, Renshaw St., Liverpool. [74

1914 Douglas, clutch model, 2-speed, speedomet large head lamp set, rear lamp, horn, too etc., new 2¼ rear tyre, exceptional condition, h new throughout; £37.—94, Gloucester Rd., S.W. [75

1912 Douglas, 2-speed, in order, footboards, Bl saddle, Miller lamp, generator, Lodge wat proof plugs, tools, Beacon outfit, sound; first cheq £25/10.—Dolling, 21, Thompson St., Stantonbury. [75

1914 T.T. Douglas, Amac carburetter, self-co tained head lamp, tail lamp, separate generat large gong, speedometer, etc., in excellent conditio £37/10.—Rex Mundy, 132, Gt. Portland St., W. [71

DOUGLAS, 1913, 2¾h.p., 2-speed, clutch and k starter, Jones trip speedometer, Lucas lamp a horn, spare belt and tube carrier, very good conditio £35.—The Premier Motor Co., Aston Rd., Birmingha [75

MOTOR CYCLES FOR SALE.

Indian.

LATE 1915 5h.p. Indian, 3-speed, model B, in absolutely new condition, and very little used; £58, no offers.—Alexander's, 115, Lothian Rd., Edinburgh. [6997

INDIAN, 1915, 7-9h.p., road racer, clutch, speedometer, lamp, generator, Stewart warning signal, done 3,000 miles, excellent condition, fast; owner gone to Front; £48.—Apply, Gordon, 35, De Vere Gardens, Kensington, W. [7355

1915½ Indian, 7h.p. model C, 3-speed, with luxurious Indian coachbuilt sidecar, complete electric equipment, and speedometer, only used 3 days; owner at Front. Who wants a bargain at £85 for this splendid new outfit?—Alexander's, 115, Lothian Rd., Edinburgh. [6998

1915 7-9h.p. Indian, T.T. model, with clutch, all accessories, including lamp and horn, machine in perfect condition; bargain, £55, or offer; also Indian, sporting model, sidecar to suit above machine, excellent condition; £12.—Box 9,784, *The Motor Cycle* Offices, Coventry [X6880

INDIAN, red, 7-9h.p., late 1914, Mills-Fulford coachbuilt sidecar complete, electric lamps, horn, 2 spare covers and tube, full kit of tools, and other spares, 2 new accumulators, Corbin-Brown speedometer, A.A. badge, all risk policy, done 2,000 miles, grand condition; £60, or near offer; too fast for owner.—J. S. Campion, 5, Acton St., W.C. [7605

Ivy.

IVY, 1915, 2½h.p., 2-stroke, complete, as new, and worth new price; going on service; price £24.—Rev. Rees, c/o Laytous' Garage, Bichester, Oxon. [X6989

IVY.—Three latest 1916 2-stroke models in stock, tourist single-speed, de luxe single speed, de luxe 2-speed.—Sole District Agents, The Walsall Garage, Walsall. [7627

Ixion.

IXION 2-stroke, 2-speed, early 1915, excellent condition, lamps; £26.—Crew, 212, Edward Rd., Cannon Hill, Birmingham. [X6854

IXION, 2¾h.p., 1914½, fast, overhauled, new piston rings, gudgeon pin, chain, sprocket, tyres, belt, P. and H., muffs; owner enlisted; £20.—Apply, Wood, The Rosery, Penygarne, Pontypool. (D) [X7012

James.

1915½ James, 2-stroke, as new, all accessories; £32. —Clergyman, 33, Gloucester Rd., Finsbury Park, N. [X6106

JAMES 1916 4½h.p. Combination actually in stock; £30/10; exchanges, deferred payments if desired. —Lamb's, 151, High St., Walthamstow. [7404

JAMES, 1916 models; immediate delivery from stock, twins, 2-strokes, and 4½h.p. combinations. —P. J. Evans, John Bright St., Birmingham. [7448

1914 4½h.p. James Combination, 3-speed countershaft; £59; exchange with 3½h.p. considered, cash adjustment.—Shavle, Great Alne, Alcester. [X7019

3½h.p. Twin James, 1914, 3-speed, clutch, in perfect condition, engine recently overhauled by James Co., speedometer, and all accessories; £40.—Capt. Judd, Drill Hall, Andover. [X6033

JAMES, 1915, 4½h.p., 3-speed countershaft gear, clutch and kick starter, chain drive, Canoelet sidecar, with Lucas electric lighting outfit, Lucas electric horn; £90/15.—Colmore Depot, 261, Deansgate, Manchester [0674

1915 James, 2¼h.p., 2-speed, 2-stroke, new May, enamel uncscratched, P. and H. lamp, generator, horn, electric tail lamp, Veeder trip cyclometer, as new; owner got commission; fine on hills, impossible to tell from new; 33 gns.—Kwato, Lieskeard Gardens, Blackheath, S.E [X6440

J.A.P.

3½h.p. J.A.P. Path Racer, in perfect order; £25.—Box L271, *The Motor Cycle* Offices, 20, Tudor St., E.C [7376

8h.p. J.A.P., Chater-Lea fittings, 2-speed gear, F.E., new belt, tyres good, Montgomery coachbuilt sidecar, speedometer, and accessories; offers.—10, Westbourne Place, Clifton, Bristol. [7508

J.E.S.

J.E.S. Motorcyclette, 1914, excellent condition, Radco spring forks, B.S.A. 3-speed gear to cycle, complete, horn, tools, spares, etc., really efficient machine; bargain, £12/10.—Clark, Cairns Cottage, Gorgie, Edinburgh. [7390

Juno.

JUNO 6h.p. Twin J.A.P., the finest twin on the market, Sturmey-Archer countershaft gear, kick starter, 2½in. heavy Dunlops, aluminium footboards; price 72 gns.

JUNO-VILLIERS, 2½h.p., 2-stroke, 2in. Mosley tyres, semi-automatic lubrication; £29/10.—Both the above seen at 248, Bishopsgate, London. [7537

Lea-Francis.

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LEA-FRANCIS 1915 3½h.p. Twin, 2-speed, clutch, kick starter, enamel perfect, tyres new; £55, or nearest.—Lieut. Denning, 1, Langdon Rd., Rochester. [7345

LEA-FRANCIS, 1915 (October), 3-speed, head and rear lamps, Stewart horn, with Montgomery sidecar; cost £92, complete outfit £65.—Lt. Wheeler, M.M.G.S., Bisley. [X6970

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LEVIS-POPULAR, 1915, splendid condition, recent T.T. bars, fully equipped; best offer over £21 secures this bargain.—Box L280, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7570

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1912 6h.p. 2-speed Matchless Coach Combination, lamp, speedometer, excellent order; £42.—Blencathra, Walton-on-Thames. [X6980

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MATCHLESS Combination, 1912, 2-speed, speedometer, lamps, spares; £47/10.—Brown, 7, Manor Park Parade, High Rd., Lee, S.E. [7561

MATCHLESS 1915 8B. Combination, Lucas lighting set, and many spares, condition perfect; lowest price £83.—Galbraiths, 10, Renfield St., Glasgow. [X7102

1914¾ 8B. Matchless Combination, lamps, horn generator, done 2,700; owner going to Front; £80, cost £115.—Morgan, Marsham St., Westminster [7601

MATCHLESS Combination, special sidecar, carry 2, August, 1914, 8B model, 7-9h.p., fully equipped, owner driven, spares, etc.; £80, cost £105.—70, High St., Walthamstow, Essex. [X6433

MATCHLESS-J.A.P., 1913, 8h.p., 2 speeds, free, kick, single control, fast, good order, coachbuilt sidecar, 2 new tyres, fully equipped; trial; £36; appointment.—Renaut, Repton, Derby. [X6437

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MATCHLESS Coachbuilt Combination, 7h.p., 2-speed countershaft gear, kick start, chain drive, accessories, cost over £100, very nice running order and condition; £55; consider 3½h.p. combination part exchange.—Bramlea, Charlton Rd., Shepperton-on-Thames. [7514

Minerva.

4h.p. Minerva, B. and B., splendid condition; a bargain, £14, or near.—18, Bickley St., Tooting [7465

2¼h.p. Minerva, B. and B., spring forks, 26in. wheels; £5.—Roy, c/o Petrie, 1, Lochrin Terrace, Edinburgh. [X7037

3½h.p. Minerva, Bosch, B. and B., m.o.i.v., low frame, new tank, saddle, and belt, spring forks, very reliable; owner enlisting; £18.—Bendle, Printer, Torquay. [7344

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MINERVA, 3½h.p., in perfect condition, Bosch mag., B. and B., new piston and rings, Brooks saddle, powerful head and rear lights and horn, 2 spare tyres and belt; £12, or offer.—Jarris, Willow Nursery, Waterloo Rd., Uxbridge. [7414

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MOTO-REVE, 2¼h.p. twin, mag., Druids, Amac; £10.—22, New Rd., Driffield. [X6959

MOTO-REVE Twin Lightweight, mag., Druids; £8/10.—Speechley, 45, Church Rd., Acton. [7614

New Hudson.

NEW Hudson, 2-stroke, Bosch, long horn; £19; Sunbeam cycle part.—95, Alma Rd., Sheerness. [7502

1913½ 2¾h.p. New Hudson, splendid condition throughout; £25.—Norman, Star Hotel, Bridgwater. [7359

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NEW Hudson, 4h.p., 3-speed; F.E., with new Pedley tyres, extra heavy; £29.—Lucas, 390, High Rd., Chiswick. [X6914

NEW Hudson, 2¼h.p., new August, only done 100 miles, in perfect order; £24, or offers.—Laidlaw, 45, Johnstone Dr., Rutherglen. [X6736

1915 New Hudson 2-stroke, 2 speeds, Lucas lamps, horn, and tools, run about 200 miles, all as new.—Tilley, The Esplanade, Weymouth. [X7089

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NEW Imperial, 1915, 2¾h.p., 2 speeds, complete accessories, new condition; £30.—P. J. Evans, John Bright St., Birmingham. [7447

IMPERI-J.A.P., 4h.p., 1915, 3-speed Sturmey, Montgomery sidecar, speedometer, perfect condition; £44.—Stag Motor Works, East Finchley, London, N. [7506

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A very "fed up" man is he,
With black and greasy hands;
For his troubles with the engine parts
Seem endless as the sands.

And children coming home from
A dozen strong or more; [School
Just love to get between his legs,
They want to "hear it roar."
He knows alas that burning sparks
Will fly from plugs no more.

Toiling—grousing—sorrowing,
One thing in life he knows;
Next morn will see a task begun:
To Godfrey's shop he goes
And buys a Power Plus INDIAN
Before the evening's close.

Week in, week out, from morn till
You can hear his engine roar, [night
You can see him swing his trusty bike
At speed up one in four—
And the Village Blacksmith died
with fright
As he stood at his smithy door.

We are more than sorry that the exigencies of rhyme compel us to deprive the Village Blacksmith of the night's repose awarded him by the gentle Longfellow long before the advent of the Power Plus Indian. We are sure that the Village Blacksmiths of to-day (if there are any left) will be proof against the phenomenal speed of the Power Plus Indian flashing past their smithy doors; especially when they learn that it is just as easy to ride this wonderful machine with "measured heat and slow" as it is to attain a speed which it would be unwise to mention.

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1914 Precision-Martin, 2¾h.p., 2-speed gear, free engine, splendid condition, foot plates, horn, lamp, generator; genuine bargain, £18/15 quick sale.—4, Ruru Villas, Andover. [7460

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PREMIER, 3½h.p., 1912, Sensspray, Bosch, spares, tyres perfect; £20.—Sergeant Colquhoun, Rumgally, Cupar, Fife. [X6881

1914 Premier Lightweight, 2½h.p., 3 speeds, and clutch, perfect condition throughout; £30, offers.—Blake, 9, St. Michael's Rd., Aldershot. [7469

1915 3½h.p. Premier, 3-speed countershaft, Matchless sidecar, done 900 miles; bargain, £48.—Coates, 88, Griffin Rd., Plumstead, Kent. [7356

PREMIER, 1913 (late), 3-speed and sidecar, all accessories, speedometer, in perfect condition; any trial; £36, no offers, bargain.—169a, Lower Clapton Rd., N.E. [X7078

PREMIER, 1914, 2½h.p., with 3-speed and free engine hub, a charming and almost new machine; cost £46/10, worth easily £36, accept £30.—Layton's Garage, Bicester, Oxon. [X6986

PREMIER, late 1914, 4h.p., 3-speed gear box, Milford coachbuilt sidecar, speedometer, lamps, and horn, all in splendid condition, done 3,500, guaranteed perfect; £54.—L. Henderson, 224, London Rd., Sheffield. [X6962

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REVERE-VILLIERS 2-stroke, 2¾h.p., 2-speed, speedometer, machine as new, only done 350 miles; no reasonable offer refused; officer shortly returning to Front; bargain, £35.—Harris, Garage, Slough. [7566

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6h.p. Rex Combination, 1912, 2 speeds, clutch, spares; £36.—327, Upland Rd., Dulwich. [7612

REX, 3½h.p., mag., nice condition; great bargain £8/15.—41, Ashford Rd., Cricklewood. [7517

3½h.p. Rex, mechanical valves, Bosch, B. and B.; bargain, £8.—25, Farley Rd., Catford, S.E. [7554

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REX de Luxe, 6h.p., late 1914, cost £84, little used, perfect; £55 cash.—Delahay, Callington, Cornwall. [X6973

REX, 3½h.p., and sidecar, in perfect order, new tyres; £9 to clear.—Percy and Co., 337, Euston Rd., London. [7527

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REX 1912-13 6h.p. 2-speed Combination, all accessories; £25, or exchange 1913 Triumph.—96, Shortlands Rd., Kingston, Surrey. [X6936

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ROVER, 1915, T.T. model, practically a new machine; £38/10.—Walsall Garage, Walsall. [7634

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ROVER, 1914, 3-speed, Mills-Fulford 16 gn. sidecar, speedometer, lamps, watch, horn, in first-class order; 40 gns.—Hilder, 15, Reginald Rd., Bexhill. [7471

£40.—Rover, T.T., 1915, Philipson pulley, horn, decompressor, tools and spares, like new throughout.—Queen St. Garage, Old Hall St., Liverpool. [X6933

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ROYAL Ruby, 2-stroke, 1915, as new, fully equipped; £19.—Percy and Co., 337, Euston Rd., London. [7525

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RUDGE, 1912¾, free engine, recently overhauled, completely equipped; £25.—Wood, Skipton Rd., Colne. [X6960

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1914 Sun-Villiers, complete with accessories, 20 gns.—Colmore Depot, 31, Colmore Row, Birmingham. [X6941

SUN VILLIERS, 1914, countershaft 2-speed, completely equipped, tyres practically unsoiled; £22.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [7560

SUN V T S, 1916 model, 2-stroke, 2-speed, 3 weeks old, tried only 5 miles, Lucas lamp set, and horn, not used, spotless; cost £42, sell £35, bargain.—C. Pritchett, 141, Merton Rd., Wimbledon. [7499

Sunbeam.

SUNBEAM, late 1915¾, 3½h.p., done 2,000, perfect, with accessories; £62.—Box L270, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7375

1915 3½h.p. Sunbeam Combination, as new, lamp, horn, speedometer, 1,500 miles.—Sowden, Victoria Park View, Keighley. [X7041

SUNBEAM, 1915, 6h.p., and sidecar, perfect condition, and all accessories; £85.—No. L273, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7384

6h.p. Sunbeam, 1915, Gloria sidecar, spare wheel, Lucas accessories, speedometer, only done 2,000 miles, as new; owner buying car; £98.—Kingsbury, Hampton, Middlesex. [6652

1916 3½h.p. Sunbeam, with the latest improvements, in stock; immediate delivery; exchanges entertained. Tel.: 388. Telegrams: Bicycles.—Robinson's Garage, Green St., Cambridge. [6665

LATE 1914 3½h.p. 3-speed Sunbeam, Lucas 462 lamp and horn, not done 1,500, original tyres untouched, guaranteed perfect as new; nearest £52.—Box 9,786, *The Motor Cycle* Offices, Coventry. (D) [X6910

1914 3½h.p. Sunbeam and Millford sidecar, with several spares, Stewart speedometer, Lucas horn and mirror; can be seen 57, Holborn Viaduct; £60.—Box L285, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7635

SUNBEAM, 2¾h.p., 1914, 2-speed, kick starter, hand clutch, Stelastic back tyre, spare chains, Miller front lamp, rear lamp, spare tube, spare valve complete, in excellent condition; price 40 gns.—P., 26, Stubbington Av., Portsmouth. [7378

FAMOUS 1915 6h.p. Sunbeam Combination, hardly soiled, fitted with spare wheel and tyre complete (which has never been used), Lucas electric lighting set and horn, sidecar, with hood, screen, folding luggage grid, this outfit is like new, has never been punctured; £115, less electric outfit £105, bargain.—Edwards, Bridge House, Kington, Herefordshire. [X7020

Torpedo.

TORPEDO-PRECISION, 2½h.p., 2-speed; £17.—Seen at 248, Bishopsgate, London. [7540

Triumph.

TRIUMPH, 4h.p., 3-speed, free engine, new last year, little used.—Vicarage, Shap, Westmorland. [X6920

3½h.p. Triumph, 3-speed, good condition; £25; part useful exchange.—67a, Dickson Rd., Blackpool. [X6432

TRIUMPH, 1911¾, new cylinder, adjustable tappets, perfect condition; £22.—Lodge, Ashleigh, Lincoln. [X6869

1915 Baby Triumph, with all accessories; £38.—Colmore Depot, 31, Colmore Row, Birmingham. [X6842

1915 Triumph Junior, little used, and in lovely condition; £36.—Crow Bros., 190, High St., Guildford. [6879

TRIUMPH, 1914, 4h.p., single, P.H. lamps, just like new, done 1,000; £43.—Smith, Joiner, Howden, Yorks. [7464

TRIUMPH, late 1912 T.T. model, Lucas lamp and horn, excellent condition; £24/10.—The Walsall Garage, Walsall. [7633

TRIUMPH, 1914, 4h.p., 3-speed, Bramble sidecar, perfect condition; £44.—Stag Motor Works, East Finchley, London, N. [7507

TRIUMPH, 1914 (late), original tyres, 3-speed, with accessories, almost new condition; bargain, £39.—64, Mill Lane, Brixton Hill. [X7090

1912 3½h.p. Triumph, free engine model, with lamp and horn, new Dunlop tyre and belt, fine machine; £24.—The Garage, Whitland, S. Wales. [X6150

1913 3-speed T.T. Roadster Triumph, lamp, horn, 50/- suit overalls, perfect; £36, nearest.—Box 9,788, *The Motor Cycle* Offices, Coventry. (D) [X6912

3½h.p. Triumph, 1910, Bosch, lamp, horn, 2 spare tyres, sidecar less frame clip; lot £16; stamp ensures reply.—80, Bispham Rd., Southport. [X7073

TRIUMPH, 1914, 4h.p., and Sydenham sidecar, 3-speed, Lucas lamp and horn, speedometer; £50.—Nesma, 7, Exhibition Rd., South Kensington. [7371

1913 3½h.p. 3-speed Triumph, with Canoelet coachbuilt sidecar; £50, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0734

1914 Triumph, 3-speed, clutch, with Montgomery coachbuilt sidecar, splendid condition; 55 gns., no offers.—Cassels, Clarewood, Fortescue Rd., Paignton. [X6735

1914 Triumph, 4h.p., F.E., 3-speed, clutch, and sidecar, speedometer, horn, lamps, and spares, all in perfect condition; £50.—91, Christchurch Rd., Reading. [X6439

MOTOR CYCLES FOR SALE.

Triumph.

1910 Model 3½h.p. Triumph, free engine, T.T. bars, tyres as new, all accessories, perfect condition; price £22/10, offers.—Ronald Morries, 54-55, Piccadilly. [7379

1914½ Triumph, 3 speeds, Canoelet sidecar, in first-class condition, done only 3,500 miles; expert examination invited; 50 gns.—94, Midland Rd., Wellingborough. [X6924

1910 Triumph, 3½h.p., free engine, 1914 watertight mag., perfect running order, accessories; £17; exchange considered.—Ellis, 231, High St., Shoreditch, London. Wall 4872. [7426

1913 3-speed Triumph, with brand new 17 gn. Gloria sidecar, luggage rail, all accessories, perfect; £50, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0720

TRIUMPH Combination, 1912-13, 3½h.p., 2-speed, clutch model, torpedo sidecar, exceptionally reliable, extra heavy Dunlops; only £38.—Norfolk Villa, Joseph's Rd., Guildford. [7463

TRIUMPH, 1914, 3-speed, Lucas accessories, and Swan sidecar, like new; 60 gns.; deferred payments if desired.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7399

1914 4h.p. Triumph, 3-speed, Gloria sidecar, recently fitted with extra heavy Dunlop tyres, Dunlop belt, new lamps, overhauled recently, splendid condition; £55, nearest.—Reed, Marnhull, Dorset. [X6928

TRIUMPH, 1910, 2-speed, splendid condition, adjustable tappet, tyres nearly new, Whittle belt and Dunlop, sidecar new last season, luggage grid, lamps; reasonable offer accepted.—151, Broomfield Rd., Coventry. [X7098

TRIUMPH, 1914, 4h.p., 3-speed, with Torpedo sidecar, lamp, horn, speedometer, etc., exceptionally fine outfit, had fine weather use only; price £55, or for quick sale very near offer.—Tollady, Hemingford, Bicester, Oxon. [X6987

1914½ Triumph, 4h.p., 3 speeds, and sidecar, complete with speedometer, lamps, horn, tools, etc., only done 1,700 miles; owner proceeding on active service; £50, or nearest offer.—Can be seen at King's Garage, East Grinstead, Sussex. [7424

TRIUMPH, 1914¾, 3-speed, clutch, special engine, just been thoroughly overhauled and renovated by makers, new Dunlop and Hutchinson tyres, lighting set, horn, spare valves, etc.; £42/10, no offers.—Hodgskin, Letchmore Heath, Watford. [X6974

JULY (1915) Triumph Junior, electric lighting, Stewart speedometer, horn, spring saddle-pillar, unused Rich tube, etc., only ridden 1,100 miles, condition perfect; cost £49, accept £38; owner going abroad this month.—M., 21, Marlborough Place, N.W. [7458

TRIUMPH, 1913, 3-speed, magnificent £17 1915 Gloria coachbuilt sidecar, absolutely as new and unscratched, luggage grid, tyres in splendid condition, speedometer, head and tail lamps, horn, etc., whole outfit in magnificent condition and one of the smartest and most luxurious on the road; cost over £83, accept for quick sale 42 gns.—Julian, Broad St., Reading. 'Phone: 1024. [X3143

Velocette.

1915 2-speed Veloce; £26.—Colmore Depot, 31, Colmore Row, Birmingham. [X6843

VELOCETTE, 2-stroke, 2-speed, 1914, good condition, with lamp, etc.; £25.—Andrews, Fair View, Nailsworth, Glos. [X6741

1914 2-speed Veloce, in splendid condition, with full range of accessories; £22.—Colmore Depot, 31, Colmore Row, Birmingham. [X6844

Williamson.

WILLIAMSON, 1914, 8-10h.p., 2-speed, kick start, water-cooled, 2-seater sidecar, as new; £75.—Nesma, 7, Exhibition Rd., South Kensington. [7372

WILLIAMSON, late 1913, 8h.p., 2-speed, with 1914 Williamson coachbuilt sidecar, complete with hood, wind screen, lamps, and horn; £52 cash; extended terms, exchanges.—Ideal Cycle Co., Thundersley, Essex. [7494

Wolf.

WOLF, 2-stroke, nearly new; must sell; £17/17.—Coward, Bootmaker, Beckenham, Kent. [X6738

1914 Wolf, 4h.p. J.A.P. engine, 3 speeds, kick starter, and well sprung coachbuilt sidecar, good condition; £28.—4, Talbot St., Burnley. [X7038

WOLF, 2¾h.p., 1916 model, just delivered, 2-speed, 2-stroke, kick-starter, hand-controlled clutch; £36/19/6; exchanges or deferred payments.—Eagles and Co., High St., Acton, W. [X6996

FOR Sale, 4h.p. Wolf sidecar combination, J.A.P. engine, 2-speed, 1915 model, perfect condition; will exchange for motor, chassis or motor car, suitable for delivering goods.—Apply by letter only, 3, Oaks Crescent, Wolverhampton. [7602

Yale.

YALE, 8h.p., never ridden; cost £72; enlisted; £56.—736, Holloway Rd., London. [7283

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WANTED, £17 for Zenith and sidecar, good running order.—Brignall, Westgate, Rillington. [7367

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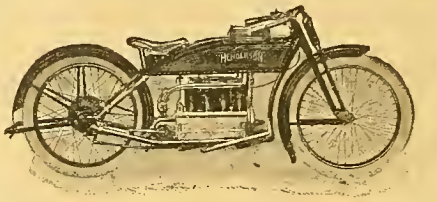

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ZENITH Combinations, three in stock; a 1913, 1914, and 1915; £35, £50, £65; all in good order.—Percy and Co., 337, Euston Rd., London. [7524

ZENITH 1914 3½h.p. Twin, T.T., special model, turned out for competition work, excellent condition, and very fast; £37/10.—Longman, 1, King St., Acton. [7519

ZENITH, 1914, 3½h.p., twin, excellent condition, tyres and equipment, with 15 gn. coachbuilt Canoelet sidecar; sacrifice £42/10.—Longman Bros., King St., Acton, W. [7518

ZENITH, 1913-14, 6h.p., clutch model, all accessories, 20 gn. sidecar, hood and screen, excellent condition; any trial; £55.—Edward, 22, Heathfield South, Twickenham. [7543

ZENITH, 1914¾, 8h.p., 90 bore engine, clutch, and kick starter, excellent condition, very fast; too powerful for owner; exchange lower power and cash adjustment, or sell £50.—C. Pritchett, 141, Merton Rd., Wimbledon. [7500

STANDARD Model 1913-14 8h.p. Zenith-Gradua Coachbuilt Combination, spares and accessories value £15; the lot, worth at least £50, to be sold for nearest offer £40; part exchange considered; trial week-end.—136, Dalmally Rd., E. Croydon. [7545

ZENITH-GRADUA, latest 1916 models, just received, 4-5h.p. twin, countershaft gear, clutch, and kick-starter; model D 64 gns., 6h.p. model F 73 gns., 8h.p. model H 74 gns., plus 5% increase; exchanges or extended terms arranged.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0492

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Ladies' Machines.

HOBART, 2½h.p., 1912, 3-speed, Whittle belt, excellent tyres, just overhauled; £20, or offer.—Greystones, Oakwood, Hexham. [6980

Miscellaneous.

EAGLES.—Douglas, 1914, T.T. model V, 2 speeds, excellent condition, with accessories; £36/10.

EAGLES.—New Hudson, 4h.p., 1913 model, with 3-speed gear, kick-starter, with accessories; £32/10.

EAGLES.—N.S.U., 3½h.p., model de luxe, 1913, spring frame, 2-speed gear, free engine; £27/10.

EAGLES.—Calthorpe, 1915, 2¼h.p., 2-stroke model, 2-speed gear, variable mag. control, only used 250 miles, as new; £28/10.

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EAGLES.—Douglas, 2¾h.p., late 1914, model U, 2 speeds, new condition, with accessories; £40.

EAGLES.—Any of the above can be had on approval, *The Motor Cycle* deposit system.—Eagles and Co., High St., Acton, W. Tel.: 556 Chiswick. [X6997

IF You Want Bargains in second-hand motor cycles you can get them at Wauchope's, 9, Shoe Lane, Fleet St., London. [5624

1913 Scott, perfect condition, £34; 1914 Rover, with sidecar, £48.—London and Thames Motor Co., Kingston-on-Thames. [6712

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LONGMAN Bros., King St., Acton, have some exceptional bargains: Two 1914 twin 3½h.p. Zeniths, T.T., £37/10; Standard and coachbuilt Canoelet sidecar £42/10; Calthorpe-J.A.P., 1915, 25 gns.; and numerous others. [7521

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SPEECHLEY'S Great Bargains.—Clyno coachbuilt combination, 6h.p., countershaft gears, kick start, £28; Rudge Multi, £25; Douglas 2-speed, foot clutch, £23; Ariel, £22/10; Moto-Reve twin lightweight, £8/10; N.S.U. and sidecar, 2 speeds, F.E., £14/10.—Write for particulars, Speechley's, 45, Church Rd., Acton, London. [7616

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Miscellaneous.

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WANDSWORTH.—Abingdon-King-Dick, 1915, 3½ h.p., mag. (new), mostly soiled; 28 gns.; exchanges.

WANDSWORTH.—Sun, 1915, 2-stroke, mag., hardly been used, as new; £26/10; exchanges.

WANDSWORTH.—James, 1915, 2-stroke, mag., 2 speeds, F.E., Cowey; opportunity, £35/10; exchanges.

WANDSWORTH.—Premier 1915 coach combination, 7-9h.p., 3 speeds, first-class; £65; exchanges.

WANDSWORTH.—American Excelsior 1915 coach combination, 7-9h.p., 3 speeds; only £59/10; exchanges.

WANDSWORTH.—Hobart (brand new), 2½h.p., 2-stroke, just delivered from works; £28/10; exchanges.

WANDSWORTH.—Ivy, 1915, 2½h.p., 2-stroke, mag., nice little machine; £23/10; exchanges.

WANDSWORTH.—Premier, 1915, 3½-4h.p., mag., 3 speeds, kick, magnificent machine; £45; exchanges.

WANDSWORTH.—Rudge, 1915, clutch model, 3 speeds, new, mostly soiled; offers; exchanges.

WANDSWORTH.—B.S.A., 1916, model K, just delivered, 3 speeds, countershaft; £62; exchanges.

WANDSWORTH.—American Excelsior 1914-15 coach combination, 7-9h.p., mag., 2 speeds; 49 gns.; exchanges.

WANDSWORTH.—Williamson 1914 coach combination, 8h.p., water cooled, 2 speeds, Cowey; £58/10; exchanges.

WANDSWORTH.—Premier 1914-15 coach combination, 7-9h.p., mag., 2 speeds countershaft; £59/10; exchanges.

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WANDSWORTH.—Bradbury coach combination, 4 h.p., mag., 2 speeds, splendid order; £32/10; exchanges.

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WANDSWORTH.—Easy Terms.—Wandsworth Motor Exchange, Ebner St., Wandsworth Town Station. 'Phone: Battersea 327. [X7082

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F. MEDCALF and Co., Colchester. 'Phone: 171.—We have for disposal the following motor cycles: 6h.p. 1913 Rex-Jap twin and sidecar, £30; 3½h.p. 1914 Rudge, T.T. model, £30; 2¾h.p. 1915 Douglas, 3-speed, £40; 1914 Triumph, 2-speed, 2-stroke, £30; 4h.p. 1915 B.S.A., 3-speed, chain-cum-belt, £48; 3½h.p. 1913 B.S.A., 2-speed, £30; 2½h.p. 1914 Levis, 2-speed, 2-stroke, good condition, £27; 3½h.p. 1914 Sunbeam, 3-speed, as new, £57; 2¾h.p. 1914 Douglas, 2-speed, £38; 3½h.p. 1914 Premier, with 2-speed countershaft gear, £28; Douglas magneto, £4; 80 soiled motor cycle belts, all sizes, from 3/6 each; Douglas frame, £1; B. and B. carburetter, 23/-; one Bosch magneto, £3; coachbuilt sidecar, £4; several speedometers, second-hand, little used, from 35/- each. We will exchange any of the above motor cycles, etc., for the following, with cash adjustments: Good make 2-stroke engine, motor cycle rims, motor cycle mudguards, head lamp sets, cycle or motor cycle lamps, stands, or footrests, car foot pumps, jacks, tail lamps, tyres, Ford parts. [6380

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A GOOD Second-hand Sidecar, in perfect condition; £4/4.—Seen, 223, High Rd., Kilburn. [7554

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BASTONE'S. Mill-Fulford second-hand sidecar, complete; £3/5. 228, Pentonville Rd., King's Cross, London, N. [7575

HERCULES Wicker Torpedo Sidecar, new condition; £3/10.—43, Kilmorie Rd., Forest Hill. [7433

TORPEDO Sidecar for 3½h.p. machine, not done 200 miles; £5.—Butcher, 60, London Wall, E.C. [7429

£14/14 Coach Sidecar, scarcely used, hood, screen, etc.; £7/10, lowest.—10, Norwood Crescent, Southport. [X7074

HARLEY-DAVIDSON Canoelet and Gloria Sidecars in stock.—The Premier Motor Co., Aston Rd., Birmingham. [7584

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SIDECARS.—Several bullet-shaped coachbuilt bodies, with or without chassis, cheap.—Write, Stokes and Holt, Ltd., Belgrave Rd., Leicester. [0718

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THE Juno. £10/10, 19/3 month; Watsonian featherweight, E, £6/13/6, 12/3 month; L, lined, £6/18, 12/8 month; G, £9/19/6, 18/4 month; H, £10/10, 19/3 month; Watsonian cabriolet, £12/12, 22/9 month.—Seen at 248, Bishopsgate, London. [7541

PHŒNIX Sidecars, highest grade; immediate delivery. Send for our 1916 catalogue. Special models for Harley-Davidson, Indian, Yale, and other American motors. Large stock of second-hand sidecars. Special weekly list published. Sidecars on hire. Exchanges made.—Phœnix Motors, Ltd. (Motor Cycle Depot), 736, Holloway Rd., N. Tel.: Hornsey 449. [0135

HARLEY-DAVIDSON Riders.—Buy the sidecar recommended by the Harley-Davidson Motor Co.; don't spoil a good machine by fitting a badly designed sidecar; we can give you immediate delivery of the Harley-Davidson Canoelet sidecar, chassis and body enamelled H.-D. grey, 28×3in. Dunlop R.S. tyre, spring back and cushion, etc., price 17 gns.; and also special H.-D. Gloria sidecars, from £20 to £27; lists free. Trade supplied.—The Premier Motor Co., Aston Rd., Birmingham. [7585

BODIES.

BASTONE'S for Bodies.—New cigar pattern, wicker and rush; 45/- each.

BASTONE'S.—New lightweight coachbuilt bodies; splendid value, £3/5

BASTONE'S.—Special offer; new best quality coachbuilt bodies; £3/15, worth double.

BASTONE'S.—Williamson second-hand coachbuilt body; 40/-.—228, Pentonville Rd., King's Cross, London, N. [7576

CAMBER Coach Bodies, £3/10; lists free.—Bright and Hayles, Church St., Camberwell. [7488

SECOND-HAND Coach Body; 25/-.—Bright and Hayles, 73, Church St., Camberwell. [7491

CAMBER Coach Tandem Models, £4/12 6.—Bright and Hayles, 73, Church St., Camberwell. [7489

CAMBER Lightweight Models, under 20 lb.; £3/5.—Bright and Hayles, 73, Church St., Camberwell. [7490

CLEARANCE of Torpedo Coachbuilt Bodies from £1/10 to £4; list free.—The Premier Motor Co., Aston Rd., Birmingham. [7586

COACH Bodies, semi-underslung, 25/-; repairs, repainting, exchanges.—Venue Sidecar Co., 746, Seven Sisters Rd., Tottenham. [7106

CYCLE CARS.

1911 Phœnix 2-seater, dual ignition, silent drive, nice condition; £65.—10, Norwood Crescent, Southport. [X7078

A.C. Sociable, with hood, screen, lamps, tools, and spares, good running condition; £40.—408, Moseley Rd., Birmingham. [X6155

CYCLE CARS.

G.N. Type Cycle Car, 8-10h.p., 3 speeds, spare tyres and tube, thorough good going order; price £45.—Clifford, 46, Eldon Rd., Wood Green. [7395

MORGAN Grey Sporting Model, ready for immediate delivery; £94/10; cash exchanges considered.—The Walsall Garage, Walsall. [7631

CHATER-LEA, 1913½, 8h.p., w.c., very complete equipment, cost over £160, excellent condition; £95, or offers; private owner.—Arthur May, Heybridge, Maldon, Essex. [7610

CHENARD-WALCKER Cycle Car, 8-10h.p., 2-cyl., smart 2-seat., worm drive, gate change, hood and screen, electric lamps; £55. — Percy and Co., 337, Euston Rd., London. [7532

COLIBRI 10-12h.p. 4-cyl. 2-seat. Sporting, hood, screen, lamps, lately overhauled, do 45 m.p.h. and 35 m.p.g.; £65, or nearest offer.—34, Killieser Av., Streatham Hill, S.W. [X7014

MORGAN, 1915, Grand Prix, disc wheel, 5 lamps, speedometer, hood and screen, perfect condition, £100; a brand new 1916 Grand Prix, £111.—Percy and Co., 337, Euston Rd., London. [7530

6h.p. Humberette Chassis, w.c. engine, same rebushed and bored, 3-speed and reverse, the lot overhauled and painted, all tyres and body for same; £10, or exchange for motor cycle engine.—Smith, Plumber, Wivenhoe, Essex. [7511

8h.p. J.A.P. Water-cooled Engine, back axle, with 2-speed gear and connections, set of wheels complete with Palmer tyres, pair of side frames, silencer, and radiator, ready for being assembled to make a cycle car, what offers?—The Royal Ruby Cycle Co., Manchester. [0705

SWIFT, 7-9h.p., De Luxe 2-3-seater, complete with hood, screen, Stepney, lamps, etc., dual ignition, excellent condition, good appearance, property of Government official; nearest offer to £55 received by Saturday midday (18th) will secure; car must be sold; wire your offer.—Layton's Garage, Bicester, Oxon. [X6990

NEARLY Finished Cycle Car, new 8h.p. J.A.P. engine, Splitdorf mag., Zenith carburetter, 2-seater side entrance body, finished grey, petrol tank in scuttle, wind screen, 700×80 Dunlops, F.R.S. lamps, and large generator, also 3-speed and reverse Chater-Lea gear box, ready for assembling; £60, or offer; private.—Heath Bros, Garage, Park Rd., Aston, Birmingham. [7361

BARGAINS.—Must clear following 2-seaters: 10h.p. Adams, 1910, £40; 8-10h.p. Jackson sporting, m.o.i.v., Bosch, £45; 9h.p. Riley Baby cycle car, 5 detachable wheels, mag., £50; 12h.p. Sizaire sporting, bulbous back, 1911, £65; 14-16h.p. Hurtu, 4-cyl., Zenith, mag., 4 speeds, splendid condition, £65; 15.9h.p. S.C.A.R., 1912, sporting, £185. Several 4-seaters, landaulets, chassis, etc. List.—Please call, Liquidator, 10c, Waylett Place, West Norwood. [X7085

CARS FOR SALE.

ROVER, 8h.p., smart 2-seater, dickey, hood, screen, etc., condition as new; £45.—A.G.M., 363, Hackney Rd., N.E. [7591

G.W.K. Light Car, 1916, latest model, just arrived from works; immediate delivery; £178/10.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7389

1915 Saxon, scarcely used, £120; Chater-Lea, £90; 1913 Cronch, Morgan 1915, slightly soiled, £110. Motor cycles accepted in part exchange.—Lamb's, 151, High St., Walthamstow. [7406

CALCOTT, 10.5h.p., 1916, latest model, the leading light car, dynamo lighting set, and dickey seat, just arrived from works; immediate delivery.—Wilkins, Simpson, and Co., 24, Sheet St., Windsor. [7388

HUMBERETTE, 1914, water-cooled, hood, screen, 2 head, side, and tail lamps, speedometer, horn, tools, etc., 700×80 tyres, in excellent condition throughout; £100.—Rex Mundy, 132, Great Portland St., W. [7618

EXTENDED PAYMENTS.

EXTENDED Payments.—All makes supplied; lowest terms.—Service Co., 292, High Holborn, London. [0618

WE Are Open to accept reasonable suggestions for motor cycles on deferred payments; strictest privacy observed.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7408

ELCE and Co. have a large selection of new and second-hand motor cycles and light cars which can be purchased on the most advantageous extended terms.—15-16, Bishopsgate Av., Camomile St., E.C. [0479

ENGINES.

2½h.p. Singer, excellent condition; 30/-.—Hunt, Brookhouse Hall, Caton, Lancaster. [X7029

4¼h.p. Precision Complete Unit, perfect; £12.—487, Coventry Rd., Small Heath, Birmingham. [X6428

1914 10h.p. Bloomfield Engine, water-cooled, £15; 3½h.p. J.A.P., £6.—Baines, 166, Belgrave Gate, Leicester. [X7068

4h.p. J.A.P. Engine, mechanical, gear wheels enclosed in case for mag. drive, silencer, good as new; approval; £5/10 lowest.—Curd, 17, Gardner St., Brighton [7480

IGNITION APPLIANCES.

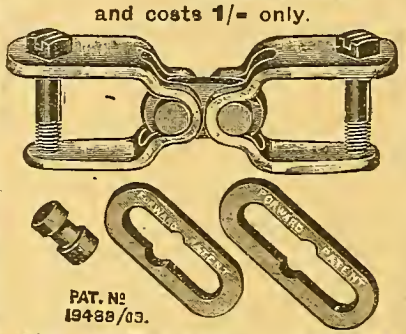
BASTONE'S for Magnetos.—Right prices.—228, Pentonville Rd. King's Cross, London, N. [7574

THIS LINK

Is designed specially for use with the world-famous

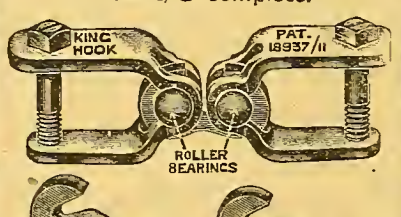
FORWARD ADJUSTABLE FASTENER

and costs **1/-** only.



The FORWARD ADJUSTABLE FASTENER

costs **1/6** complete.



KING HOOK. The original hook fastener with flanged roller bearings. Stronger than any other make obtainable.

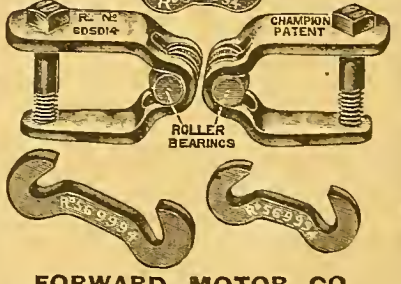
1/- detachable. 1/3 adjustable.

KING HOOK LEATHER LINK. 10d.

"CHAMPION"

The Popular Fastener.

9d. detachable. 1/- adjustable.



FORWARD MOTOR CO., SUMMER ROW, BIRMINGHAM.

IGNITION APPLIANCES.

PARKER and Rice, Magneto Specialists.—Experts on all magnetos, Bosch, Eisemann, etc.

PARKER and Rice.—Re-winding, re-magnetising, overhauling, etc.; repairs executed with expedition and unapproachable workmanship; low quotations.

IMPORTANT.—Parker and Rice give 12 months' written guarantee with each repair.

PARKER and Rice, John's Place, King St., Acton, London. 'Phone: Chiswick 1518.—State your trouble. Let us quote you. [4292

BOSCH Magneto, little used, suit big single; 55/-.—28, Idlecombe Rd., Tooting, S.W. [7564

BOSCH Anti-clock, 70/-; ditto clockwise, 70/-; Splitdorf Dixie, 65/-.—L281, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7568

MAGNETO, C.A.V., single, anti-clock, triple magnets, variable ignition, just overhauled by C.A.V., as new; 55/-, bargain.—Wilmot, 12, Hill Rd., Wimbledon. [X6946

"PRACTICAL Hints" on High Tension Magnetos; illustrated; copyright; 1/-, cloth 1/6 nett.—Loveland Bros., Magneto Designers, 97, Appach Rd., Brixton, London. [7475

MAGNETO Repairs and all spare parts.—The Runbaken Magneto Co., Ltd., Camp St. Works, Deansgate, Manchester. Tel.: 8266 City (3 lines). T.A.: Runmag, Manchester. [0715

SEND Your Magneto Repairs to the Runbaken Magneto Co., Ltd., Camp Street Works, Deansgate, Manchester. 'Phone: 8266 City (3 lines). T.A.: Runmag, Manchester.

REPAIRS.—The Runbaken Magneto Co., Ltd., have the largest and best equipped works in this country for dealing with this class of work. Moderate charges. Can return within 24 hours.

SPARES Department.—We can supply from stock all spare parts for Bosch, Eisemann, Mea, U.H., etc. Send for illustrated booklet.

THE Runbaken Magneto Co., Ltd., Camp Street Works, Deansgate, Manchester. 'Phone: 8266 City (3 lines). T.A.: Runmag, Manchester. Call or write. [0404

MAGNETO Repairs by Manufacturers; all repairs guaranteed; spare parts for any make; prompt delivery.—Kenyon and Torrance, 399, Gt. Western St., Rusholme, Manchester. 'Phone: 362 Rusholme. [6407

JEBRON, registered 291298, greatly superior to platinum, unequalled for blades, screws, etc.; cures misfiring; 2/6 each rivet; Jebron screws, fit Bosch magnetos, 5/6 pair; old screws Jebronised, 2/6 each.

JEBRON Contacts, used by Messrs. Collier Bros., Colver, Martin, making world's records.—Jebron, 38, Herbert Rd., Woolwich, London, S.E. [X4331

MAGNETOS, Repairs, Spares.—Repairs to all types at our own works by experts. Re-winding, re-magnetising, spare parts for any make. Prompt delivery guaranteed.—Brooklyn Engineering Co., 10, Bailey St., Pendleton, Manchester. [X7022

MAGNETO Repairs of every description by Bosch specialists. Expedition and moderate charges. Magnetos bought and sold. Several 1-2-cyl. magnetos in stock.—The Magneto Mart and Repairing Co., 142, Wardour St., W. 'Phone: Gerrard 727. [7415

MAGNETO Repairs of Every Description.—We are late from the Bosch Works, and entirely British, and give same guarantee at half their prices in 24 hours. All spare parts stocked.—The Magneto Repairing and Winding Co., 158, Seymour St., Euston, London. 'Phone: Museum 1158. [7623

BELTS.

BASTONE'S.—Best leather and chrome belting, ¾ 1/-, ⅞ 1/2, 1in. 1/4, 1⅛ 1/6 per foot.—228, Pentonville Rd., King's Cross, London, N. [7575

50 Dunlop Motor Cycle Belts, perfectly new, all sizes, ⅝in. at 1/3, ¾in. at 1/5, ⅞in. at 1/8, 1in. at 1/11, 1⅛in. at 2/4 per foot, carriage paid; Sphinx 3/- sparking plug given free with each belt.—Dancer Motor, 69, Gower St., Birmingham. [X7044

BALATA-CHROME Belts, highly satisfactory all weathers; ⅝in. 9d., ¾in. 10d., 1in. 1/-, 1¼in. 1/2 per foot, post free; extra strong belts for passenger work, with steel drilled eyelets and washers all through, 1in. 1/6, 1¼in. 1/9 per foot.—Pollin, Shepherdswell, Dover. [9494

TANKS.

TANKS Made, repaired, and enamelled.—Bright and Hayles, 73, Church St., Camberwell. [7492

TANKS, tanks, tanks, any shape, to order or repaired; all metal sidecar bodies; general sheet metal work; lists free.—Attwood's, 86, Rosebery Av., E.C. Tel.: Central 12445. [5136

TYRES.

REDUCED 1915 List Tyre, all makes.—T.A.: Tyres.—Graham, Vine St., Birmingham. [0658

26in.×2½in. Perfectly New Inner Tubes; 5/- each, carriage paid.—Dancer Motor, 69, Gower St., Birmingham. [X7045

7/6 Allowance Guaranteed for old tyre towards nearly all new motor cycle covers.—Particulars to Taylors', Tyre Stockists, Store St., London, W.C. [0626

 All letters relating to advertisements should quote the number at the end of each advertisement, and the date of the issue.

THE MOTOR CYCLE
ESTABLISHED IN 1903
AND FOR OVER SIX YEARS THE ONLY PAPER SOLELY DEVOTED TO THE PASTIME

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SOUTH AFRICA—Central News Agency, Ltd. PARIS—Smith's English Library, 248, Rue Rivoli.

Christmas, 1915.

ONCE more, but we sincerely hope for the last time, the usual Christmas greetings seem somewhat out of place. The time-honoured wish of a Merry Christmas is an empty one when addressed to those whose nearest and dearest are in places of danger, or to those who are mourning the loss of friends and relations. Still a cheerful spirit is to be at all times commended; our country has weathered many a storm, and will do so again, and through it all has been known as Merry England, as Sir Walter Scott bears witness in the following lines from "Marmion":

"England was Merry England, when
Old Christmas brought his sports again.
'Twas Christmas broached the mightiest ale,
'Twas Christmas told the merriest tale;
A Christmas gambol oft could cheer
The poor man's heart through half the year."

The Lighting Regulations.

JUDGING from what we hear of the new rules for regulating the power, *i.e.*, the light-giving properties, of motor cycle head lamps, we incline to the opinion that the authorities are only making confusion worse confounded. They seem to have assumed that all motor cycle head lamps are equal in size and power, and, therefore, all that is needed is a uniform method of cutting off the light in the prescribed districts. This assumption is, of course, entirely fallacious; head lamps differ almost, if not quite, as much as the motor cycles themselves, and a general rule for keeping down the speed by attaching a 56 lb. weight to the tail would be just about as sensible.

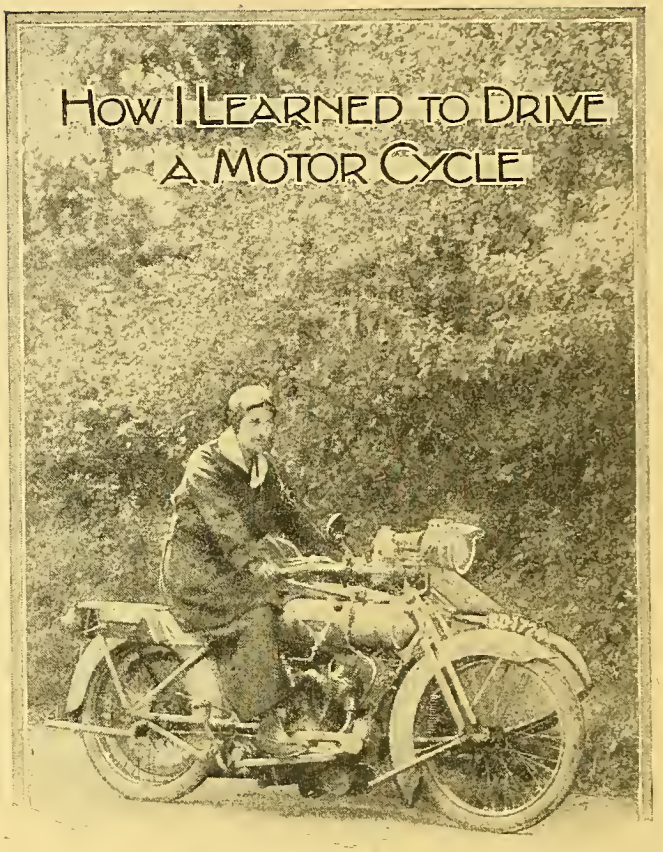
What is wanted is a uniform beam of light, not a uniform screen, and it should, in our opinion, be left to the rider to reduce his light in any way most convenient to himself, provided that the reduction be satisfactory. It would be a simple matter to submit his reduced light to the chief of police in any of the special districts and get from him a certificate that it was satisfactory. This certificate should pass him freely in anyone of the districts, provided that he could prove that his lamp had not been tampered with and the light increased. It is obviously absurd to produce a powerful light simply to hide it under a bushel as it were, and if the proposed obscuring disc, with its shilling-sized holes, is to become compulsory, none but a powerful light will be of any use at all. Several excellent suggestions for reducing the light and at the same time the expense—another desirable object in these days of enforced economy—have appeared recently in these pages, and those who have the framing of official regulations would do well to consider some of these before adopting drastic rules which are suitable only in some cases.

Another absurdity is shown in the treatment of what are called swivelling head lamps; these are really nothing of the sort: they are simply adjustable, and many of them cannot be moved without the help of a spanner. In the unlikely event of a motor cyclist wishing to signal to the enemy, he could take his lamp bodily from his machine—the work of a moment only—and hold it in his hand. The rule, therefore, is of no use, but is only an annoyance, for in the case of a foggy night it is a real advantage to be able to throw the beam more down on to the road instead of keeping the rays horizontal. Such regulations defeat their own ends by making it more difficult than it should be for loyal motor cyclists to comply with the law of the land.

While we are upon the subject of lights on vehicles, it may not be out of place to suggest to the police that some notice should be taken of that very real danger on country roads, the covered van or trap whose only light is a stable lantern throwing a white light all round and held in the left hand of the man who sits beside the driver. This only dazzles the eyes of the unfortunate behind, who, supposing that he is meeting another vehicle, keeps to the left, and, his own light being reduced, is lucky if he finds out his mistake in time to avoid an accident.

An Index to the advertisements in this issue will be found on the page facing the back cover

How I Learned to Drive a Motor Cycle



The author on a 6 h.p. Bat sidecar outfit.

I MUST first of all tell you that I have a husband, and, of course, he always lets me have what I want, but we nearly fell out over the new motor cycle and sidecar he bought. It is a lovely machine, all grey and silver, and he simply revelled in the mechanism, and only seemed really happy when he was "tuning it up" as he called it—whatever that wonderful process may be—anyway, he made himself fearfully greasy, but the result was worth it, for the speed was increased to 60 m.p.h., and my husband, Ted, assured me the petrol consumption was reduced as well, but whether that was to salve his conscience on the score of economy I don't know.

Now, I ask you, don't you think you would get tired of just riding in the sidecar? even though it is comfortable and cosy, and rides far better and more easily than the light car we had previously. So I coaxed and coaxed, and at last I was allowed to drive. I had often driven light cars, but had never been on a motor bicycle before, so you may imagine the delight with which I mounted the saddle for a trial trip. The road was open and clear, with very little traffic, and, as Ted pointed out, it had "soft sides," this being a warning that if I did anything wrong I should do less damage on a soft grass bank than by driving through a barbed wire or iron railing or into a brick wall. Horrid man! Just as if I should have done such a silly thing. Anyway, the engine was started and low gear engaged and away we went, Ted on the carrier telling me the uses of the different levers, while I endeavoured to keep the outfit on the road. A few hundred yards on low speed—and that must have been agony for any experienced driver—and I had gained sufficient confidence and understood how to use the levers well enough to change into second speed, which was kept in for another few hundred yards, and then I was permitted to change into "top." Then and not till then did I realise the delights of my mount. How my fingers itched to open out the throttle, but no! I must first learn to drive slowly and to keep the machine straight. Somehow or other the sides of the road would keep turning and twisting until the proper knack of steering was learnt; and then came the trial, I set my teeth, glared ahead with a fearful stare (I know I must have looked a fright), and with a great sigh realised the danger was passed. Don't be alarmed, it was not a Zeppelin bomb, or a mouse, or anything like that—no! but I had passed the first cart without hitting it.

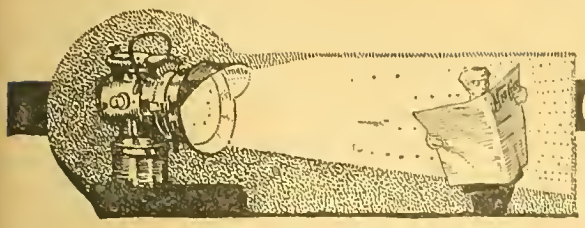
Ted said the strain of it was too great for him, and he must sit in the sidecar and smoke his old pipe, and for once I made no demur. Then I found he had played a nice little joke on me, for, of course, I had stopped so that he could mount the sidecar, and foolishly I had also stopped the engine. However, the "kick" starter would start the engine again, I was told, but when I tried it I could not move it; then the fact that the engine was in gear was forced upon me, so I learnt one other lesson. Then a few futile attempts, and Ted, complacently smoking, informed me the "air lever" was wide open and I was initiated into the mysteries of "tap twiddling," and sure enough, on the first push the engine started. Of course, it was just like Ted to sit there and look on all the time, but, any way, I know how to work it properly now, and learnt in that way quicker than in any other.

Confidence at Last.

Up into the saddle again and off we went; in my enthusiasm while changing gear I nearly went into the hedge, but "once bit twice shy," that one scare was enough; now I never look at the gear lever when changing speeds. However, top gear was safely engaged and away we went in real earnest, not too fast, of course, but the magic of the machine was now in my blood, and I could hear the call of the road in my ears. The least touch to the throttle and the big "Bat" responded just like a horse, and we were speeding away westward to the counties of gladsome sunshine and luxurious greens. The steady beat of the engine sang a song of freedom and careless power to me—away, away, away, and on we went, uphill, down hill, speeding along on the level, somehow it all came to me at once, that here was the real thing. It seemed to have a vital force beneath me, no mere mass of machinery, but a living thing, pulsing, vibrant, and full of life.

Later on, when we pulled up for lunch, Ted said in his usual slow way, "not so bad," but with sparkling eyes and cheeks aglow, I answered, "It's grand! It's the real thing, why didn't we sell the car years before and have a motor cycle? You will buy me one all of my own, won't you?" Do you think he will?

LADY BEATRICE.



Occasional Comments

By Ixion

Thick Mud.

I have been doing some lanework in the recent wet weather, and I wonder what advice some unfortunate county surveyor, or other daily mudplugger, would give me on the subject, for I had a most miserable time. I can hold my own with most men when the main roads are slippery or heavy, but the six inches of coagulated sludge in these twisty lanes absolutely beat me. I tried taking them slowly, and before long my machine would slide into a rut perhaps 6in. deep and nothing would get it out; one either stopped and made a fresh start on the crown of the road or tried to steer straight until the footrests began to catch on the sides of the rut. Then I tried charging the abominable surfaces at 25-30 m.p.h., which has always been my pet recipe for stones and other brands of unusually formidable going; but whether I am getting old and nervous or whether my wrists have lost their cunning, I found it impossible to hold the steering straight, and, after a heart-chilling series of leaps and bounds and bumps and skids, I usually settled down to a slower pace before I had covered more than 200 or 300 yards at the faster pace. My machine was certainly too big and heavy for the job; I must try a baby two-stroke over the same route when another opportunity occurs and see if it is more manageable.

Dry Battery Lighting for Two-strokes.

I have made further researches into the question of dry battery lighting outfits for baby two-strokes, and have at last pitched upon a set which strikes me as about the lightest and cheapest likely to give satisfaction. In construction the set is hardly too heavy for a push bicycle, as it scales but 8 lb. 9 oz. all told, of which 6 lb. 14 oz. constitutes the weight of the two batteries, including their metal cases. The cost of the various items is as follows: Head lamp, complete with switch, wiring, and bulb, 13s. 6d.; head lamp battery, 8s. 2d.; metal carrying case for same (hooks on to side tube of carrier, with patent clip to lock to carrier strut), 6s. 6d.; metal fitment, containing red rear lamp, small dry battery, and switch, clipping to chain stays, 7s. 6d.; spare bulb (fits either lamp) in wooden case, 11d.; total, £1 18s. 7d. The light given by the outfit is all one could require for pottering at medium pace on a light machine, and the strength of the various items appears adequate. The switch of the tail lamp is ingeniously concealed from meddlesome urchins, as it is operated by twisting the bulb holder. I will report later on the life of the batteries, but judging from my friends' experiences, I cannot expect more than about twenty hours' lighting, the cost of which is 10s. 8d. (8s. 2d. for head lamp battery, and 2s. 6d. for tail lamp battery). This is expensive on prolonged rides, but its cleanliness and convenience for intermittent short work are obvious, and carbide is the reverse of cheap when lamps are employed for brief spins. Some riders inform me that I shall get astonishingly long life from the big head lamp battery, but I reserve judgment, as a friend used up a similar set in a winter "48" hours trial: the makers only promise twenty hours from the small tail lamp cells.

The Editor and Staff of "The Motor Cycle" wish all readers at home and abroad A HAPPY CHRISTMAS. May a speedy victory crown our arms!

The Next A.C.U. Trial.

I know this cross-heading alludes to events which may be far distant, but it is dictated by an interesting suggestion. An inveterate speed merchant remarked to me last week that there are only three motor bicycles in the world. On being challenged he admitted that "any old 'bus" would serve the turn of an owner who is content to potter along at 25 m.p.h. average speed. The speaker habitually averages 30-35 m.p.h. on his long trips and does his 20,000 miles every year. On these terms the ordinary machine soon crumples up. It sheds

Occasional Comments.—

its pretty fittings, wears out its engine and gear box bearings, and, possibly, even suffers from serious structural fractures. "I take no notice of six days trials!" he remarked haughtily. "Any machine can get through them if it is lucky with its tyres." There is a modicum of truth in his remarks. The motor cycle butcher is the man who tests quality down to rock bottom, and learns to sift the wheat from the chaff—a function which A.C.U. Trials have lately ceased to fulfil. But reliability trials on the public roads have already been stiffened up to the last notch. The police will not allow us to pile on the average speed. The trade will not allow us to prolong the distance or the time. Nature forbids us to accentuate the hill tests, and, if we could unearth worse hills than we have yet employed, a general lowering of gear ratios would promptly cancel our efforts. We are in a dilemma. Shall we continue after the war is over to organise trials which notoriously fail to differentiate between first-class and second-class machines, which perhaps even misrepresent facts so badly as to place third-rate crocks on an apparent level with the best machines in the world? Or shall we hold our next big trial on Brooklands at a vastly increased speed schedule and relieve the monotony, from the driver's standpoint, by employing relays of riders? I returned home from the two last A.C.U. Trials in profound disappointment. Freak hills and the fortuitous incidence of tyre troubles under a close time schedule had doubled or trebled the element of luck, whilst the tests provided were so unexacting that merit had a comparatively poor opportunity of distinguishing itself.

The Cost of Combination Covers.

A recent paragraph of mine might be taken to mean that combination covers were normally more expensive than steel-studded types. Needless to say, this implication is unjustified. "All-rubber" treads, whether plain, scolloped, or studded, are cheaper to produce than compound treads, embodying leather or metal; but the combination cover is, if anything, a shade cheaper, as a rule, than a full steel-studded tread. When I alluded to the cost of combination treads as perhaps exercising some deterrent effect on the huge popularity to which their intrinsic merits certainly entitle them, I was specially thinking of motor cycles and light cars, both of which can be regarded as fairly safe on most kinds of grease when "all-rubber" treads are employed. On the other hand, heavier cars are generally thought to need greater insurance against skids than any all-rubber tread affords; in this case, the question of cost hardly applies, as the combination tread is as cheap as, or cheaper than, the full steel-studded tread, and is an efficient non-skid on ice or greasy macadam or asphalt, where the full steel-studded cover is not particularly satisfactory.

Chaos in Back Wheel Accessibility.

If you buy a modern motor cycle, you can absolutely rely on getting a good engine, a reliable magneto, and a tolerable carburetter. The only gamble is whether it will take seconds or hours to take out the back wheel. Odd, isn't it? When one maker gets his teeth deep into a sound idea, the others usually copy his lead like sheep; but there is some sort of Hague Convention about back wheels, exempting them from plagiarism. Two or three firms adopt knock-out spindles, or miraculous axles which spit the back wheel into the road if a novice ejaculates "Sesame!" leaving the brakes and chain cases adhering to the rear frame. *Per contra*, the next machine you buy is obviously modelled on those wire puzzles which are found in the best brand of Christmas cracker—you know the sort of thing: an anchor, two bracelets, three keys, four corkscrews, and several miles of Hun barbed entanglements, which dissolve mysteriously if you give them the proper sort of shake, but keep grandfather quiet in his corner chair till the New Year. For this sort of machine you want the temper of an archangel, the leisure of twenty years' penal servitude, a tin opener, a crowbar, and sixty assorted wrenches should you desire to remove the back wheel and fit a new cover. I speak feelingly; let me add that it was raining; the thermometer about zero; no railway arch or tavern within parasangs; and She was waiting on the gate eight miles away!

What a Spring Frame can do!

There is little doing in the motor cycle world at present, apart from catering for the Army's needs, but such glimpses as one can obtain of the hopes designers are cherishing for post-war activities suggest that the spring frame must boom soon after the Peace of Potsdam. I wonder if the rider who glibly murmurs that "we want better springing" realises what a good spring frame can do. To quote an actual example, I took a trial some weeks ago of a certain machine which was efficiently sprung fore and aft without any sacrifice of lateral stability. Its front wheel could rise 4in. from the datum line of the road without jerking the rider or saddle a millimetre upwards, and the back wheel could jump no less than 5½in. upwards whilst leaving the rider's level unaffected. On such a mount a level crossing can be taken at speed without its presence being felt at all. The machine can be ridden at 30 m.p.h. over really bad pot-holes without the wheels ever leaving the road at all. It can be bucked at right angles over a row of planks measuring 3in. × 3in. square without the least risk of losing steering control and without the rider quitting the saddle or his feet being thrown off the rests, though the extremely vertical and angular nature of such artificial obstacles renders their presence under the wheels perceptible. Trials men will recall the horrible character of the road from Applecross to Tornapress in the Highlands. In the last Scottish Trials many a man dismounted for two or three rests in the *descents* of the two long hills on this pass simply to seek a moment's ease from the agony of aching wrists and jarred teeth and jawbones; another man bit the mouthpiece of his pipe clean through over one of the bumps. The ascent of these twin hills of loathsome memory would not feel as smooth as newly rolled asphalt with the spring frame in question; but if it were ridden up those rugged roads and naked rock reefs, the rider would not wish to dismount for a rest, and his body movements during the ascent would remind one rather of skipping on a spring mattress than of being rolled down stone steps in a barrel. The spring frame has got to come; and the designer who ignores its possibilities will get left when peace returns.

The Elopement of Araminta.

By ANGELINA SIMPKINS (Author of "Lilacs and Love," "Burning Kisses," "A True Hero," etc.)

IT was a dark and stormy night. Overhead the chill moon was casting down its yellow rays. Far away in the dim west a purple cloud heralded the coming dawn.

In the bushes by the roadside a branch snapped. Lady Araminta MacHaggis, only daughter of the proud Earl of Ettrick, stepped out into the moonlight. Clad daintily in a chiffon veil, a purple parasol to match the sunrise, and a pair of high-heeled shoes, she might have sat for a cubist painting. Her golden hair and blue eyes gleamed brilliantly, and

"And a fledgling sparrow fell from its nest."

"The parson is waiting at Aberdeen."

a fledgling sparrow fell from its nest.

The horn of a motor cycle sounded far down the road. With a roar and a whirr of dancing wheels a vast two-stroke racing motor bicycle sprang along the road like a giant untamed, and stopped dead as the rider applied the brakes. Roland St. Clair leapt from the saddle and sped to meet the waiting maiden. He took no notice of her unusual attire, but cried, "My darling! You are here o meet me! Does your father know you are gone?"

"No, Roland, all is well."

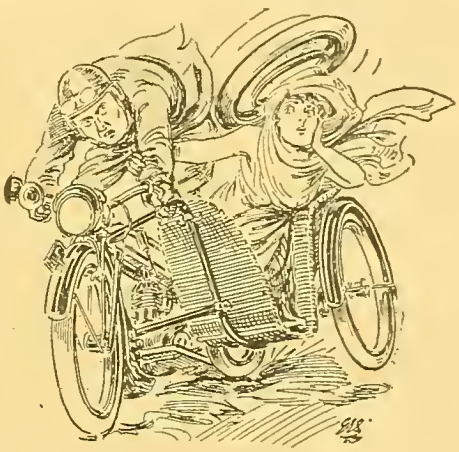
"The parson is waiting at Aberdeen, a hundred iles away. Come, my dar-ing, our mount is ready."

He caressed the engine of is beloved Minerva. It burnt is fingers, but he made no ign.

A trailer had been attached y the side, and into this raminta climbed. Roland ouched a lever, and the great wo-stroke sprang into life, its alves racing up and down as f they knew what a duty was heirs that day. He advanced he ignition of the magneto, nd they moved off down the oad, gathering speed. Soon e changed the gear and let out the clutch, and in a sudden dash the bicycle nearly went through the hedge. With a magnificent effort of driving Roland turned the corner (he had once taken the first prize at Brooklands), and they sped off down the broad high road at nearly sixty miles an hour. Lady Araminta looked back. "Oh, Roland!" she gasped, "there is father on his new twin Levis just behind!"

Roland looked back, and just missed the hedge. "You are right," he said, "but my old Minerva holds the world's record for speed, and we will beat him yet."

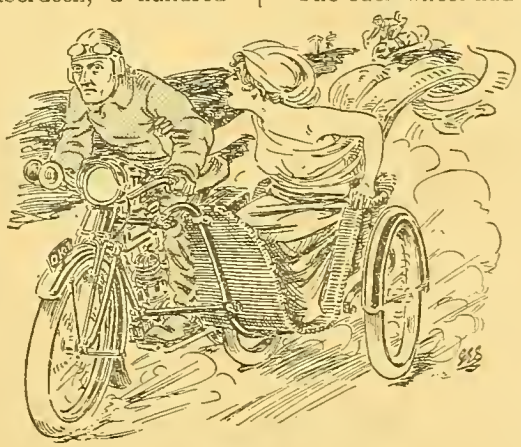
With set teeth he bent again to his task. He turned on more petrol, and did something to the accumu-



"Something was terribly wrong."

lator with a penknife. Slowly they drew ahead. At the end of half-an-hour the Levis was several miles behind, in spite of its two engines.

The path of love is never smooth. Roland suddenly felt a great bump below him, which he put down to the uneven road. In a few seconds, however, he realised that something was terribly wrong, and, glancing down, he saw his suspicion confirmed. The back wheel had fallen off, and was lying some distance down the road. He ran back and fetched it; but time had been wasted, and as they started off again the panting of the Levis could be heard drawing nearer in the distance. But scarcely had the lovers got up full speed again, when, in turning a sharp hairpin corner, the indiarubber belt broke in two.



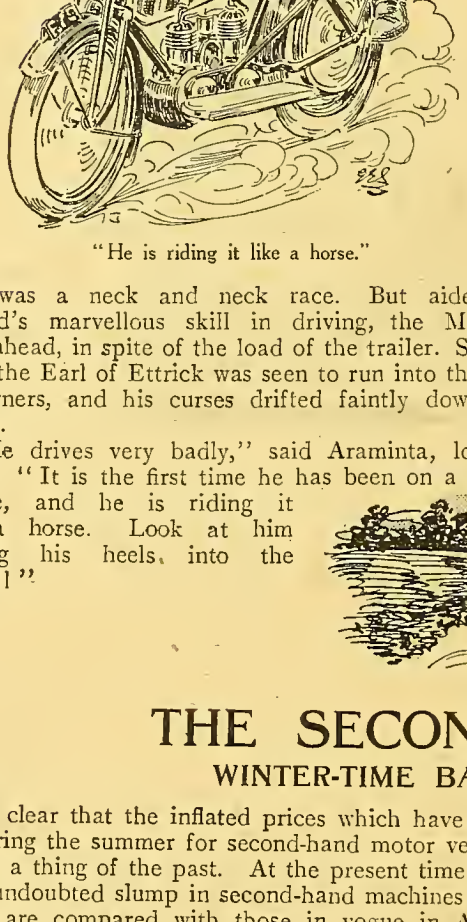
"There is father just behind!"

Roland did not waste a moment. He seized the chiffon veil and tied it tightly round the wheels. "I would rather be drawn by a veil of yours, darling," he panted, "than the best John Bull deep drive that was ever made."

The Elopement of Araminta.—

The Levis was now only a few yards away, and they could hear the Earl of Ettrick bawling loudly that he would have the law on them. "How I wish it would break down!" sighed Lady Araminta.

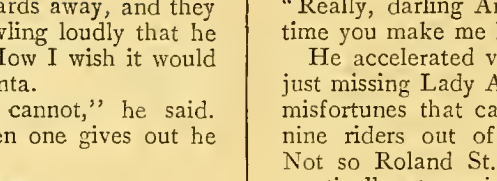
Roland shook his head. "It cannot," he said. "There are two engines, and when one gives out he can use the other."



"He is riding it like a horse."

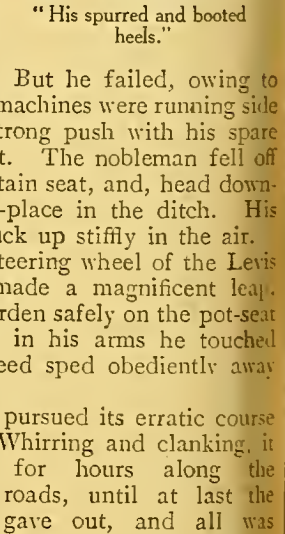
It was a neck and neck race. But aided by Roland's marvellous skill in driving, the Minerva drew ahead, in spite of the load of the trailer. Several times the Earl of Ettrick was seen to run into the wall at corners, and his curses drifted faintly down the breeze.

"He drives very badly," said Araminta, looking back. "It is the first time he has been on a motor bicycle, and he is riding it like a horse. Look at him digging his heels into the engine!"



Roland looked, and very nearly ran into a gatepost. "Really, darling Araminta," he said firmly, "the next time you make me look round it will mean a funeral."

He accelerated violently, and the cylinder blew off, just missing Lady Araminta. This is one of the worst misfortunes that can happen to a motor bicycle, and nine riders out of ten would have given up hope. Not so Roland St. Clair. As the engine raced on erratically, staggering under the faulty compression, he leant over and snatched his loved one from the trailer into his arms. "My angel," he breathed, gazing into her clear blue eyes, "for thee I will dare anything!"



"His spurred and booted heels."

Swiftly the Levis drew abreast with the tottering two-stroke, and the Earl of Ettrick grinned spitefully, and attempted to hiss through his clenched teeth. But he failed, owing to lack of practice. As the two machines were running side by side, Roland gave one strong push with his spare hand on the Earl's waistcoat. The nobleman fell off at once from his rather uncertain seat, and, head downwards, found a soft resting-place in the ditch. His spurred and booted heels stuck up stiffly in the air.

Roland had grasped the steering wheel of the Levis motor cycle, and now he made a magnificent leap and landed with his living burden safely on the pot-seat saddle. With his Araminta in his arms he touched the levers, and the swift steed sped obediently away to distant Aberdeen.

But the deserted Minerva pursued its erratic course with no hand to guide it. Whirring and clanking, it reeled for hours along the lonely roads, until at last the petrol gave out, and all was still.

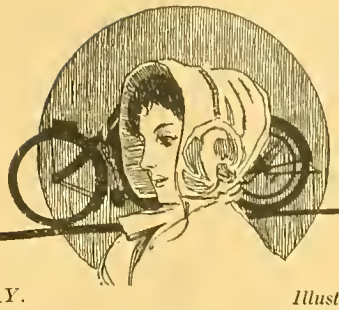
THE SECOND-HAND MARKET.

WINTER-TIME BARGAINS TO BE OBTAINED.

IT is clear that the inflated prices which have ruled during the summer for second-hand motor vehicles are a thing of the past. At the present time there is an undoubted slump in second-hand machines when prices are compared with those in vogue in August and September, and the present figures more nearly approach the normal, *i.e.*, peace time, value of motor cars and cycles. Consequently, now is a chance for the buyer who is able to anticipate his wants in the spring, as it is evident that the sudden reaction in the second-hand market is due primarily to two causes, viz., the advent of winter, which usually has a damping effect in more senses than one, and the new Recruiting Scheme. We feel confident that, with the arrival of spring, the prices will harden again appreciably, as they usually do, and may be increased more than usual in view of the comparatively small number of new machines which it is now possible for the manufacturers to produce. Therefore our advice to readers who may shortly be requiring a second-hand machine is to consider whether it would not be more advantageous for them to purchase now while prices are ruling so low. The highwater mark of August and September is past, and December seems to be touching the lowest level.

In times of peace December is always a bad month in which to sell, while March is probably the best time. This is due, of course, to the near approach of Easter, the first public holiday of the year, when many persons find that they cannot obtain quick delivery of new machines and so turn to the second-hand market.

BLUFF.



The Story of a Scrap of Paper.

By CHARLES MURRAY. Illustrated by OSWALD CUNNINGHAM.

"YAAS, sir, we're on time with everything, and all we want now is the formula."

The speaker was a man of about forty, with a big strong body and deep nasal voice. He drawled his remarks to his employer, John Gray, the sole proprietor of the Gray Motor Co., who, a few years previously, had appointed him general manager of the great business which held the premier position among motor cycle manufacturers in this country. At the commencement of the war the whole output of the works had been taken up by the British and Allied Governments, and day and night the factory had hummed with the busy forging, casting, welding, and assembling of "War Office models" and sidecar outfits complete with machine guns. Then came the call for high explosives, and most of the works had been monopolised for making munitions.

"Quite so," said Gray, "we must have the formula by to-morrow, but I have not yet made up my mind how to get it here."

"Why not let me go and fetch it?" asked the other in a casual tone.

"For the same reason that I don't go myself. We are both too well known in connection with this munition business. Well, I need not keep you any longer, Mr. Sleath. Oh! before you go, tell me—has young Bernard Russell been worrying any more about enlisting?"

"Why, yaas," replied the manager. "He's always shooting hot air about it, but I've told him repeatedly that no one can be spared from here. However, it seems to me a pity not to let him go. He's doing no good where he is."

"You never have much good to say for that young fellow," remarked Gray quietly. "However, I will talk to him about it myself."

Gray telephoned to the repair shop, and, as Sleath left the room, carelessly laid the receiver on the table in front of him.

A few minutes later a man, twenty-five years of age, knocked and entered the room. He did not look his height, which was well over six feet, for his figure was well proportioned, nor his age, his face being that of an honest schoolboy with bright eyes which sparkled as he spoke, and his untidy mop of brown hair was as unruly as that of any little fourth form rascal.

"I understand that, in spite of being a starred man, you are anxious to join the Army, Russell," said his Chief.

"Yes, sir, I am," he answered. "At least, it's not necessarily the Army, sir, but I want to be doing something really useful for the country. I would be glad to stay here if I were doing the right work, but Mr. Sleath has put me in the repair shop, where I can do nothing but tinker up private owners' machines, and I feel my training is worth something more than that, sir."

"So do I," said Gray, looking into the boy's earnest face. "Therefore I am going to give you a chance of serving your country to-day.

"England is about to make, from simple ingredients, a most powerful explosive, which experts believe will bring about the speedy collapse of our enemies. As these works are especially suitable for this particular service, we are to have the privilege of making the first lot of new shells for the use of the Allies' big guns."

Gray paused, and then asked, "Is your motor cycle in perfect order?"

"Yes, sir, I always keep it well tuned up."

"Good. I consider the road safer than rail for the expedition you are to make. You will ride to London at once, and go to the War Office. Ask for Major Everard Worsdell, saying that you come from Grays. Repeat these numbers to him—one, four, five, nine."

Gray had been toying with his telephone receiver, which he now replaced on the stand.

"I believe I have made a mistake in the numbers myself," he then said, turning over some papers. "Yes," I thought so. I had got the order wrong. It should be one, four, nine, five. Remember that."

He then gave Russell a few more directions.

"Does anyone know, sir, that I am going?" the latter asked.

"I have told no one, though Mr. Sleath may have guessed. Mention nothing to him or to anyone else. Slip out of the works and go. I shall expect you back at about nine o'clock this evening. Come straight to me here when you arrive. Here are a couple of pounds for meals, petrol, and anything else you may need on the road. Put this also in your pocket; it's loaded. Don't use it unless you are absolutely obliged to; but if you have to shoot, shoot straight."

The Ride to Town.

Russell was burning with excitement as he took the flight of stairs at one bound, and ran round into the shed, where all machines belonging to the staff were kept. He wheeled his own mount out into the yard, turned on the petrol, flooded the carburetter, and gave one, two, three quick kicks to the starter. No result. No shock when he held the plug terminal and kicked. Insulated wire all right. Magneto must be wrong. Who in thunder had been monkeying with his machine?

Bluff.—

He had no time to tinker about with a magneto, so he looked about him for another suitable mount. An almost new big twin with a luxurious sidecar caught his eye at once.

"Sleath's, by Jove. The very thing!" he said to himself. "Won't he be wild when he finds it gone."

It took him but a few seconds to detach the sidecar, and within a minute he had slipped out of the gate, and was quietly purring up the road. It was a bitterly cold day with a keen north-east wind, so he had wrapped himself up in the General Manager's thick ulster which had lain invitingly in the sidecar.

Russell decided to go by the main London Road and to return by a more circuitous route. Snow soon began to fall heavily, and the cold wind drove hard in his face, trying, as it seemed, to keep him away from London. However, both snow and wind met their master in the powerful machine which, divested of its usual burden, made light of all opposition, and responded gladly to the throttle which the rider opened more and more as he tore along over the rapidly whitening ground.

Russell was supremely happy. He was being recognised at last, and had now been entrusted with a mission of vital importance. Further, this mission was taking him just where he had been wanting to go for many months past. True, he would not have much spare time there, but he would be able to leave his, or rather Sleath's machine at Martin's Garage, and then he might catch a glimpse of, and perhaps a few words with, Mary Martin, who was working so hard for her father in place of the brother now somewhere in France.

Mary and he had been on terms of healthy friendship for years, but latterly he had felt awkward and tongue-tied in her presence. This time, though, he would speak out and tell her something that he had tried but been unable to frame in his letters.

Thus he thought as he sped along, covered with snow and ploughing through the thick white crust on the roads. He had been riding hard for nearly three hours, when the crystal surface became a greasy sludge, churned up by the traffic of a busy London suburb. Thoughts of skidding never came to him as he whirled round trams, between 'buses, and past streams of slow traffic. It was half past two when he wheeled his mud-bespattered machine into the large garage. There was Mary in a blue overall, running the show, and at the moment instructing a bullet-headed mechanic how to set the timing of a six-cylinder car.

She came forward with joy written all over her pretty face.

"She came forward with joy written all over her pretty face."

"Bernard!" she exclaimed as he seized her hand. "It is delightful to see you. How long are you going to stay in Town?"

"Only a few hours, I'm sorry to say, and I shall be engaged most of the time. I'm up on important business for the Governor, and must get back to Minford before nine o'clock this evening. Can you spare half an hour now? I'm famished and want some lunch. Come and have some with me, before I go on."

Mary could not leave the garage as she was in charge, but she sent out for a meal for him so that they might have a few words together when her duties would permit. She asked no questions; Bernard had said he was up on important business, and unless he volunteered more information, that was enough for her.

Refreshed, he decided to go on by taxi and to return as soon as possible, so that he might have a little more time with Mary. When he left she insisted on giving him a ticket for the machine. It was garaged with her, and "business is business, you know," she said.

At the War Office.

On alighting from the cab in Whitehall, Russell drew some change from his pocket and, with it, the garage ticket. He was selecting a coin to pay his fare when an obviously drunken man lurched against him, and sent the money spinning over the pavement. The man, muttering fuddled apologies, helped him collect the money and then hurried away. Russell did not notice until he was waiting in the vestibule of the War Office that he had lost the ticket. However, this did not worry him. He would have a joke with Mary about it when he returned for his machine. He had to wait some time and state his business to various officials before he was ushered into the presence of a tall, gaunt-looking officer, who riveted him with the eye of a hawk.

"From whom do you come?"

"Grays."

"Number, please."

"One, four, nine, five."

"Quite right, but you are not the first man who has been here about this. The other gave the order wrongly, and is now under arrest.

The Major then handed Russell a slip of blue paper with some unintelligible hieroglyphics on it.

"This is your despatch," he said. "You know of its importance, so I need not give you any warnings. In case you are being watched you had better leave the building by a side door."

He led Russell through a labyrinth of corridors and let him out through a small door into a side street.

Bluff.—

"Good luck to you, my boy," said the soldier, and the door was shut.

It was getting dusk when Russell reached Martin's Garage, where Mary met him with an anxious face.

"I hope I did right," she said, "in not letting him have the machine."

"He? Who? What machine?" he asked.

Mary then told him that during the afternoon a big man with an American accent had presented the garage ticket which she had previously given to Russell, and had demanded the motor cycle. As she would not part with it, the man had stormed at her, saying that the machine had been stolen, and that he would fetch the police. However, he had not yet returned with the arm of the law.

"Good Heavens, Sleath!" exclaimed Russell. "I always thought the man was a blackguard, but I never dreamed he was as bad as that. Well done, Mary, you did quite right. If our American friend is what I think, he won't seek the assistance of the police."

Russell decided to get away at once, as he was anxious to be well out of London before it got quite dark. He could have said a whole lot to Mary just then, but it must wait for another time. As he wheeled his machine from the garage he drew the scrap of blue paper from his pocket and slipped it into his saddle pillar. He looked up and saw that Mary was watching him. That did not matter, he thought, she was as safe as a church, but he did not notice that the occupant of a racing car which had just drawn up also had his eyes on him.

Hurrying Home.

A hasty good-bye, and he was off. It had stopped snowing some time previously, and a severe frost had set in. The roads were already hard, but the frozen lumps of mud and snow made riding difficult. However, he sped through the suburbs at a good pace, but it was dark before he reached the open country, and when he switched on his electric head and tail lamps he was still within the area where lights are restricted. He tied his handkerchief over the head lamp, but was suddenly pulled up short by a cry of "Stop!" A policeman was standing in his way. He dismounted.

"Licence, please."

"What's the trouble?" Russell asked.

"Your light is too bright and your engine is making a tremendous noise. You have no silencer, or else it has a hole in it."

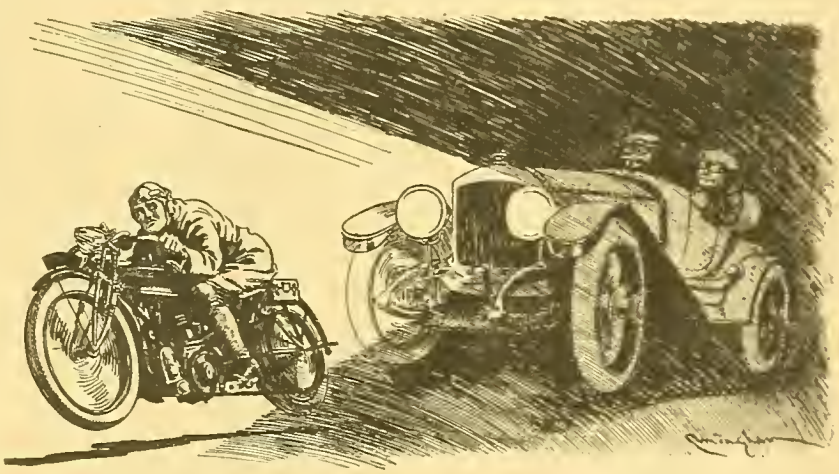
"Of course I have a silencer," said Russell. "And of course it has a hole in it. How do you think the exhaust gases would escape if it hadn't?"

"Then it's illegal," said the constable definitely and with a great air of knowledge. Just then the purr of another engine was heard, and round the bend of the road appeared the beam of another head light. The policeman swelled visibly with dignity. He was going to make a double haul. He shouted to this rider also to stop, but the engine had already ceased to fire before the command had been uttered. The second motor cycle glided silently up to the gentleman in blue.

"Licence, please," he said as before, but this time he seized the handle bars of the offending machine as if in fear that it would suddenly bound forward and escape him. The rider left the machine in the policeman's hands and ran up to Russell.

"Go on, Bernard, go on for all you are worth," said a girl's voice very quietly, but rapidly, and with a strong note of appeal. "A racing car is in pursuit, but I slipped by in the traffic to warn you."

Russell recognised Mary, and, instantly obeying her, lifted his exhaust and pushed off. After covering many a mile, he was careering along a straight road with a pine wood on either side, when suddenly a beam as from a searchlight behind him turned night into day and transformed the track into a glistening and brilliantly-lit tunnel. Russell did everything he could to get still more speed from his mount, but although his pace was terrific, the thunder of the huge car drew closer and closer. It was only just behind him now,



"The thunder of the huge car drew closer and closer."

and Russell instinctively drew over to the left, to allow the overtaking vehicle to pass. He then shut his throttle and put on his brakes, so that the car might shoot ahead, and not be able to stop and turn round before he had found some means of escape. The car did not keep straight on; it also drew over to the left. Russell heard a grinding crash, felt himself flying through space amidst a firmament of stars, and then all was dark.

* * * * * *

Presently Russell came to and was still wondering what to do when the lights of two cars appeared in the distance, advancing at a good pace. He sprang into the road, shouted and waved to the drivers to stop. They drew up, and Russell immediately recognised Major Worsdell with another man in the first car. He explained his position in a few words, jumped into the car, and was soon making for Minford at all speed.

The Capture.

When they were within a mile of Minford, lamps were switched off and they proceeded very cautiously. A couple of hundred yards from Gray's works they

Bluff.—

stopped. A burly sergeant and seven men got out of the second car, and the party proceeded silently towards the works. There stood the racing car under the shadow of some trees. Two soldiers slipped away from the others and took possession of this. The rest crept into the yard, unnoticed by a rapidly moving figure which they saw busily attaching wires to what looked like several round pegs. He was working towards them, standing more pegs upright in the snow and connecting them with wire.

The sergeant moved noiselessly forward, and before the man could cry out had whipped a scarf over his head and gagged him. Two more of the soldiers seized the victim and carried him outside.

The gentleman in civilian clothes, who had travelled in Major Worsdell's car, spoke for the first time.

"Just as I thought," he said. "Roman candles ignited by an electric current, a most useful guide to a target in darkness. Now for the head of this gang."

They walked to the office entrance of the building. The door was on the latch, and they heard voices in the room above. After a whispered consultation on the stairs it was agreed that Russell should take his despatch to his chief, and the others would wait on the landing outside.

He entered the room without knocking. Gray, seated at his desk, looked up and smiled. Sleath, as bold as brass, was lolling back in a chair, hands in pockets, and with his back to the door.

"Well, Russell," said Gray, "I am glad to see you back in good time."

Sleath started, but quickly controlled his astonishment. Gray took no notice of him.

"Have you the formula?" he said to Russell.

"Yes, sir," the latter replied.

At that moment Major Worsdell, his companion, the sergeant, and one soldier entered the room.

"Baron von Schleigel," said the gentleman in mufti, deftly slipping a pair of handcuffs on Sleath's wrists, "I hold a warrant for your arrest on the charge of espionage."

He had not finished speaking before a droning noise attracted the attention of all. It grew rapidly louder and louder until it resembled the roar of an express train overhead.

"Curse the lot of you," cried Sleath. "Do you hear that? That is one of our great Zeppelins, which will bring your devilish country to her knees. He is an hour too early, but he shall blow all of us and these works of hell into little bits to-night."

"I'm afraid you are to be disappointed," said the man who had arrested him. "Your friend below, who was to have given the signal, is otherwise engaged just now, and will not be able to give his little firework display."

Snarling an oath, Sleath bounded to the window and with his two manacled hands was about to seize the blind. A shot rang out and with a howl of pain the German-American rolled on the floor.

"Good shot, lad," said Major Worsdell to Russell. "Got him clean through the wrists. Take the wretch away," he added to the sergeant, who, with the private, dragged the spy bellowing and cursing from the room.

The noise in the air had grown faint and was now but a droning in the distance.

Gray stood up and shook Russell by the hand.

"My dear boy," he said. "You have proved yourself worthy of much better work than you have ever had the chance of doing, and I am afraid what I am going to tell you now will cause you some pain. This scrap of paper for which you have done so much is of no use whatever. It means nothing."

"His Majesty never fails to recognise distinguished conduct such as you have shown to-day."

"No, Russell," Gray continued, "the War Office does not send important despatches in that way. The formula we require has been in my *head* for a week past. This scrap of paper was all bluff, but it was bluff with an important object, which with your splendid help we have attained. Three of the most dangerous German spies in this country have now been caught red-handed. One of them was captured at the War Office to-day by a simple trick. You may remember that I corrected the numbers I first gave you this morning. When I said them in the wrong order my telephone receiver was in my hand. Sleath, I guessed, was listening. He informed a confederate who fell into the trap. You have just assisted in the capture of the other two. Now I can no longer keep you wasting your time in my repair shop, and Sir Edward Naughton here has other work for you to do."

The Reward.

"By Jove!" broke in Major Worsdell, "I never introduced you. This is Sir Edward, who is the Chief Officer of the Secret Service Police of Great Britain."

Sir Edward put his hands on Russell's shoulders.

"I have recently been looking," he said, "for a live young man with some brains, plenty of muscle, and a whole lot of nerve. I think I have found him this time. There will be plenty of work for you in the service of your country now, and I may mention that His Majesty never fails to recognise *distinguished conduct* such as you have shown to-day."

MILITARY NOTES.

THE KING HONOURS THE M.M.G.S. A SERVICES HILL-CLIMB.

Officers, N.C.O.'s, and men of the No. 18 Battery, Motor Machine Gun Section.

HONOUR FOR M.M.G.S. OFFICERS.

DURING his last visit to his troops in France, His Majesty the King inspected the No. 16 Battery, Motor Machine Gun Section, which with many other batteries is now on active service on the Western front. Major Thackwell, O.C., commanding the No. 16 Battery, had the honour of showing His Majesty round, and the latter was much impressed by the construction of the gun

Lieut. C. Wickham-Conduit, of the No. 16 Battery, M.M.G.S.

emplacements and trenches. Lieut. G. Wickham-Conduit was responsible for the selection and manufacture of the emplacements, and His Majesty congratulated him upon them.

Another matter which interested the King during his visit to the No. 16 Battery was a magnificent dug-out, for which Lieut. Wickham-Conduit is also responsible. It is a very luxurious affair, and is called the "Hotel Cecil."

NEWS OF SERGT. E. J. BASS.

WE recently heard from Sergeant E. J. Bass, the well-known official of the Essex M.C. He writes: "Just a line to tell you I am still quite safe, and have had a change since I wrote you last, as I am now not with ambulances, but attached to a siege battery. As road sergeant, I use a Triumph motor cycle, and find it stands up very well to the work."

A SERVICES HILL-CLIMB.

AN event of a sporting nature, devoid of all trade interest, was the hill-climb for Service men, held in the Isle of Wight on December 5th. The leading light in the enterprise was Lieut. C. E. Dalton, and the competition was open to officers, N.C.O.'s, and men of both Services.

The hill selected was 890 yards long, with a very sharp corner near the starting point. The gradient was not very severe, and the surface was in fair condition. Unfortunately, it rained so heavily that it was only possible to run off four of the seven classes, and the times varied to a considerable extent, for which the rain may also be held partly responsible. Timing was done by an electric cable.

An important regulation was that forbidding the use of Government machines. It is a pity that the bad weather prevented some entrants from turning up.

Results:

SINGLE-CYLINDER LIGHTWEIGHTS NOT EXCEEDING 300 C.C. (TWO OR FOUR-STROKE ENGINES).

		Time.	
1.	Fernow (2¼ Omega)	2m.	2s.
2.	Whitney (2¼ Enfield)	3m.	1s.
3.	Gibbs (2¼ Royal Ruby)	—	

TWO OR FOUR-STROKE ENGINES, 560 C.C. LIMIT.

1.	Houghton (4 Triumph)	1m.	2⅕s.
2.	Evisard (3½ B.S.A.)	1m.	0⅘s.
3.	Paul (3½ Zenith)	1m.	12⅕s.

UNLIMITED.

1.	Houghton (4 Triumph)	1m.	2⅘s.
2.	Ramsey (7-9 Harley-Davidson)	1m.	3⅕s.
3.	Evisard (3½ B.S.A.)	1m.	4s.

SIDECARS AND CYCLE CARS.

1.	Ellis (5-6 Ariel sc.)	1m.	50s.
2.	Hart (8 Sunbeam sc.)	2m.	21s.
3.	Gamble (Scott sc.)	—	

MOTOR CYCLIST AVIATOR.

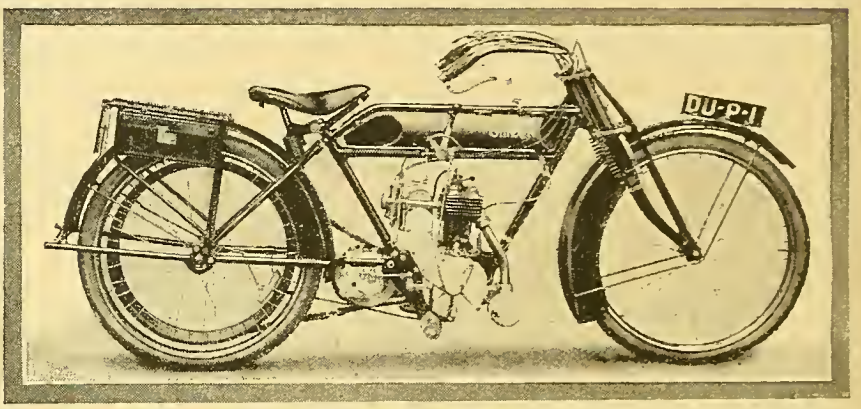
FLIGHT SUB-LIEUT. C. W. GRAHAM, R.N.A.S., the pilot who sank a German seaplane off the Belgian coast early last week, was at one time engaged with the Triumph Co. at Coventry, and at the outbreak of war he was with the Bosch Co. at Stuttgart. He managed to get away from Germany soon after the declaration of war, and his adventures in trying to smuggle his Triumph along with his personal luggage *via* Switzerland were recounted in *The Motor Cycle* of August 27th, 1914.

Mr. Graham is well known in Coventry, and is a member of the Coventry and Warwickshire M.C. He is the son of Mr. C. Graham, of Barnes, a director of Brown and Barlow, Ltd. Our readers will join us in offering him our congratulations on his achievements, and wishing him the best of fortune in the future.

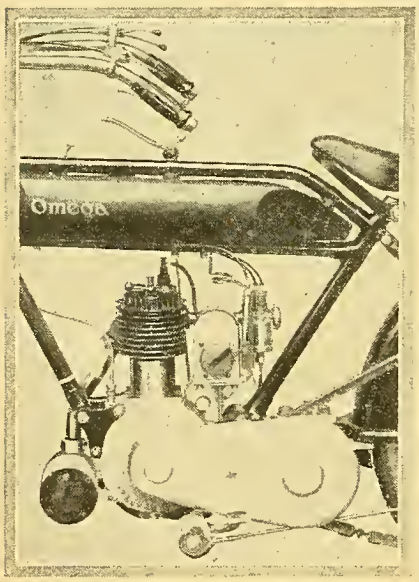
OMEGAS FOR 1916.

A NEW FOUR-STROKE LIGHTWEIGHT MODEL.

IT was recently pointed out in *The Motor Cycle* that quite a number of firms who have been manufacturing two-stroke lightweights were now turning their attention to four-stroke models, either instead of, or in addition to, the two-strokes. Among the several firms to do this are Messrs. W. J. Green, Ltd., of Coventry, the manufacturers of the Omega lightweight. This firm has specialised in two-strokes all along, but for the coming year it is placing an additional model on the market fitted with a 2½ h.p. J.A.P. engine of 70×76 mm. bore and stroke, giving a capacity of 292 c.c. An E.I.C. magneto is situated behind the engine, above which is fitted an Amac carburetter. The frame of the new model is exactly the same as that used on the two-stroke, the only difference being that the front down tube, instead of being forked, has a special lug to accommodate the J.A.P. engine. The tubing used is of special heavy gauge to enable a light sidecar to be attached without fear of over-straining the frame. A two-speed countershaft gear is fitted, operated by a strong gate type lever. The drive is, of course, by chain and belt, the chain being enclosed in a most substantial yet neat cast aluminium case, which is far better than the usual stamped sheet metal type. Druid spring forks, 26×2in. wheels, wide mudguards with side valances back and front, strong tubular carrier, at the side of which is fitted a large toolbag, hand-operated front brake and heel-operated back, and large Brooks saddle complete the specification. The general finish is excellent.



The latest four-stroke lightweight—the new 2½ h.p. Omega, which has a two-speed countershaft gear and the usual chain and belt transmission.



Power plant of the new four-stroke lightweight Omega. The engine is a 2½ h.p. 292 c.c. J.A.P. The neat chain cover will be noted.

The tank as fitted to the two-stroke is still retained; its rounded edges, tapered ends, and finish in black with red panels give it a distinctive appearance. Enots quickly detachable filler caps are used.

We were recently favoured with an opportunity of trying the new four-stroke Omega on the road, and we were much struck by the handiness and easy running of the little machine. The roads were in a particularly greasy and muddy state after the recent thaw, so we had plenty of opportunity of testing its stability, which we found excellent, and which was probably considerably helped by the wide bars, which gave a most comfortable riding position. The speed on the level was very satisfactory, while a mere crawl was possible for negotiating traffic.

The Two-stroke Model.

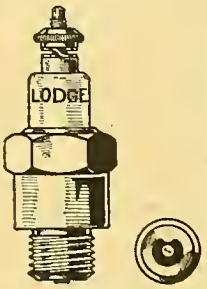
The two-stroke has been altered and improved in many small details. The engine will remain the same as this year, except that the design of the exhaust port will be altered slightly, and will be of rather larger dimensions and with slightly tapering instead of perfectly straight sides, as at present.

The compression release valve will also be larger, so as to give an absolutely free release of the compression for starting purposes. Mr. Green told us of some experiments he has been carrying out in connection with the lubrication system, and said he was rapidly being won over by the system which supplies the lubricant to the induction passage, owing to its cleanliness.

A New Sparking Plug for Two-strokes.

Special Design to Withstand Heat and Oil.

THE mysterious but more or less trifling troubles which attend the running of some two-stroke machines, especially those of the air-cooled variety, can, as a rule, be traced to faulty plugs. Probably the most common troubles are inefficient lubrication and faulty plugs causing pre-ignition. The first is due to the fact that there is so short an interval between the explosions that the plug has very little time to cool; the second is most often due to the method of lubrication, which, in the majority of two-strokes, is of the petroil system, the oil therefore readily entering the combustion chamber, and becoming rapidly deposited on the plug electrodes.



A new Lodge plug for two-stroke engines

In an attempt to overcome these troubles the Lodge Sparking Plug Co. have designed a special plug for use in two-stroke engines. The plug is of the single gap variety, and the central electrode is of a very substantial nature; the other point is formed by a circular piece of metal with a hole in it through which the central electrode protrudes. This piece is let into the end of the plug body, and at one point has a slight protuberance, which forms the second electrode.

It is stated that the plug is designed in such a way that the heat is rapidly conducted away from the electrodes, while sparking is unaffected by oil.

Enquiries having reached us respecting the marketing of the new Levis 5-6 h.p. horizontal twin-cylinder two-stroke machine, we communicated with the makers on the subject, who inform us that the Admiralty are having first call of these engines. They are, therefore, not likely to be offered to the public for some time to come.

B.S.A —

1916 Catalogue Now Ready

The "Daily Telegraph" says:

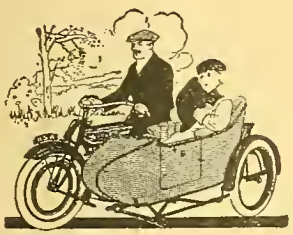
"Regularly with the autumn comes along the B.S.A. Motor Bicycle Catalogue, always interesting and always helping to uphold worthily the great B.S.A. traditions. The issue for the ensuing season is as interesting and well produced as ever. . . . Undoubtedly the outstanding features of the 1916 Catalogue are the beautifully printed full page colour plates, which give a correct rendering of the appearance of the various models, and it is safe to say they mark the highest advance yet achieved in motor cycle illustration."

The "Motor Cycle" says:

"The 1916 B.S.A. Catalogue is a fine production, and the colour plates of the complete machines are very pleasing. The latter are accompanied by full specifications of the models they illustrate."

The "Autocycle" says:

"The 1916 B.S.A. Catalogue of motor cycles is conspicuous by the excellence of its coloured illustrations of the firm's products."



B.S.A. MOTOR BICYCLES
FOR SOLO & SIDECAR.

A COPY OF THE B.S.A. 1916
MOTOR CYCLE CATALOGUE
AS DESCRIBED ABOVE WILL
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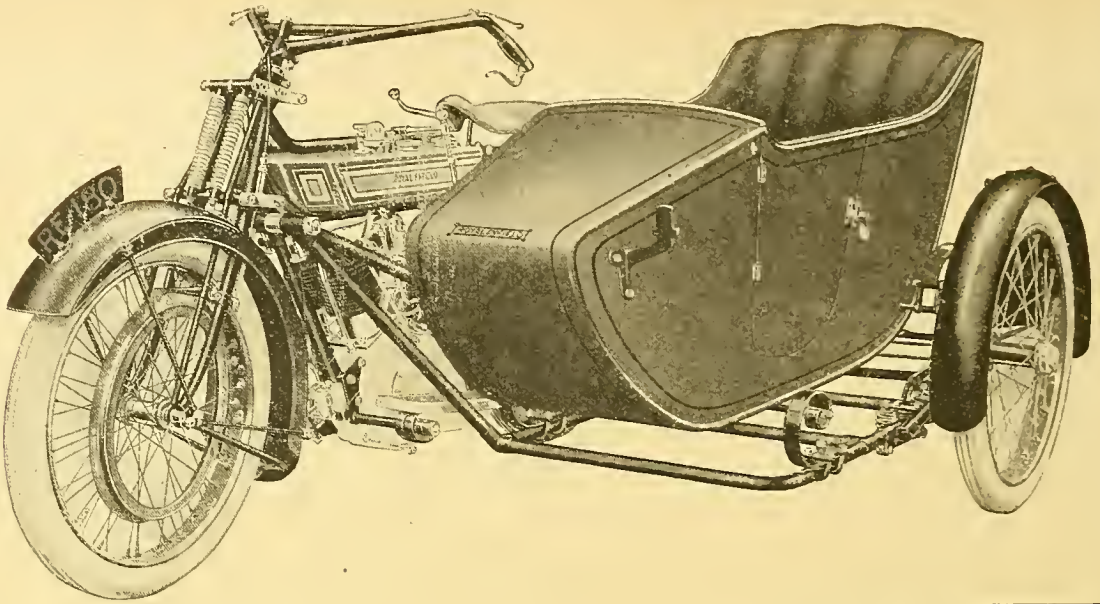
The Birmingham Small Arms Co. Ltd.,

13, SMALL HEATH, BIRMINGHAM.



ROYAL ENFIELD

Whatever type of motor cycle you require there is a Royal Enfield model to suit—and in every one the famous Enfield Two-speed Gear, Cush Drive Hub, and Chain Transmission are embodied. Royal Enfields are reliable.

The illustration above shows the 6 h.p. Royal Enfield sidecar combination. There never has been a more satisfactory passenger model than this—it is the standard of quality and efficiency the world over.

Four great Allied Armies are all using Royal Enfields.

At 40 guineas
The 2¼ h.p. Royal Enfield Two-stroke Lightweight.

At 50 guineas
The 3 h.p. Royal Enfield.

At 85 guineas
The famous 6 h.p. Royal Enfield Sidecar Combination.

At 100 guineas
The 6 h.p. Sidecar Combination. Complete with Lucas Dynamo Lighting Set, etc.

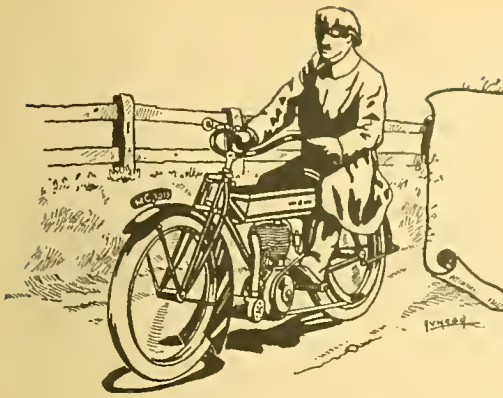
Mention "The Motor Cycle" and write for the Royal Enfield Catalogue.

THE ENFIELD CYCLE CO., LTD., REDDITCH.

Contractors to His Majesty's Government, the French and Belgian Governments, and the Russian Military Authorities.

London Office and Showrooms: 48, Holborn Viaduct, E.C. **Agents Everywhere.**

In answering this advertisement it is desirable to mention "The Motor Cycle."



CYLINDER COOLING.

Is the Modern Air-cooled Cylinder with Cast Iron Flanges Sufficient?

REFLECTIONS ON Mr. LANCHESTER'S PAPER.

THE ordinary air-cooled engine of the motor cycle is so satisfactory that at first sight one is inclined to think that it is hardly open to improvement so far as its extremely simple cooling methods are concerned; or if we think of improving the cooling at all we are apt to turn instantly to water-cooling, with all its weight, complications, and delicacy. However, a new light has been thrown upon the whole subject of cylinder cooling by Mr. F. W. Lanchester in his magnificent monograph, "The Cylinder Cooling of Internal Combustion Engines," which was read last week before the Institution of Automobile Engineers. Mr. Lanchester's gifts and achievements as a scientist, a mathematician, and an automobile engineer are well known, but many have forgotten, if they ever knew, that the cars first associated with his name were driven by air-cooled engines. Concerning these engines some very interesting and significant facts were brought to light by Mr. Lanchester. The first were made with thin cast copper gills or flanges, which were shrunk on to the plain cylinder barrel. These were very satisfactory. As great or greater satisfaction was obtained by substituting spun sheet copper gills for the cast copper or aluminium flanges. With the thinner material, double the number of flanges could be used, and although, of course, the cooling power was not doubled it was materially increased. At this point, and for the convenience of manufacture, the separate gills were abandoned and flanges cast integral with the cylinder were substituted. These were a failure not merely because it was not practical to cast as large a number of flanges per cylinder this way as with the separate flange or castings, but also on account of the fact that cast iron was used, and the conductivity of copper is approximately ten times greater than that of cast iron, while the conductivity of aluminium is about half that of copper.

Food for Thought.

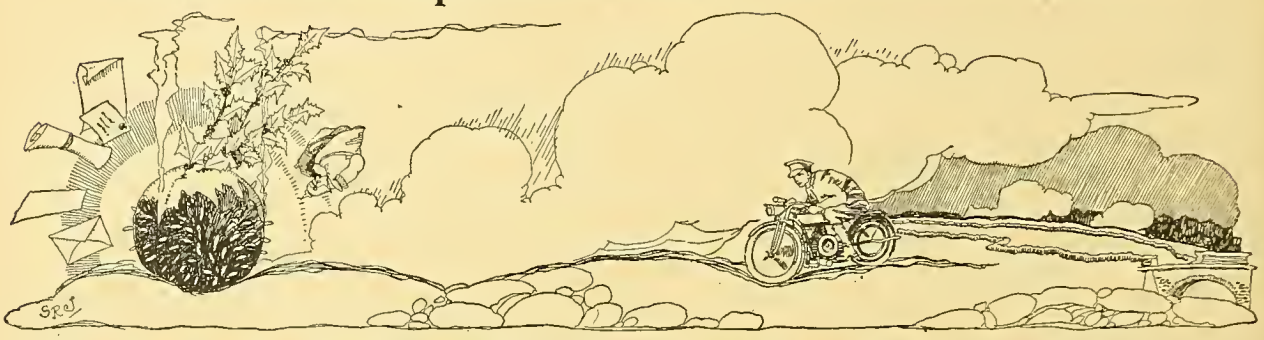
This bare recital of facts is full of interest and suggestiveness to the motor cycle designer, because it is obvious that to-day the motor cycle cast iron cylinder with its flanges cast integral is but a perpetuation of Mr. Lanchester's least successful effort. His spun sheet copper flanges and his separately cast aluminium or copper flanges had succeeded where the cast iron flanges had failed. We do not say that this is any reproach to the motor cycle designer, for, if it be, he sins in good company, as practically all air-cooled aero engines follow motor cycle practice in using cast iron or steel flanges which are part and parcel of the cylinder itself. Mr. Lanchester shows in his paper, both by theory and practice, that much more satisfactory cooling can be obtained by the use of metals of higher conductivity than cast iron, and the thing is so obvious that one cannot help wondering how it is that no investigator has followed it up before. It is true that sheet metal cooling flanges have been used on motor cycle engines, and we believe that separately cast flanges have also been employed; but the experiment has evidently been vitiated by some other conditions, or at any rate its advantages have not been appreciated.

At this point it is well to ask ourselves why we should consider the expense of separate flanges of copper when we are getting highly satisfactory results with integral flanges of cast iron. We should, therefore, say that the reason why we think the subject is so well worth further investigation by the motor cycle engine designer is that the active mileage of the air-cooled motor cycle engine would be greatly prolonged if it ran somewhat cooler. It follows that with better cooling we should have less burning and pitting of the valves and seatings, fewer sparking plug troubles, less carbonisation, and cleaner piston rings.

Air-cooled or Oil-cooled?

It may be said that in a way the air-cooled engine is partly oil cooled. This is not strictly the fact, but the results are the same. In other words, the great heat of the cylinder walls burns up the oil so quickly that considerably more oil must be used than if the walls were cooler. This large amount of oil which is necessary means that whenever the engine is running on a partly open throttle or with the throttle closed, that it is more or less over-oiled, and this excess of oil is burnt above the piston, resulting in carbonisation of the piston and the cylinder head, and in the fouling of the rings. No arguments are necessary to show that the valves, valve seats, and plugs would run longer without attention at somewhat lower temperatures, and it therefore follows that satisfactory as the present system of air-cooling may be it is decidedly open to improvement, and Mr. Lanchester's paper has shown the lines along which the designer can experiment with the minimum of uncertainty. In any case, there is no doubt that the paper will have a marked effect on the future design of air-cooled aero engines which in their turn will react upon motor car design, in which, as our readers know, water-cooling is to-day paramount. However, air-cooling is essentially the motor cycle engineer's province, and we feel certain that he will be among the first to profit by the volume of fact which Mr. Lanchester has placed before him.

Christmas Despatches from Service Readers.



On this and the following pages will be found Xmas Messages from men well-known in the motor cycle world now serving their country in one capacity or another. Some are from men on active service, others from those still at home, and all show the quiet confidence in final victory that is a feature in all ranks.

LIEUT. VERNON BUSBY, R.E. and R.F.C. *(a leading Birmingham competition expert).*

"All the old sporting circle of motor cyclists are now far separated serving their country. I much appreciate *The Motor Cycle* scheme of exchanging good wishes with old friends whom I hope soon to meet again back in old surroundings and ready to fight in that other war of maintaining the supremacy of the British motor cycle industry throughout the world. My wishes to all are the best of luck and a safe return."

H. D. TEAGE, R.A.F. instructor on aero engines *(formerly of "The Motor Cycle" staff).*

"To all my old friends—may 1915 be your worst year."

LANCE-CORPL. A. B. WADE, No. 1 Battery, M.M.G.S. *(highly successful hill-climber with twin Zenith).*

"Hearty greetings and good wishes to friends at home. Don't be depressed. We are 'top dogs.' Keep everything in good tune and we will be looking forward to a London-Exeter Run for next Boxing Day, and may we all have a happy re-union before then."

SERGT.-ARTIFICER L. A. BEES, A.S.C., attached to Motor Machine Gun Service *(formerly competition rider of L.M.C.)*

"Expect to go overseas very shortly to join the boys. Good luck and a Merry Christmas to those at the Front and those on the way."

J. S. IRVING *(organiser of the R.A.F. Munition Workers' Meeting at Brooklands, for which there were no less than 265 entries).*

"Comrades! Sincere wishes for safe conduct through the conflict and a speedy return. May you all safely receive Christmas puddings and suffer less than your less active comrades at home."

2ND-LIEUT. G. T. GRAY, R.E., Motor Cycle Section *(a successful competition rider of Rudge).*

"To all despatch riders serving abroad, and especially to fellow competition riders, Christmas greetings! May you have a congenial gathering in the mess, and for a day at least forget all about stew, bully, and dog biscuits. May you all have the best of good luck throughout the New Year."

LIEUT. J. W. WEIR, R.E. *(leading Irish motor cyclist and secretary Motor Cyclist Reserve Committee I.C.).*

"The best of luck, and a peaceful and glorious Christmas at home next year. Best wishes to you personally and your very interesting paper."

SERGT. H. KARSLAKE, R.F.C. *("Oily" and his Dreadnought are very well known figures in motor cycling club circles).*

"Heartiest greetings to the boys overseas. They have done, and are doing, great deeds, as I have seen. Keep the flag flying and show 'our friends the enemy' that the motor cyclist makes the best of sportsmen."

Xmas Messages.—

DR. A. M. LOW, R.F.C. *(member A.C.U. Committee).*

"I have been away experimenting at flying station, and only hope motor cyclists are not working day and night as I am. Best wishes."

SERGT. E. J. BASS, R.F.A. *(well known in Essex club circles).*

"My kind regards to all my motor cycle friends. I trust that all will have a successful and peaceful 1916."

CORPL. ERIC WILLIAMS, D.C.M., 23rd Infantry Brigade, Headquarters 8th Division *(winner Junior T.T., 1914, on A.J.S.)*

"The order for the day is, for many of us, the same as last year, but this does not damp my spirits, so here's to all of you this Christmas and to 'The Day' when we all meet again, may it be in 1916."

SERGT. ALBERT MILNER, R.E. *(a Midland rider of Levis machines).*

"A Merry Xmas and Happy New Year to all my old friends at home and overseas. Kindest regards and good luck to Archie Sproston, Charlie North, and the rest of the boys I know, and here's hoping to see them all at Quarter Bridge before 1916 is out."

2ND-LIEUT. HOWARD R. DAVIES, R.E., Motor Cycle Section *(Sunbeam trials rider, second in 1914 Tourist Trophy Race).*

"To the despatch riders at present in France, and especially those with whom I was stationed when out there, I send greetings, and I sincerely hope that on Christmas Day they will be able to join together and forget for the moment the hardships and anxiety which they are called upon to endure whilst on duty. May happiness and the best of good luck attend all throughout the coming year!"

CORPL. W. PRATT, A.S.C. *(formerly P. and M. rider, captain of British trade team in Anglo-Dutch Trial).*

"*Bonne chance*, boys! May we soon be all together again on the good old English roads. Should this message meet the eyes of Archie Sproston (Dardanelles) and Bob White (France), will they accept it personally."

SERGT. NORMAN LONGFIELD, Motor Machine Gun Service.

"Dear *Motor Cycle* and all at home in dear old England,—As jolly a Christmas as you wish yourselves, and may the New Year see us all once more in the only country worth living in, and all talking of reliability trials and T.T. races, and, if possible, participating in them. *Bonne santé, bon courage, bonne chance.*"

PTE. F. G. BALL, A.S.C., M.T., Repair Base *(successful competition rider of Douglases).*

"Taking all points into consideration, it is surprising how well the modern motor cycle is standing the racket of war service conditions. It is quite the exception nowadays to meet with defective workmanship or ill-chosen design since manufacturers have profited by the military riders' experiences. With best wishes for Christmas and the New Year."

LIEUT. F. M. C. HOUGHTON, Flanders *(originator of "All-khaki" Meeting at Brooklands).*

"To those at home the 'All-khaki' Meeting is a thing of the past, but there is another one with room for heaps more competitors. So buck up and help us along to the finish. And, to those who 'stand and wait,' keep it up and take the place of those who have gone. Keep the motor bicycles going till the boys come home. A Merry Christmas to all."

LIEUT. D. H. NOBLE, A.S.C., on active service *(Rover competition rider).*

"Christmas greetings to all motor cyclist brothers-in-arms. May the New Year see us all back in England. *Strafings* to all sidecar chassis designers! May their Christmas dinners give them new ideas, so that a sidecar will run at least a fortnight out here without falling to pieces."

STAFF-CAPT. W. B. LITTLE, 151st Brigade *(a Lakeland motor cycle mountaineer).*

"Greetings from my dug-out home! The most acceptable Xmas gift this year of the readers of *The Motor Cycle* would be—*themselves* given to King and Country. The infantry needs them."

PTE. S. A. M. WHITHAM, A.S.C. *(late of Singer and Triumph Companies).*

"The Darinétar (Rouen) motor cycle repairers wish *The Motor Cycle* a prosperous New Year, and hope that the war will end with all speed. A happy Xmas to all and the best of good luck for the coming year!"

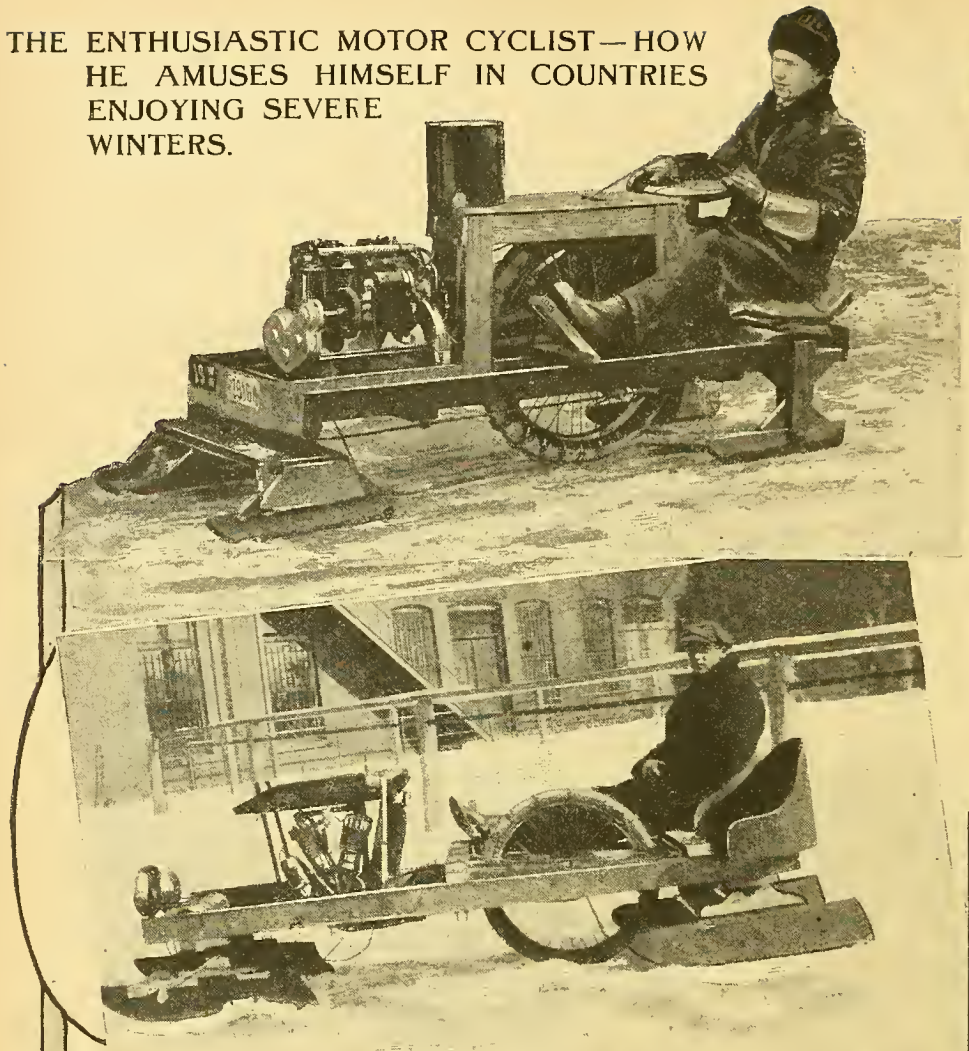
LIEUT. S. A. ROWLANDSON, A.S.C., on active service *(formerly Rudge competition manager).*

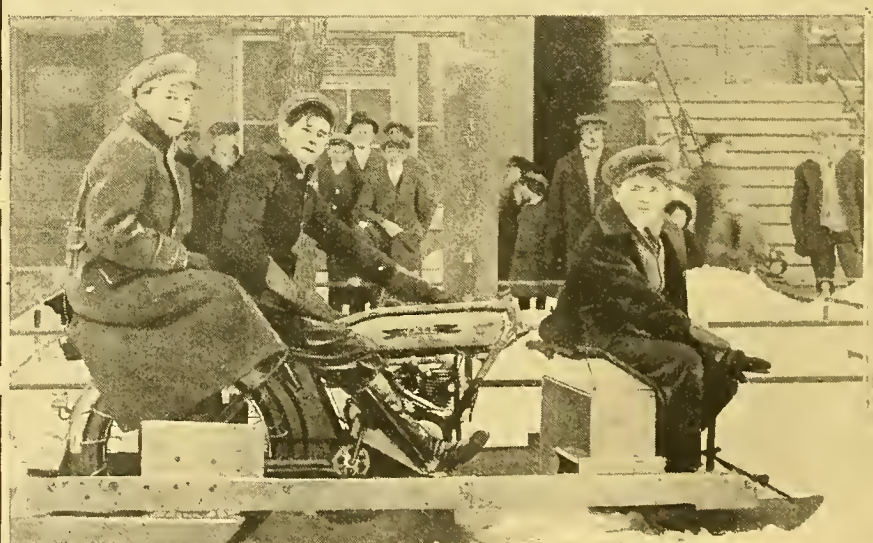
"To all my old friends and acquaintances, those met in 'Six Days' trials, T.T.'s, Grand Prix, and Olympia Shows, greetings from this show over here. What with no TT., no show for two years—well, it is a bit thick, but we do not have to worry about which group we are in."

2ND-LIEUT. S. W. CARTY, A.S.C., M.T. *(a leading North-country motor cyclist and club founder).*

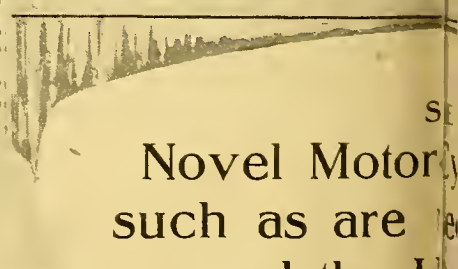
"Here's the best of good luck to all motor cyclists in the coming season. May they all do their duty by the country that gave them birth, and more power to your own elbow!"

THE ENTHUSIASTIC MOTOR CYCLIST—HOW HE AMUSES HIMSELF IN COUNTRIES ENJOYING SEVERE WINTERS.





MOTOR sleighing is a popular sport in North America, and the accompanying photographs, which were taken in Canada and the States, will produce envy in the minds of many of our readers. Sleighing, and in particular motor sleighing, owing to climatic conditions, cannot be enjoyed in this country to anything like the extent it is on the other side of the Atlantic, as our spells of winter are short and sporadic. But in the piping times of peace young enthusiasts who own motor cycles might get some days' sport if they cared to go to the trouble of converting their machines to the shapes illustrated on these pages. The point is that, apart from Scotland and the North, it is the exception to get more than a few days throughout the winter on which sleighing is possible.



Novel Motor
such as are
and the U

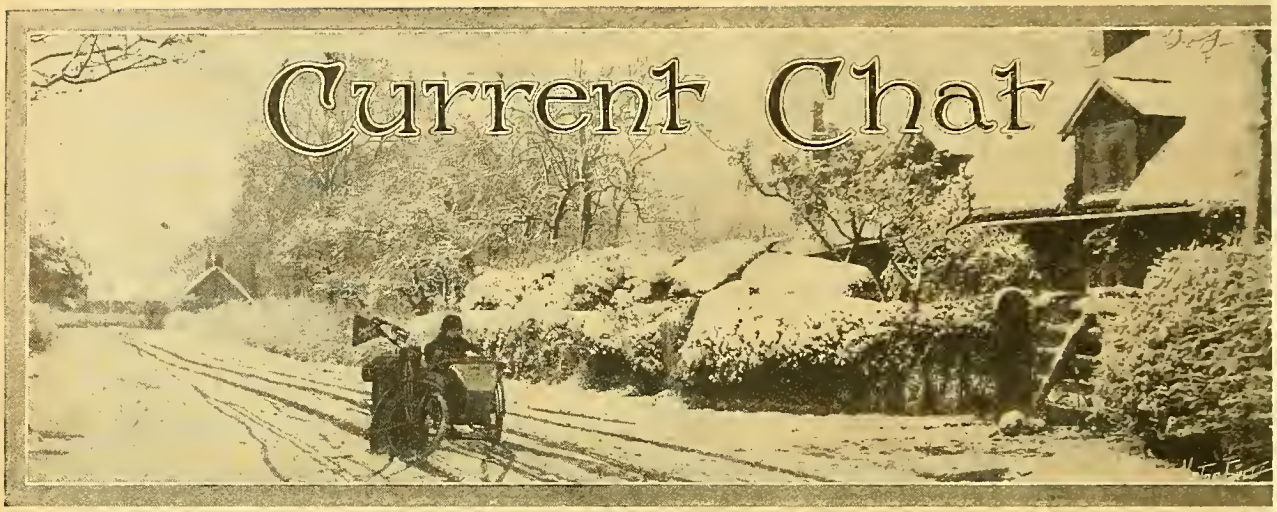
Great ingenuity has been displayed in the conversion of the outfits illustrated. With the exception of the four-cylinder Henderson in the left-hand top corner they are all typical American twins, and all the tyres are fitted with non-skid chains. Some riders have stripped their machines more than others. For instance, compare the two Indians on the right. The centre one is minus the cycle frame, while the lower one contains the motor cycle complete, except for the front wheel. Another interesting comparison is in the methods of steering employed.

Appearance is not studied, though the owner of the outfit shown in the centre has evolved quite an attractive affair. The car-type bonnet and dash not only improve the appearance but also provide a certain amount of protection for the feet and legs.

All, however, look as if they would provide fine and most exhilarating sport.

WE OFTEN REFER TO THE ADAPTABILITY OF THE MOTOR CYCLE—THESE ILLUSTRATIONS GIVE FURTHER PROOF OF OUR CONTENTION.

ME
Cycle Sleighs
sed in Canada
nited States.



TIMES TO LIGHT LAMPS.

GREENWICH TIME.

Dec	23rd	4.52	p.m.
,,	25th	4.53	,,
,,	27th	4.54	,,
,,	29th	4.56	,,

In London half an hour earlier.

Overseas Trials.

Just as this issue goes to press we have received from our Overseas correspondents photographs and particulars of trials held in Holland, South Africa, and New Zealand, and they will be published next week.

Special Features of this Issue.

In accordance with our usual custom, this being the Christmas issue of *The Motor Cycle* contains several features of a seasonable nature.

A number of readers well-known in the motor cycling world and who are serving their country in various capacities have sent Christmas greetings.

Flight Lieut. Wilberforce.

The statement in our last issue respecting Mr. Victor Wilberforce, made on the authority of Mr. W. W. Douglas, is, happily, untrue. We have received a communication from Mrs. Wilberforce stating that her son is now at home on leave. Needless to add, we are only too delighted to make this announcement, and offer Mrs. Wilberforce and her son our sincere apologies. Flight Lieut. Wilberforce joined the R.N.A.S. before the outbreak of war, and has been on active service ever since.

N.W.A.A. Meeting.

The annual general meeting of the N.W.A.A., which constitutes the north-western centre of the A.C.U., was held in Liverpool on Saturday last, Lieut. T. A. Moulds being in the chair. It was resolved, owing to the extremely difficult circumstances now prevailing, and the utter stagnation of the sporting side, that the Association should be suspended until the end of the war, or whenever it may be possible to resume activities. Three trustees were appointed to look after the interests and affairs of the Association, these being Messrs. Moorhouse, of Bury; Whithouse, of Oldham; and Kettle, of Liverpool.

Trend of Design.

Still another four-stroke lightweight made by a firm hitherto specialising on two-strokes is illustrated and described in this issue.

Home-made Mudshields.

A reader resident in Siam, who regularly rides in white cotton suits, has sent us particulars of a neat and simple mudshield he has rigged up on his Sunbeam. It is referred to an page 638.

The National War Funds.

At the week-end the principal national relief funds stood as follows:

The Prince of Wales's Fund ..	£5,657,546	0	0
The *Weekly Dispatch* Tobacco Fund	93,257	0	0
The Times Fund for the Sick and Wounded	2,755,068	0	0
The Queen's Work for Women Fund	167,497	7	4
Daily Chronicle Xmas Gift Fund (concluding total) ..	21,871	4	7

The New Lighting Regulations.

The new lighting regulations have now been issued by the Home Office, and will come into operation on January 10th, 1916. With reference to rear lights, a month's grace is allowed in those places where the rule is not already in force.

The restrictions in those areas contained in Schedule I. are as follow:

ELECTRIC LAMPS.—The bulb must not exceed 12 watts, or give in use a greater candle-power than a 12 watt (12 nominal c.p.) bulb as standardised for side lights by the Engineering Standards Committee. The front glass, if circular, must not exceed 6in. in diameter, and if rectangular, the longer side must not exceed 6in. The whole of the front glass must also be obscured with one thickness of ordinary white tissue paper.

ACETYLENE LAMPS.—The burner must not consume more than 14 litres (half cubic foot) per hour, and the size must be as above. The whole of the front glass must be obscured with one thickness of white tissue paper, or with paint, ground-glass, or a disc of some other uncoloured material, so that the obscuring effect is not less than that of one thickness of ordinary white tissue paper.

OIL LAMPS.—One burner only is allowed, and the wick must not be more than $\frac{3}{8}$in. in width.

SPECIAL FEATURES.

THE ELOPEMENT OF ARAMINTA.
BLUFF.
CHRISTMAS DESPATCHES.

SIDE PANELS.—With the exception small red or green side panels, these m be covered with some opaque materi

The material used for obscuring light must not be wetted or treated any way to reduce its opacity.

The same restrictions apply in th places mentioned in Schedule II., b in addition, an opaque disc of card some other material having six ho such as we exclusively described in *Motor Cycle* of December 9th, page must also cover the front glass. T disc must not interfere with the i mination of the number plate.

ALL vehicles must show a red light the rear *by means of a rear lamp.*

Lighting-up time is now half an h after sunset, instead of one hour formerly.

DISTRICTS AFFECTED BY THE ORDER

SCHEDULE I.—The whole coast wit six miles of the sea or navigable wat of an estuary. The counties of Angles Bedford, Cambridge, Durham (nea all), Essex, Hants, Herts, Hunts, Ke Lincoln, Norfolk, Northumberl (nearly all), Suffolk, Surrey, Suss Yorkshire (nearly all). Important to in Berks, Bucks, Lancashire, Leices Northants, Notts, Stafford, Warwi The boroughs of Stockport and Ches field.

SCHEDULE II.—Bedford, Luton, C bridge, Darlington, Hartlepool, Jarr Stockton-on-Tees, Durham, Gateshe South Shields, Sunderland, Colches Harwich, Southend-on-Sea, Portsmou Chatham, Dover, Folkestone, Gilli ham, Gravesend, Hythe, Maidsto Margate, Ramsgate, Tunbridge We Grantham, Louth, Great Grimsby, L coln, Great Yarmouth, King's Ly Norwich, Peterborough, Berwick, Wa end, Newcastle, Tynemouth, Bury Edmunds, Lowestoft, Ipswich, Goo ming, Guildford, Reigate, Bexhill, Ho Brighton, Eastbourne, Hastings, B lington, Hull, Middlesbrough, S borough, Thornaby-on-Tees, and York

An American Trip.

Mr. Robertson Brown, British agent for the Henderson four-cylinder motor cycle, who is paying a visit to the Henderson factory in America, has just supervised the shipment of sixty-three machines to London. It is interesting to note that he has expressed the opinion in America that, after the war, there will be several British machines fitted with four-cylinder engines.

Cumberland County M.C.C Record.

The annual general meeting of the Cumberland County M.C.C. was held at the club's headquarters, Crown and Mitre Hotel, Carlisle, on November 27th; Mr. D. R. Leech in the chair. Owing to a very large percentage of the members of this sporting club being on active service the attendance was small. It was announced, and received with keenest regret, that two of its gallant members had already laid their lives on the altar of patriotism, viz., Lieut. G. N. Frazer, who fell when nobly leading his company at Neuve Chapelle on March 10th, and Lieut. Dick Gilbanks, who fell in Gallipoli on August 9th, when with splendid heroism he was leading and cheering on his men. The president, Mr. Christopher W. Lowther, is recovering from his very severe wounds. Members of this club who are serving their King and country have been made honorary members for the period of the war. The activities of the club have been suspended for the duration of the war, and practically all its funds invested in War Loan. A small committee has been appointed to look after the club's interests. Mr. W. B. Anderson, 157, Warwick Road, Carlisle, is hon. treasurer; Mr. T. Rutherford, 79, West Walls, Carlisle, hon. sec.

Mr. and Mrs. R. G. Page, of St. Leonards-on-Sea, in their 3½ h.p. Rover sidecar. No better testimony to the reliability of the modern motor cycle will be found than the number of middle-aged people who indulge in motor cycling nowadays. Mr. and Mrs. Page have a son and daughter who are motor cyclists.

Greater Britain Still Answering the Call.

Among last week's enquiries respecting recruiting letters reached us from Australia, Singapore, F.M.S., South Africa, and Jamaica.

A Well-known Motor Cyclist Married.

On Friday last S. L. Bailey, the well-known Douglas rider, who is now holding an important position with Messrs. Douglas Bros., Bristol, was married to Miss Pullin, the sister of C. G. Pullin, who won the Tourist Trophy Race in 1914.

Police Traps—Threatened and Actual.

The Automobile Association is informed that proposals have been made for the establishments of speed limits for motor cars in Aspatria, Penrith, and Longtown (Cumberland). The local Highways Committee resolved that the matter be referred to the police with a suggestion that proceedings might be taken against motor drivers if found to be driving to the danger of the public.

Traps are in constant operation along the Barking Road, East Ham, and Aldersbrook Road, Wanstead Flats.

Average Prices.

We give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model the average for the past week is quoted. If there were not at least two advertisements, then the last occasion on which they were quoted is given.

Make.	Year.	H.P.	Average for last week.	Latest weekly average obtainable
A.J.S.	1915	6 3-sp. sidecar ..	—	£90
,,	1914	6 3-sp. sidecar ..	—	£70
,,	1913	6 3-sp. sidecar ..	—	£55
,,	1915	2¾ 3-speed	—	£48
Allon	1915	2¼ 2-speed	—	£36
Ariel	1914	3½ 3-sp. sidecar ..	—	£53
Bradbury	1914	4 3-sp. sidecar ..	—	£47
B.S.A.	1915	4½ 3-sp. sidecar ..	—	£70
,,	1914	4½ 3-sp. sidecar ..	£56	—
,,	1913	3½ 2-sp. sidecar ..	£44	—
,,	1913	3½ 2-speed	£31	—
Calthorpe	1914	2 2-speed	£19	—
Clyno	1914	6 3-sp. sidecar ..	—	£63
,,	1913	6 3-sp. sidecar ..	—	£50
Douglas	1914	2¾ 2-speed T.T. .	£40	—
,,	1914	2¾ 2-sp. kick start	£38	—
Enfield	1915	6 2-sp. sidecar ..	£72	—
,,	1914	6 2-sp. sidecar ..	£61	—
,,	1913	6 2-sp. sidecar ..	£49	—
,,	1915	3 2-speed	—	£45
,,	1914	3 2-speed	—	£37
H.-Davidson	1915	7 3-sp. sidecar ..	£81	—
Indian	1915	7 3-sp. sidecar ..	£80	—
,,	1914	7 2-sp. sidecar ..	£60	—
,,	1914	7 T.T., free eng.	—	£44
James	1915	4½ 3-sp. sidecar ..	—	£63
Matchless	1914	8 3-sp. sidecar ..	£77	—
New Imperial	1915	2½ 2-speed	£32	—
,,	1914	2½ 2-speed	—	£26
O.K.	1915	2 2-speed	—	£25
P. & M.	1913	3½ 2-sp. sidecar ..	—	£13
Premier	1914	3½ 3-sp. sidecar ..	—	£49
,,	1913	3½ 3-sp. sidecar ..	—	£44
Rex	1914	6 2-sp. sidecar ..	—	£48
Rover	1915	3½ 3-sp. sidecar ..	—	£56
,,	1914	3½ 3-sp. sidecar ..	£41	—
,,	1913	3½ 3-sp. sidecar ..	—	£40
Rudge	1913	3½ Multi	—	£29
Scott	1913	3½ 2-sp. sidecar ..	—	£44
Singer	1913	3½ free engine	£23	—
Sunbeam	1915	6 3-sp. sidecar ..	£96	—
,,	1914	6 3-sp. sidecar ..	—	£80
,,	1915	3½ 3-speed	—	£63
,,	1914	3½ 3-speed	—	£52
Triumph	1914	4 3-sp. sidecar ..	£53	—
,,	1914	4 3-speed	£42	—
,,	1913	3½ 3-sp. sidecar ..	£48	—
,,	1913	3½ 3-speed	—	£38
Williamson	1914	8 2-sp. sidecar ..	—	£65
,,	1913	8 2-sp. sidecar ..	—	£55
Zenith	1914	8 Gradua sidecar	—	£67
,,	1914	6 Gradua sidecar	—	£54

A Flying Visit to the United States

Mr. W. H. Wells left for America last week, his intention being to visit the Indian factory with a view to improving the delivery of machines intended for the British market. According to Mr. Wells, American manufacturers are finding difficulty in obtaining raw material, but he hopes to help matters by arranging to fit still more British equipment on the Indians sold here, and, incidentally, avoid the tariff. He had as companion Mr. Chas. Jarrott, the well-known motorist, who, we understand, has gone to America in connection with motor car requirements of the Government.

Dublin and District M.C.C. Dinner

The annual dinner of the Dublin and District Motor Cycle Club took place on Thursday of last week. The proceedings, in which many Cork Club members joined, were very enjoyable, and the evening's entertainment was greatly added to by a very excellent musical programme. Mr. G. A. M. Curtis, the president of the club, occupied the chair, and had on his right the president of the Cork Club, Mr. Frank Daly.

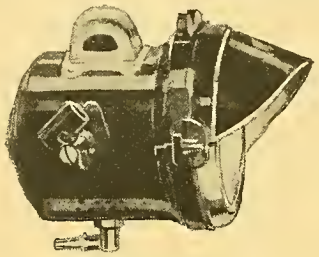
The president distributed the prizes won in the numerous competitions of the club during the season, the chief trophy, the Rudge-Whitworth cup, for the club's open twenty-four hours trial, being shared by the honorary secretary, W. H. Freeman, and T. O'Toole, while the Roche cup for the Glengarriff and back two days event went to A. W. Mooney. These cups, and also the large number of minor ones, were duly filled and circulated in the customary manner.

Mr. Charles Jarrott and Mr W. H. Wells leaving Euston last week *en route* for the United States. The former is making the trip on Government work, the latter to visit the Indian factory.

F.R.S. LAMPS FOR 1916.

FOR next year the F.R.S. Co. is marketing three new types of lamps, each one type having certain improvements either in design or manufacture, while the 8 volt dynamo has been redesigned as regards certain of its details.

The chief new model is the F.R.S. Junior, a substantially made gas lamp having an improved parabolic mirror and a lens front glass in place of the old flat glass. In deference to the new lamp



The F.R.S. Junior lamp.

regulations, the lugs by which the lamp is secured to the bracket now are soldered to the side spindles of the lamp, and as these lugs are set to fit the F.R.S. bracket no further adjustment is necessary. The finish is for the most part black, so that it is easy to clean.

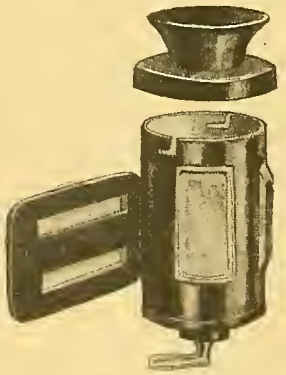
Two new tail lights now are marketed. One—a black finished circular lamp with a slotted plate riveted to the body, in order that the light may be adjusted to the number plate—is priced at 4s. only. It is extremely strong, has good wide air holes, and the top is made with a bayonet fitting so that access may be obtained to the burner. It has been found that a loose top is less often lost than a detachable underplate.

The other tail lamp is nickel-plated, costs 5s. 6d., and has also a slotted plate for adjustment on the number plate. The lamp body is triangular, and the front (that part with the red disc) opens on a hinge when a loop-headed pin has been withdrawn.

The Dynamo Outfit.

As regards the dynamo, readers will remember that it gives light for a 40 c.p. lamp, and a beam which renders anyone recognisable at a long distance with a lamp of 7in. front.

The appearance of the machine is exactly the same as it was when last described, but the detachable cover over the brush gear is fitted now to bed down evenly and so remain watertight under the worst conditions. This necessitates certain minor alterations to the end plate and the removal of certain lugs.



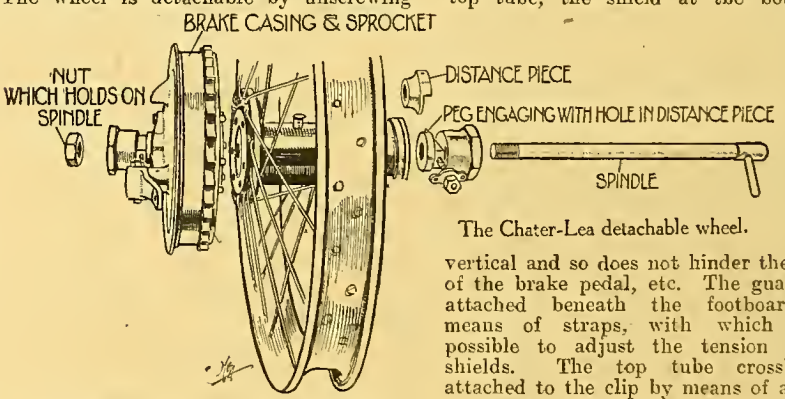
The black finished F.R.S. tail lamp.

The brush gear itself is now altered, and instead of the brass brush holders insulated with bushes of vulcanite there is now an extension of the aluminium centre piece which carries the brushes, their springs and the leads. To insulate the brush from the body sheet vulcanite is used with bushes of simpler form, while the cables or leads have beads of vulcanite strung on them, so preventing any contact with sides or cover.

In the 1915 Douglas dynamo an extra flywheel was fitted upon the gear box shaft outside the big sprocket of the Douglas, the dynamo being clipped to the seat-pillar and driven from this flywheel. Now, however, a small aluminium pulley is fitted upon the gear box shaft and clamped thereto by the big sprocket securing nut.

CHATER-LEA DETACHABLE WHEEL.

MESSRS. CHATER-LEA, LTD., have introduced for their latest No. 7 sidecar outfit a detachable wheel, a desirable innovation which will be much appreciated. The wheel runs on standard Chater-Lea waterproof journal bearings, which have been specially adapted for the purpose. The wheel is detachable by unscrewing



The Chater-Lea detachable wheel.

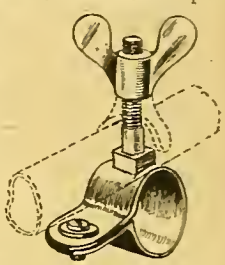
the nut shown on the extreme left hand of the sketch, and removing the ingenious distance piece. When this has been accomplished, the wheel can be detached. There are six pegs in the internally expanding brake casing, which engage with six holes in the wheel hub, through which the drive is taken. When the wheel has been withdrawn, the brake and sprocket remain *in situ*.

NEW GLORIA SIDECAR.

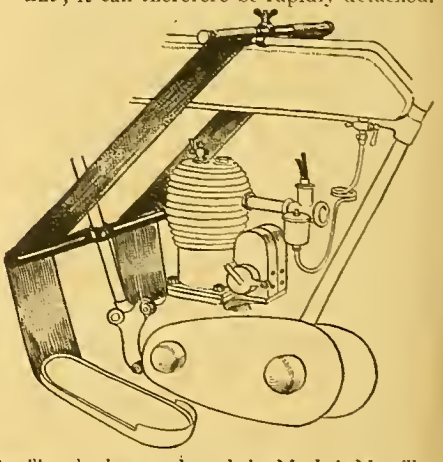
With regard to the new pattern Gloria sidecar illustrated on page 614 of our last issue, we are requested by the Gloria Cycle Co., Ltd., Coventry, to point out that they are not in a position at the present time to execute orders, and, as far as can be seen at present, the firm will be unable to place the new design on the market until after the war.

A NOVEL MUDSHIELD.

A RATHER novel and at the same time somewhat unusual type of mudshield has been invented and fitted to a Sunbeam motor cycle by a Mr. J. A. Macgill, of Bangkok, Siam. The chief advantages of these guards are that, in combination with a reasonably efficient front guard, they afford perfect protection from mud, wet, and cold for the rider's legs and feet, yet at the same time the air is not prevented from reaching the engine. They are extremely simple and are rapidly attached or detached. The guards consist of two strips of varnished leather or some similar material attached beneath the footboards, carried over a crossbar situated some six inches above the front of the footboards, and then carried back and attached to another tubular crossbar situated in any convenient position on the top tube, preferably as near the rider's legs as possible. The idea of carrying the leather over the lower front crossbar is so that, if it is desired to attach the top ends well back along the top tube, the shield at the bottom is vertical and so does not hinder the action of the brake pedal, etc. The guards are attached beneath the footboards by means of straps, with which it is possible to adjust the tension of the shields. The top tube crossbar is attached to the clip by means of a single nut; it can therefore be rapidly detached.



Clip for securing mudshield to top tube of frame.



Auxiliary leather guards made by Mr. J. A. Macgill, of Bangkok, Siam.

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Winter Lubrication.

Sir,—I should be pleased to hear from some of the many readers of *The Motor Cycle* what is the best lubricant to mix with castor oil for winter riding. I notice that in using thin lubricating oil mixed with castor oil the thin oil rises to the top and does not mix readily.

CONSTANT READER.

Broken Spokes.

Sir,—With reference to the correspondence on the subject of broken spokes in connection with chain-driven motor cycles, our experience may be interesting to you as we have used chain-driven machines now for some years, and such a thing as a broken spoke we have no recollection of, which is undoubtedly on account of the fact that we use a cushion hub. With this system it is of no importance whether the slipping clutch is adjusted up tightly, or *vice versa;* in fact, it is better that it should be adjusted up tightly, otherwise the power of the engine will gradually loosen it, so much so that it will not then keep tight without constant adjustment.

This system of hub is also a wonderful chain saver, the system comprising rubber buffers, and one has only to imagine the impossibility of breaking a steel spoke by pulling at it through a rubber medium to realise what a fine system it is, and for the same reason it can be understood why the chains last so extraordinarily well.

MOTOSACOCHE, LTD.,
OSBORNE DE LISSA, Managing Director.

A Curious Fault.

Sir,—I have a two-stroke machine which has an objectionable fault which perhaps some of your readers can explain.

When travelling at fairly low speeds (15-20 m.p.h.) at times the machine almost pulls up with a violent jerk, resembling a partial seizure of the engine. I always give plenty of oil, and have tried everything I can think of to effect a cure without success. The piston and rings are a free fit and show no signs of seizing at any place.

The symptoms only develop at small throttle opening, never when climbing a hill and never after the first half-hour of a ride. I may say I have written to the makers on the subject without obtaining any explanation. The machine is very powerful for its size, and has a good turn of speed for a two-stroke. The carburetter is a Senspray.

H. WEBSTER MOSS.

Sidecar Stands.

Sir,—Another trouble with sidecar stands is apparent in my 6 h.p. Enfield sidecar combination, 1915. This combination, though extremely well designed generally, suffers from having a front wheel stand with a rounded end where it rests on the ground (probably made so to fit into the front mudguard). The result is that no strain comes on the frame as in the two-legged variety, but the front rolls over on the U, making it difficult to work on the front wheel tyre, unless the handle-bar is tied to the saddle.

N. FIELDER.

Winter Riding.

Sir,—Although I have taken in your admirable paper for some years, this is the first offence as a correspondent. I have been reading your article on "Hints and Tips for Winter Riding," and may I suggest the use of disc wheels? About two years ago I fitted a set to my Triumph machine, and they have not been removed since. I find that the mudguards do not get so much choked up now as was the case previously. I am often asked if I suffer trouble with the wind. Well, to tell you the truth, my only trouble is when I am riding on greasy *pavé* and there is a stiff wind, then, to counteract that, I always ride very carefully. Up to now I have not had a single slip or fall through my disc wheels. But I advise anyone who does fit them to use low semi-racing bars; they are far steadier.

They (disc wheels) are also easily made from sheet aluminium. Cut round a little larger than the rim of your wheel, and a hole cut in the centre for the hub. Then cut from edge to centre, and rivet together to make a cone shape. Then put one disc either side and bolt together with about eight nuts and bolts, which will never rattle loose. Mine cost me, ready cut to size, 8s. They are also a fine preventive for grit getting into hubs. Another tip is this. Continue your front mudguard a little over half-way round the front wheel, as there is always a certain amount of mud taken round to that point. When one is travelling fast or against a head wind it is all blown back on to the cycle, so that if this is guarded the mud is then thrown either on to the mudguard or else the ground again.

CHAS. DAUNTON-SHAW (Trick Cyclist).

A Novel Test of Engine and Clutch Efficiency.

Sir,—Being very interested in the article in your issue of November 25th last, I was recently able to test my own machine in a similar manner, and was rather surprised at the results obtained, so am writing you to see if the method of testing were carried out correctly. In the first place, a spring balance was obtained, reading up to 300 lb. and fitted with a maximum hand; this was roughly tested for accuracy by weighing myself upon it. One end of the spring balance was secured to a ring in the wall at a convenient height, the other end being attached to the back rail of luggage carrier by a short length of rope. The engine was then started up, with the wheels on the ground, and the clutch gradually engaged, the throttle being also opened to get maximum power. The first reading registered a pull of 90 lb., which could easily be maintained for, say, half a minute, the engine running at about 1,500 to 1,750 r.p.m. Other readings of 95 to 100 lb. were afterwards obtained, and one of 110 lb., which latter, however, caused the engine to konk out.

As these results do not compare with those obtained by Messrs. The Headingley Motor Co., perhaps you can throw some light on the subject. These results can be vouched for by Mr. C. Foster, of the Coventry Magneto Repairing Co., 9a, Fleet Street, Coventry, at whose premises my machine was tested, and who would no doubt be willing to carry out a test on any of the local motor cyclists' machines.

My machine is a self-assembled one, having a 1912 3½ h.p. Triumph engine, B and B. carburetter (30 jet), and a Villiers clutch, single gear ratio 4.75 to 1. The valve timing is not the makers' standard, but has been set according to various hints culled from the pages of *The Motor Cycle*. It is also fitted with a M-L magneto, which is a soundly-made British article, and has proved to be a very reliable instrument, and one which will really give a fat spark at a low engine speed.

ESLUH.

[The test appears to have been carried out correctly, and our correspondent is to be congratulated upon the excellent results obtained.—ED.]

Fittings on American Motor Cycles.

Sir,—Your article in your issue of December 9th in reference to the failure of American manufacturers to adapt themselves to English ideas has struck me as being radically unfair and also written by one who has not had very much experience of American machines.

The first thing I have to complain about is your statement to the effect that *machines sent over here by American manufacturers are fitted with 3½ to 1 gears and are not suitable for sidecar work.* I consider this is misleading to your readers, especially considering the wide circle of popularity your paper enjoys. You seem to forget that 3½ to 1 gear is a standard solo gear, and I have no hesitation in saying that if a rider enquires of the maker of the machine and explains he will use it for sidecar purposes the necessary sprockets are obtainable which will give him any gear he desires. As an instance of this I quote the Harley-Davidson service, holding no brief for this company whatever, but being a great admirer of their pushful methods and the thorough business-like way in which they conduct all their transactions.

My second point is in reference to the lever controls. *You oppose the handle-bar control,* which is simplicity itself, and for all-weather riders is the ideal. How many thousands of riders will speak of the incessant trouble they get after a wet day's riding, of grit and rain getting underneath the protector of the air and throttle levers, and in the morning when they come to use the machine their air and throttle lever rusted up.

I have little to add to what I consider absurd remarks in reference to the *Bowden wire control to the gear,* but, as an Englishman, and one who likes to see fair play, and a rider of some twelve years' experience, I consider the American and his methods in dealing with spare parts alone miles ahead of the English manufacturer. Where is the firm to-day in England who, on receipt of a telephone message, will despatch one of its mechanics by the first train because one of its riders is hung up, and when the question of expense arises writes and informs the customer there is no expense to him whatever as this all comes in his guarantee. And do not forget you are manifestly unfair to firms who come to this country and establish English companies, and, in spite of the present tariff, have not altered any of their arrangements in their guarantees which were established before the war.

S. A. SERPELL.

Reading.

[Our correspondent has distorted the views expressed in our article. We have therefore italicised his inaccuracies. Also he has criticised our article without reading it carefully. We did not suggest that all American machines are sent over here fitted with a 3½ to 1 gear for sidecar work, but it is a fact that such ratios were lately not uncommon on machines sent out for demonstration with sidecars attached. This experience of ours is also confirmed by correspondents. With regard to the second point we do not oppose handle-bar control (we think that our more observant readers are quite aware of this), but we pointed out that most English riders prefer the handle-bar levers to the twist grip so popular in America. Thirdly, a Bowden wire-controlled gear was not suggested, and a wire-controlled clutch is by no means an absurdity, but a well tested and successful fitment. Our correspondent writes slightingly of English firms, but we have recently heard of two English manufacturers who have done the very thing which he suggests they never do, viz., Messrs. Rudge-Whitworth and the Enfield Cycle Co., and we have no reason to suppose that these are isolated cases.—ED.]

Rapid Progress of a New Rider.

Sir,—I have recently returned on recuperation leave from the German Cameroons, and take this opportunity of saying how much I have appreciated the valuable information contained in your columns from week to week. I have just taken delivery of a two-stroke machine—my first mount. I was able to ride it through a busy city without the slightest trouble. The next day I did a trial trip of twenty-five miles, the next day eighty miles, the next day fifty miles with passenger on the carrier and a return journey of eighty miles.

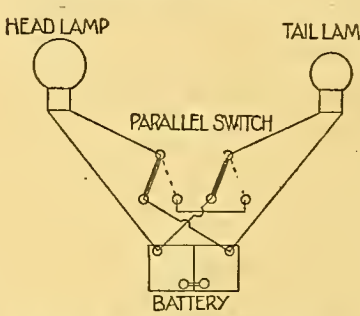
As I had never been astride a motor cycle up to the moment of delivery I consider my experience should be a great encouragement to all intending beginners.

REGINALD ROWLAND (Nigerian Survey).

Varying the Power of Electric Light.

Sir,—I have read with interest the article by "Auriga" on varying the power of electric light, and also the two letters to which he refers.

I would suggest that the best method of dimming the lights is as shown in the enclosed sketch, the wiring of which is quite simple.



With the switch in the position shown, the lamps would be in parallel and giving full power. On switching over they would be in series and the light greatly reduced. The intermediate position would, of course, be "off."

Probably an electrician would find a simpler way of wiring than the one I have illustrated.

W.K.O.-M.

The Psychic Relation between Man and Machine.

Sir,—I entirely agree with those who think there is some sort of understanding between owner and machine. Who has not experienced the "cussedness of inanimate objects"? And this must have its opposite number at the other end of the scale. For instance, who has not taken a bad toss and found the machine unscathed and able and willing to go on at once, as if in sympathy with your bad luck, and anxious to give you fresh heart? And who has not had a poisonous ride when all the elements seem to be doing their level damnedest to stop you, and yet you run through, with the faithful steed dripping with mud and water, but always plugging cheerily away against the wind and dark? Isn't this gratitude for care and attention in the garage, and do not machines often put you to shame by responding gamely to your call on bad hills and in tight corners in spite of your guilty conscience of over-driving and neglect? I am sure of it, according to my experience. I have owned machines which were thorough good companions on the road; also one brute, curiously (or naturally) enough, a Hun make, which was possessed of seven devils, each worse than the first. This leper amongst stink bicycles never missed a chance of doing the dirty on me, in spite of care such as that of a young mother on her first-born. Its crimes were worthy of its ancestors. I ran it 1,000 miles in seven months at a cost of just over one shilling a mile. And then I couldn't get rid of it. I hope it has gone to its makers by now.

Someone in the same number remarks about there being no motor cycles in Gallipoli. There may be none now, but there were in April soon after the landing. I saw several Douglases. One afternoon I saw a fellow riding along a road (such roads!) being sniped by a Turk, of whom there were several behind our lines in those days. It must have been rather boring if the Turk was anything of a shot. Five men of the R.W.Y. went after him, but I could not wait to see if they got him. I saw several at Suvla, too, but the Peninsula is not the country for them.

I fear I have been very verbose, but it is a great pleasure to read and write about the pastime—if one cannot enjoy it.

H.M.S. *Euryalus.* C. T. NUTHALL, Lieut. R.N.

[Our correspondent returns to an old topic, but as he is on Active Service with the Fleet his letter has taken many weeks to reach us.—ED.]

Motor Cycles for Home Service Men.

Sir,—May I through the medium of your paper be permitted to voice a suggestion which many men engaged in the services at home, temporarily or permanently for duration of war, would very much appreciate?

Many are engaged on duties which necessitate running about considerably, and not having the wherewithal to purchase a machine of their own would greatly appreciate the loan of a motor cycle.

There must be a considerable number of machines which have been rejected by the War Office as unfit for further use in the war zones, which at a small cost could be put into running order.

If the War Office would sanction the loan of these machines, anyone who might be allotted the use of one would repair it at his own cost and return it at the end of the war.

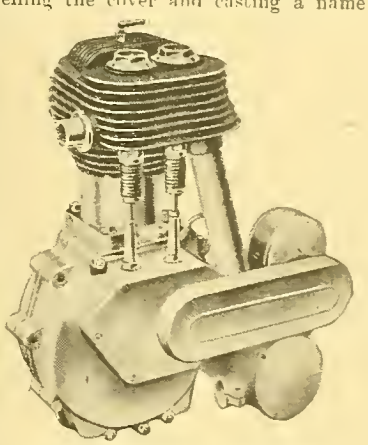
Personally, it would give me great satisfaction to be granted the use of one on these conditions.

CHIEF PETTY OFFICER, R.N.V.R.

Engine Design.

Sir,—In the course of your remarks *re* next year's models in a recent issue, you say, "There are infinitely too many nooks and crannies, especially on the engine, which harbour the dirt"; also, "Bearings are too small for the loads they have to carry." Now whilst there is always room for improvement—and the intelligent section of manufacturers will always welcome suggestions for such—it is, nevertheless, an extremely difficult matter to point out where, or rather how, improvement may be made in the parts mentioned, at any rate in some engines.

Generally speaking, the crank case is an offending member, and the custom of panelling the cover and casting a name and various webs, rings, etc., in prominent relief is to be deprecated. In many cases this is undoubtedly done for appearance sake, but the accompanying illustration surely proves that appearance need not suffer, and is, in fact, enhanced by a clean and smooth exterior.



The clean crank case of the Norton engine. (See letter from the maker on this page.)

It will be noticed that in the Norton engine there is a total absence of interstices for the lodgment of dirt, that all corners are radiused and edges rounded; in addition, all cover screws are sunk flush with the case, so giving a perfectly flat surface.

Regarding small bearing areas, so long as manufacturers adhere to narrow crank cases, cramped timing gear cases, and internal cams, with their necessarily narrow faces, small rollers and smaller shafts, adequate bearing dimensions will be difficult of realisation.

In the engine mentioned external cams are fitted, having a total bearing surface for the ½in. rocker face of 2¼ square inches to each cam, and a camshaft bearing roughly 2in. long by ½in. diameter—considerably larger than many small end connecting rod bearings which take the thrust of combustion; but *area* of bearing is not the sole consideration where durability is concerned. Large bearings may give shorter service in a badly-designed engine than smaller bearings in one of otherwise good design.

The Design of Connecting Rod and Piston.—The strength of piston rings and the design of flywheels affect the durability of bearings, as also does the stroke-bore ratio. A large diameter piston with short throw crank must necessarily subject the bearings to greater load or pressure than a long stroke and small piston with its smaller load, friction (i.e., wear) increasing with the load. This advantage with others of the long-stroke engine must at last be receiving recognition in view of the many models of lengthened stroke now being marketed.

JAS. L. NORTON.

Unlighted Waggons.

Sir,—I am a regular reader of *The Motor Cycle*, and I should like to bring the following complaint to your notice. Every evening after dark I meet A.S.C. waggons in the neighbourhood of Bisley without lights and always in the middle of the road. Surely the Government could provide a light for the leading waggon. We are not allowed head lights, so how can we be expected to see these waggons?

H. J. CANN

Winter Riding.

Sir,—I have noticed your reference recently to the discomforts experienced in motor cycling in winter time, and I write to express my satisfaction with the protection which the Scott machine affords. I use my machine with sidecar constantly throughout the winter for my professional visiting as a clergyman, and find that the protection against mud splashing is perfect so that I can wear ordinary professional clothes. Moreover, the situation of the radiator with the warm air generated by it makes it quite unnecessary, even in the coldest weather, to wear leggings, and the frame allows an overcoat to be worn without any inconvenience.

I have just been realising more and more how admirably adapted the Scott machine is for work such as mine.

(Rev.) HERBERT F. FALCONER.

Duplex Lubrication.

Sir,—Those of us who have read our "Ixion" for as many years as the writer has know the value to be attached to his opinions, but for the sake of the novices, and in justice to a machine which I ride myself, I should like to state that the two-stroke James really does not use "forty-four fluid ounces of lubricant in 100 miles." The measure in the petrol tank holds just three and a half ounces, and it will be found that seven full strokes of the pump are required to fill it. The pump therefore holds half an ounce of oil—not two or three ounces, "Ixion"!

One pumpful of oil per five miles is really a good deal more than the engine wants, but taking it at this figure, the oil consumption will be ten ounces per 100 miles through the pump, and three and a half ounces in the petrol, or thirteen and a half ounces total.

This is about 1,200 miles per gallon, which is quite good for a motor cycle. Surely even "Ixion" would have noticed the effect on his oil bill if he had been using one gallon per 360 miles!

W. WOODWARD.

Four-stroking on Two-strokes.

Sir,—I note many of your readers who own two-stroke machines complain of four-stroking, especially on going downhill. My advice to them would be to try a B. and B. two-stroke carburetter, as my machine is fitted with one, and it is very seldom I can get it to four-stroke. I am sure the carburetter has a lot to do with this nuisance, because a friend of mine has the same make of machine as I have, but with a different carburetter, and it is a chronic four-stroker. I may state that I am in no way connected with this firm, but give my views as a satisfied user.

WILFRED F. GOWER.

Oildag.

Sir,—Some time back "Ixion" wrote very favourably of his experiences with Oildag, and as several of my motor friends swear by it, I determined to try it on my machine—a Scott. I first experimented with the concentrated Oildag mixed with the oil I was then using, and was so delighted with the results obtained that I decided to go in for Oildag all ready mixed for using, as supplied direct by the Oildag people. My hopes have been more than realised, and one has only to try this wonderful oil to become a confirmed Oildagger, and to know, what "Ixion" so aptly terms, "silky" running. Less oil is required, and yet, after a long solo "blind," or a long pull up a bad hill with sidecar attached, my engine keeps as cool as ever. I have just taken my engine down after 3,000 miles on Oildag, and, apart from carbon deposit, everything is in perfect order.

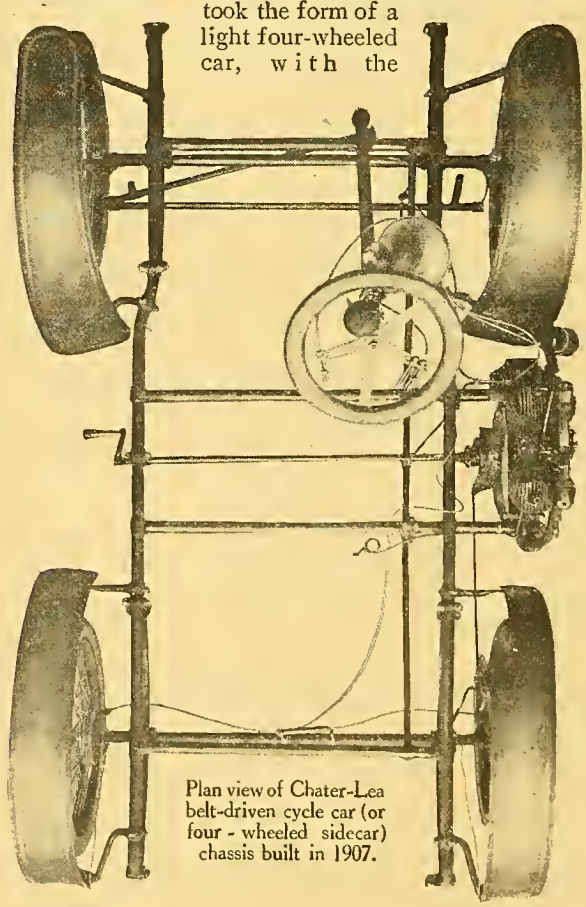
PERCY WAITE.

[MANY OTHER INTERESTING LETTERS ARE UNAVOIDABLY HELD OVER UNTIL NEXT WEEK.—ED.]

A NINE-YEAR-OLD CYCLE CAR.

The Chater-Lea Carette—a Forerunner of the Modern Double-seated Sidecar.

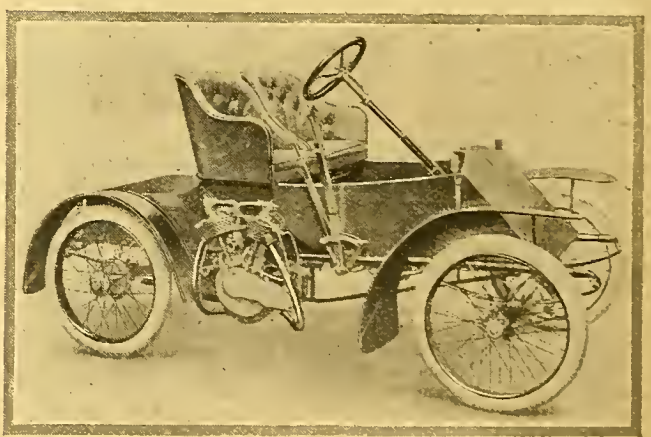
IN these days when economy is a very considerable item in all things, especially motoring, the man requiring a passenger-carrying outfit would think twice before purchasing a full-blown car, whereas the vehicle incorporating the economy of the sidecar outfit with some of the comforts provided by a light car, especially so far as the points of cleanliness and weatherproofness are concerned, would in all probability attract his attention. The advent of the new Scott three-wheeler undoubtedly opens up a new field in this direction. At first it would appear that this is an entirely new type, but by looking back nearly a decade we find a very similar machine in the Chater-Lea carette. This machine was first experimented with in 1906, was quite one of the simplest forms of light car, and was certainly the forerunner of the cycle car, which had a "boom" a year or so ago, when it was supposed to be an entirely new type. The first Chater-Lea carette appeared on the road in 1907. This took the form of a light four-wheeled car, with the engine, a twin-cylinder Sarolea, fitted at the side. If we take away the off side front wheel, we have practically a double-seated sidecar, with the mechanism delightfully accessible. The drive was by means of a belt to the right-hand rear wheel, and a variable gear and free engine were obtained by means of an expanding pulley operated by a single lever. The body, springing, steering, and brakes followed car lines, the springs being semi-elliptic, the steering by wheel, and the brakes internal expanding.



Plan view of Chater-Lea belt-driven cycle car (or four-wheeled sidecar) chassis built in 1907.

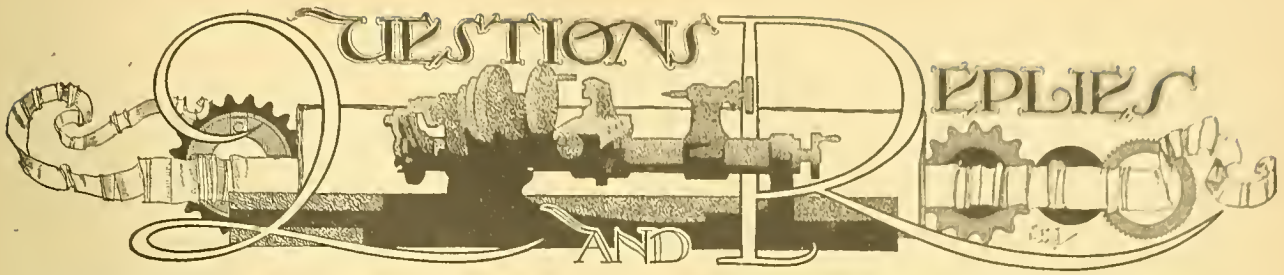
A Chain-driven Model.

This machine proved perfectly satisfactory, and in 1908, the following year, a model was produced incorporating chain drive. The drive was carried across the frame by shaft through a two-speed gear box, whence it was transmitted by chain to the near side rear wheel only, so obviating the necessity of a differential gear. This model was driven by Mr. Chater-Lea in the London to Edinburgh trial of that year, in which it ran most successfully. However, cycle cars or light cars were not in public favour at that time, so Messrs. Chater-Lea decided to turn their attention to the powerful twin-cylinder cycle and sidecar combination, with three speeds and chain drive. This outfit was placed on the market in 1909, and was the first sidecar combination to complete the London to Edinburgh trial.



An early model cycle car—the chain-driven Chater-Lea built in 1908, and which successfully completed the London-Edinburgh run of that year.

The experiments with the cycle car were abandoned at the end of 1908, as Messrs. Chater-Lea were convinced that if a motorist decides to abandon a sidecar outfit in favour of a car, a car in every sense of the word is what he desires. Therefore since 1912 they have devoted their attention to light cars in preference to cycle cars.



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Magneto Lighting Set.

I shall be much obliged if you would give me some advice as regards the use of the Dynalite lighting system. I bought one of these instruments a month ago and have had no success with it up to the time of writing, as I have not been able to get a bulb (miniature screw type) that will stand the current. Perhaps some of your readers have had experience with this system.—C.G.C.

We should think you are using lamps of too low voltage, you might try a lamp of, say, six or eight volts. It is possible that you might not get so good a light at low speeds, but it would be less likely to burn out at high. With these small magneto lighting dynamos the voltage rises rapidly when first rotated, but as the speed gets above a certain number of revolutions the voltage does not increase to any great extent; it would, therefore, appear as though a slightly higher voltage lamp would stop the trouble of burning out. The usual run of small screw bulbs as sold for flash lamps, etc., are barely four volts, and even with a four-volt accumulator are apt to burn out readily. You want to be careful to obtain one of good make, and be sure the voltage is at least two volts higher than at present fitted.

Magneto Conversions.

I have a single-cylinder machine which is not powerful enough for sidecar work. My magneto is a U.H. 50° twin. I have thought of buying a bicycle with a 6 h.p. twin engine, with cylinders at an angle of 90°. (1.) Is there any means of altering the magneto from 50° to 90°, and by what method? Also, what would be the approximate cost? (2.) Would it be practicable to obtain a fresh crank case for the present cylinders, pistons, etc., say, from the makers of the engine, to bring the angle to 50°? (3.) Which of the two alternatives would it be best to adopt? (4.) What is the correct procedure for adapting a twin magneto to a single-cylinder bicycle, and does it in any way affect the magnetism or injure the armature with the one point not firing?—W.H.B.

(1.) No, it is not possible to alter a magneto of 50° to make it suitable for an engine of 90°, as the construction of the two is absolutely different. (2.) It would, of course, be possible to have a new crank case made to alter the angle of the cylinder, but it would mean practically rebuilding the entire engine, and would be extremely expensive. (3.) It would be far more satisfactory, and, in fact, is the only really practical method, to purchase a proper magneto for a 90° engine; this would also be cheaper than the conversion. (4.) All that is necessary to convert a twin magneto to a single is a new contact breaker. It would not injure the magneto, as with a single-cylinder contact breaker the second high-tension current is not generated.

Starting a Big Single.

I have a 4½ h.p. (650 c.c.) 1914 single with three-speed hub gear and heavy coachbuilt sidecar, Bosch magneto, Senspray carburetter, and kick starter. I find it quite impossible to start on the kick when cold, and I have often had to run 100 yards. I usually have to get someone to push. The machine runs well when warmed up, and will then start readily enough on the kick. I have just taken down the carburetter and cleaned it, and the magneto also seems right. In summer I use Motorine A, and now Huile de Luxe, summer grade. These are the oils Messrs. Price recommend. Can I safely put in a lighter oil in winter than the Huile de Luxe summer grade? And would this oil do for summer? I presume they recommend these heavy oils, since it is a big cylinder. An injection does not help much, for if I can only get sufficient "way" on the machine it will start. If you can give me any advice that will enable me to start more easily I shall be much obliged.—E.H.B.

If you look at all the following adjustments you should experience no difficulty in starting; the machine should start from cold with not more than half a dozen kicks. See that the contact breaker points are clean and are separating about .4 mm. Make sure the rocker arm is not sticking. The carbon brush should be clean and quite free from oil. The plug should be clean and free from oil; have the points adjusted about $\frac{3}{32}$in. apart. You might try an absolutely new plug; the one you are using may be faulty. See that the valve tappets are correctly adjusted; when the engine is cold there should be about ½ mm. to $\frac{1}{32}$in. clearance. Make sure there are no air leaks in the induction pipe between the carburetter and engine; to ensure this you might bind all joints with adhesive tape. Make quite sure all passages in carburetter are free. Directions for starting: To free engine in cold weather, inject a little paraffin or petrol through compression tap, and turn the engine over a few revolutions to let it work past the rings and thin the congealed oil. If the carburetter is any but a Senspray, flood it well; if Senspray, only depress the needle valve once or twice. In most cases it will be found best, in order to obtain an easy start, to set the levers as follows: Spark fully advanced or nearly so, throttle quarter open, air fully shut. Do not give too much throttle; it will sometimes be found an advantage to shut it completely and then suddenly open it while pushing. You might also make sure the valve springs are strong enough; weak springs sometimes cause bad starting. Price's Huile de Luxe winter grade would be quite suitable; it is always best to use as heavy an oil as possible. We think if you check all the above adjustments you should have no further difficulty in starting.

The Effect of Wet.

On one or two occasions lately I have been compelled to leave my machine, a lightweight, standing in the rain for upwards of a quarter of an hour, after which I find considerable difficulty in getting a start. Usually this machine will start off at the first push, but under these circumstances I have to run with it till I am almost exhausted; I mean while it is spluttering and exploding in a most bewildering fashion. Can you please tell me what it is that is affected by the rain? I am only a novice, this being my first mount, so if my question seems rather crude you must excuse me on that account. The machine is fitted with B. and B. carburetter and Dixie magneto, and starts and runs beautifully when dry.—J.L.

The trouble is probably due to moisture on the plug or high-tension wire, which would cause either a total or at any rate a partial short circuit, which would cause bad misfiring. If you have to leave the machine in the wet it would be a good plan to cover it with a light waterproof cover, so as to prevent the water from getting on the plug, high-tension wire, or magneto.

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Faulty Contact Points.

[?] I have a B.S.A. motor cycle with C.A.V. magneto, which misfired occasionally, and on examining the contact breaker points I found them burnt or worn unlevel. I filed them flat, and after running ten miles misfiring again began. I tried adjusting, with still the same result, and finally put some oil on the points. After that it fired properly for another ten miles, and then again started misfiring. I applied more oil, and was all right for another ten miles, and then commenced misfiring. I have done this several times, with the same result.—J.H.R.

Your trouble is evidently due to the contact breaker points being at fault. You should make sure that the points are either pure platinum or one of the special metals sold for this purpose. You should also make sure they are perfectly flat and meeting absolutely squarely, then adjust them to separate exactly .4 mm., which would be, roughly, the thickness of a stout visiting card. If, after doing this, the points still burn or pit and give trouble, it is probable that the condenser of the magneto has broken down, and you should send it either to the makers or some reliable firm of magneto repairers to be overhauled.

Running on Paraffin.

[?] (1.) Is there any reason why paraffin should not be used in place of petrol in my two-stroke? I have tried paraffin, and found that when once the engine was warmed (which was done by filling the float chamber with petrol and running on this to start) it ran and seemed to have the same power as if petrol were being used. Perhaps it did not accelerate quite so quickly, but the plug was not sooted, and the only difference I found was that the engine was much freer after standing overnight. (2.) Which is the best method of getting the top piston ring loose? This ring gets absolutely stuck long before the engine requires cleaning. (3.) Please tell me the best method of removing carbon from the inside of the piston. The gudgeon pin has never been out, and I am afraid that it might now be difficult to remove it.—PETROIL.

(1.) Paraffin does not give so much power as petrol, and it tends to foul up the engine. Of course, most engines will run on it after being warmed up on petrol. There is also a tendency for the engine to knock badly. It also makes a mess, as it creeps everywhere, and, of course, dust collects. It is better to use a mixture of petrol and paraffin—about two parts petrol to one part paraffin. (2.) When a piston ring has stuck as badly as this, there is nothing to do but dig it out, generally speaking, in pieces. The small blade of a penknife is perhaps the most suitable tool for this purpose. (3.) Use a blunt screwdriver for removing the carbon from the inside of the piston. Special tools for removing the gudgeon pin can now be obtained. Take care to remove it the correct end.

DESPATCH RIDERS IN THE MAKING.—A group of R.E. men, all Douglas mounted, in training at a depot in the South of England.

READER'S REPLY.

Cover Blowing Off.

I have just read in *The Motor Cycle* of December 2nd your correspondent "P.E.'s" letter (page 570) with regard to cover blowing off, and thonght possibly a similar experience of mine might be of some use to him. About six months ago I bad occasion to renew the cover on the back wheel of my 3½ h.p. motor cycle, so purchased an extra heavy Dunlop cover. Much to my disgust, it blew off after it had been on about five minutes. I may state here that its size is 26×2⅜in., fitted to a 2¼in. rim. Previous to this I had been using Kempshall covers of the same size. Nothing daunted, I re-fitted it, thinking perhaps that on the first occasion the bead was not quite home, though from all outward appearances it was perfect. This time it blew off while I was pumping up. On each occasion it came off between the security bolt and the valve. I next took the wheel and tyre up to the Dunlop people, who informed me that my rim was an odd size (date of machine 1913½), there being a difference of ⅛in. in width between mine and their standard, and that also the beading on mine was much too small. I must say at the time I was rather doubtful that this slight difference was the cause of the trouble. However, I purchased one of their rims, and built it into my wheel and re-fitted tyre, and from that date to this it has been in perfect condition; as a matter of fact, it has only been pumped up twice in six months The only reason that I can account for the Kempshall tyre keeping on the small rim is that it is what I call a "stiff" tyre compared with a Dunlop, *i.e.*, will stand up and keep its shape when off the rim, whereas a Dunlop will not.—M.W.T.

EXPERIENCES WANTED.

"P.M.D." (Brighton). — T.D.C. De Luxe lightweight. Reliability, maximum speed, and consumption.

"C.A.H." (Bexhill).—3 h.p. Enfield. Consumption and speed, reliability, ease of starting, lubrication, and gear. Results fitted with Binks carburetter.

"A.C.R." (Middlesex).—Grado-multi pulley for fitting to 2¾ h.p. twin. General efficiency and belt slipping on low gear.

"A.D.P." (Bury St. Edmunds).—3½ h.p. Norton with Philipson pulley. Flexibility at slow speeds. Also 3¼ h.p. Brough. Behaviour of overhead valves.

RECOMMENDED ROUTES.

ARUNDEL TO HASTINGS.—R.C.

Arundel, Broadwater, Shoreham, Brighton, Lewes, Ringmer, Horsebridge, Ninfield, Bexhill, St. Leonards, Hastings.

LIVERPOOL TO IPSWICH.—W.D.E.

Liverpool, by ferry to Birkenhead, Chester, Nantwich, Woore, Pipe Gate, Stone, Weston, Rugeley, Lichfield, Tamworth, along Watling Street through Atherstone to Lutterworth, then through Husbands Bosworth, Market Harborough, Kettering, Thrapston, Huntingdon, Godmanchester, Cambridge, Linton, Haverhill, Cavendish, Sudbury, Hadleigh, Ipswich.

MOTOR CYCLES FOR SALE.

A.J.S.

6h.p. 1916 Model A.J.S. Motor Cycle de Luxe, fitted superbly, having 3-speed gear and clutch drive, only delivered by manufacturers last week to the order of an officer on leave; having suddenly to return to duty, he offers this machine, which cost £88, for £77/10.—Officer, c/o Motor Supply Co., Chard. [7892

Alldays.

ALLDAYS Matchless, 3½h.p., fixed gear; £22/10.—Buckingham, 21, Tindal St., Chelmsford. [7701

ALLON, 2-speed, clutch, lamps, speedometer, electric horn, done 800 miles; £38.—Carter, 45, Murdock Rd., Haudsworth, Birmingham. [X7452

ALLONS.—We have five models in stock; deferred payment and exchanges entertained.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7687

NEW Allons, 2-speed models £42, single-speed models £34; delivery from stock; cash or extended payments.—Wauchope's, 9, Shoe Lane, London. [X7550

ALLDAYS, 6-8h.p., 1915, 3-speed gear box, kick starter, coachbuilt, indistinguishable from new, guaranteed fully equipped, scarcely soiled; 55 gns.—Percy and Co., 337, Euston Rd., London. [7758

1915 Alldays Allon 2-stroke, 2 weeks old, done 200, rear drive speedometer, in perfect condition, better than new; a good, cheap lot, £30; easy payment arranged.—Jones, Tho Broadway, Muswell Hill, N. [7875

Ariel.

1913 Ariel, 3½h.p., 3-speed, Canoelet sidecar, excellent running order; bargain for quick sale, £38.—Sergt. Wilson, 64a, Clarence St., Lancaster. [X7380

ARIEL, 5-6h.p., 1915, new August, 3-speed countershaft, Montgomery coachbuilt sidecar, perfect condition; £80.—A. Downie, 19, Haymarket Terrace, Edinburgh. [X7373

1912 3½h.p. Ariel, coachbuilt sidecar, 3-speed Sturmey, clutch, lamps, horn, perfect condition; £38, close offer.—Apply, Half-moon Garage, London Rd., Croydon. [7789

1915 Ariel, 3½h.p., coachbuilt sidecar, countershaft gear, 3 lamps, speedometer, 2 horns, luggage carrier, Binks carburetter; £60, or nearest.—T. Ball, 108, Linaker St., Southport. [X6966

ARIEL, 3½h.p., 1916, 2 weeks in use, only done 345 miles, 3-speed countershaft, Lucas head light, Watford speedometer, as new; offers invited.—A. Downie, 19, Haymarket Terrace, Edinburgh. [X7374

Arno.

1914 Arno, 3½h.p. T.T., 2-speed N.S.U., cane torpedo S.C.; £34.—Leonard, 6, Harbour Rd., Loughborough Junction. [7674

SMART Arno Combination, 3½h.p., 3-speed, cane sidecar, well upholstered, lamp, horn, Sensspray; 38 gns.—Railway Garage, Staines. [7902

Auto-Wheels.

AUTO-WHEEL, 1914, perfect condition, just overhauled; bargain, £6.—Kendall, Ockley, Surrey. [7673

AUTO-WHEEL, fitted to 24in. Premier cycle; accept £11/11 for quick sale.—Newnham, 223, Hammersmith Rd., W. [7768

AUTO Wheel, attached to 3-speed Fleetwood cycle, ready for the road; £12/10; excellent condition; guaranteed.—Wauchope's, 9, Shoe Lane, London. [X7551

Bat.

1915 6h.p. 3-speed Countershaft Bat-Jap, including Canoelet sidecar, speedometer, lamps, spares, nearly new; £72.—Mason, 39, Midland Rd., Welling, borough. [7785

BAT-J.A.P., with sidecar, 3 years old, spring frame, 6h.p., £33; also 2¾h.p. mag. motor cycle, wants slight overhaul, £9/12.—Warburton, Inner Temple, Liverpool. [X7522

BAT-J.A.P., 1914½, 5-6h.p., chain-cum-belt, sporting model, 3 speeds and free countershaft, as new; £45. Write first.—"Bat," 18, Beechwood Av., Thornton Heath. [0754

BAT, 8h.p., 1914, 3-speed countershaft, and Godiva sidecar, finished in French grey to match, powerful and fast combination, Bat only done about 2,000 miles, sidecar only 40 miles.—L.R., Officers' Mess, 14, Cliff Terrace, Hartlepool. [X7420

BATS.—The very latest up-to-date combinations supplied from stock; 6 and 8h.p. twins, and 4h.p. solo twins, immediate delivery, with or without Bat sidecars. Also we have for sale a 1915 second-hand 8h.p. combination, fitted with handsome underslung sidecar, 3-speed countershaft gear, includes speedometer, and all high-class accessories, price £65, guaranteed.—Sole wholesale London agents, Wauchope's, 9, Shoe Lane, London. [X7552

Blumfield.

BLUMFIELD 5-6h.p. Twin, T.T., very fast; £20, bargain.—Buckingham, 21, Tindal St., Chelmsford. [7698

Bradbury.

1914½ 4h.p. Bradbury and coachbuilt sidecar, 2-speed countershaft, kick start, good tyres, Lucas lamps, horn, tools; £45.—Peatfield, Ulceby, Lincs. [X7465

CORONET Sidecar Chassis

is designed for long life, and has a wonderful reserve of stability, and is safe on greasy roads. Luggage carrier built into frame. Cannot locke loose, and is a boon when touring.

£10 15s.

Send for illustrated catalogue describing these well known Sidecars.

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We can give immediate delivery of all models, and suitable for any make of machine.

Coronet Sidecars for Harley-Davidsons.

We make a special Sidecar, enamelled French grey to match, 28 × 3in. tyre, apron to cover entire body, and 4-point attachment £13 10
Immediate Delivery.

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11J, electrically equipped, 3 speeds £76 13
11F, standard 3-speed model £68 5
Delivery from stock. Exchanges entertained.

NEW 1916 FORDS.

5-seater Touring Car £135
Delivery Van £135
Motor cycles taken in exchange.

SPECIAL XMAS BARGAINS.

3½ h.p. **LEA-FRANCIS,** 1915, nearly new, 3-speed, kick starter, Hercules £13 13 Sidecar, £5 5 speedometer, £3 10 lamp set; the whole cost £94 10 ..... £67 15
2¾ h.p. **WOLF,** 1916, 2-stroke, 2-speed ... £33 10
4 h.p. **WOLF,** 1916, 3-speed, chain drive. £55 11
2½ h.p. **LEVIS,** 1915, 2-stroke, 2-speed ... £28 15
2 h.p. **CALTHORPE** Lightweight, 1914, countershaft 2-speed gear £17 15
3¾ h.p. **PRECISION,** 1912, nice condition.. £18 15
7 h.p. **INDIAN,** 1912, 2-speed, Millord coach-built Sidecar £36 15
3½ h.p. **RUDGE,** 1012, free-engine model.. £19 15
4 h.p. **QUADRANT,** 1912, 3-speed model £20 15
3½ h.p. **SINGER,** 1912, 3-speed model, with cane Sidecar £25 0
3½ h.p. **SINGER,** 1912, 3-speed gear £22 10
3½ h.p. **L.M.C.,** 1913, countershaft gear .. £25 10
2¾ h.p. **DOUGLAS,** 1912, 2-speed £25 10
3½ h.p. **REX,** 1909, 2-speed gear £13 10
3½ h.p. **P. & M.,** 1909, 2-sp., with Sidecar £18 15
4½ h.p. **JAMES,** late 1913, 3-speed, chain drive, kick starter, coach Sidecar .. £43 15
6 h.p. twin **REX,** with Forecar attached, 2-speed, magneto ignition, a bargain at £11 15
3½ h.p. **EXCELSIOR,** vertical eng., B. & B. £5 5
3½ h.p. **PREMIER,** 1911, B.S.A. 2-speed.. £19 15
Light Parcel Car, fitted with 8 h.p. De Dion engine, 3 speeds and reverse, new radiator that cost £8; only wants tyres; practically giving away at .. £9 15
6½ h.p. **DE DION** 2-seater Car, in splendid condition, 2 speeds and reverse, bucket seats, tyres worth £8, 3 good lamps.. £16 15

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New Stationary Petrol Engine, 2 flywheels, bore and stroke 3½in. × 4in., electric ignition, hopper cooled, complete ready for running £7 15
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Cane Body, with side door and locker under front 22 6
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Bradbury.

BRADBURY 4h.p., new December 1914, Villiers clutch, T.T. bars, Dunlop tyres, overhauled, very fast, perfect like new £15.—Wade, Dental Surgery, Wisbech, Cambridgeshire [X7154

1915 Bradbury, 6h.p., 3-speed combination, new this month, owner left by Front ship, only done about 60 miles, and like new £82 cost £95 two weeks ago.—Alexander's, 115, Lothian Rd., Edinburgh [7699

Brough.

BROUGH, 1916 H.C. model, 6-8h.p. horizontal twin, overhead valves, 3-speed countershaft gear, kick starter, hand operated clutch, not done 150 miles, owner ordered abroad; offers invited.—A. Downie, 19, Haymarket Terrace, Edinburgh. [X7374

B.S.A.

B.S.A., 1912½, F.E., excellent condition; bargain £26.—16, York St., Dover [X7472

B.S.A., 1915, 4h.p., 3-speed, kick start, chain-cum-belt, sidecar; £62.—Nesma, 7, Exhibition Rd., South Kensington. [7715

B.S.A., 3½h.p., 2 speeds, new back Dunlops, lamps and horn; £27, or exchange.—Markham, 345, Edgware Rd., W [X7483

B.S.A., 1913, 2-speed, in splendid condition, 28 gns.; very great bargain.—Julian, Broad St., Reading. 'Phone: 1024 [X7554

B.S.A., 1916, T.T. model, £50/10; immediate delivery. Also models H and K from stock.—Alexander's, 115, Lothian Rd., Edinburgh. [7000

1912 3½h.p. B.S.A., 2-speed and free engine, Canoelet sidecar, first-class order, and well equipped, £37/10.—Riddelsdell, Boxford, Suffolk. [7695

B.S.A., 4h.p., 3-speed, chain belt, lamp set, horn, tools, done 900 miles, condition as new; £50.—Moxham Bros., Rodney Rd., Newport, Mon. [X7176

B.S.A., 1913½, 2-speed, F.E., and 16 gn. Gloria sidecar, just completely overhauled; £42; buying cash.—Bronda, Longmore Lane, Shirley, Birmingham. [7727

B.S.A., 1916, model H, 4½h.p., all chain drive, just delivered from works, all latest improvement; £64.—Hucklebridge, 133, Sloane St., London, S.W. [X7512

B.S.A., 1916, 4½h.p., model K, just delivered, chain-cum-belt, 3 speeds, kick starter; £62; exchange or deferred payments.—Eagles and Co., High St., Acton, London. [X7507

B.S.A., late 1913, Canoelet underslung S.C., 2 speeds, free, k.s., wind screen, luggage grid, Lucas lamps, condition perfect; £45, offer. 5, Greyhound Rd., Tottenham, N. [7873

B.S.A.'s.—We have two model K's and one model H and sidecar actually in stock; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7683

B.S.A., 1916 models, from stock; inspection cordially invited; all-chain drive, £64; chain-cum-belt transmission, £62, fitted with B.S.A. countershaft 3-speed, free engine, and kick-start; tradesmen's sidecar carriers, coachbuilt and roomy, suitable for baker, grocers, fishmongers, etc., £14; gradual payments entertained; second-hand machines taken in exchange, generous allowance; tuition and free delivery. B.S.A. appointed agents. 'Phone: Holborn 5777. When dealing with Wauchope's buyers can rely with confidence on their orders going through satisfactorily.—Wauchope's, 9, Shoe Lane, Fleet St., London (just off Lndgate Circus). [X7547

Calcott.

1914 2¾h.p. Calcott, variable jet B. and B., Bosch waterproof mag., new Palmer cord tyre and Dunlop belt, spares, little used, economical, 130 m.p.g.; any trial; £23; owner active service.—Constant, Ivy Restaurant, Gt. Yarmouth. [7648

Calthorpe.

CALTHORPE, 1914, 2h.p., 2 speeds; £16 16.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [7819

1915½ Calthorpe-Jap, 2-speed, accessories; cost £42, perfect order; £30.—Rose, 58, Lancaster Gate, London. [X7453

CALTHORPE, 1915, 2½h.p., 2-stroke, 2-speed, new, £32 10.—Nesma, 7, Exhibition Rd., South Kensington. [7717

1915 Calthorpe-Jap, 2-speed, shop-soiled; 28 gns.; very great bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X4886

1915 2¾h.p. Calthorpe-Jap, 2-speed countershaft gear, condition like new; £27 10.—Wauchope's, 9, Shoe Lane, London. [X7555

CALTHORPE, latest 2-speed lightweight models in stock; cash or exchange; no waiting.—Eagles and Co., High St., Acton, W. [X7568

1915 2¾h.p. Calthorpe-Jap, countershaft gear, unpunctured, spare tube, etc.; sacrifice £26; seen.—Hesketh, Ponkey, Wrexham. [X7168

CALTHORPE Junior, 1914, 2-speed, excellent condition and running order; £17.—Tube and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [7621

1915 Calthorpe-Jap, 2¾h.p., 2-speed, new June, just overhauled, condition as new, rubber handle grips, Binks carburetter, Palmer outer covers fitted, 2gn. lamp, horn, accessories; cost £40 entire, take £27.—Lieut. Lewis, Baldock. [7741

MOTOR CYCLES FOR SALE.

Calthorpe.

CALTHORPE-J.A.P., 2¾h.p., latest models in stock, 2-speed Enfield gear, ideal lightweight for winter riding; 35 gns. cash, or £9/15 deposit and 12 monthly payments of 45/- each.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. 'Phone: Avenue 5548. [0492

CALTHORPES.—Delivery from stock of all models, fitted with 2¾h.p. J.A.P. engines and Enfield 2-speed gear, variable magneto, £37/18; 2¼h.p. 2-stroke, 2-speed models, with variable magneto, £32/13 cash, easy terms, or exchange.—Wauchope's, 9, Shoe Lane, London. [X7554

Campion.

CAMPION, 1915, 2-stroke, guaranteed, as new; £23.—Percy and Co., 337, Euston Rd., London. [7763

CAMPION-VILLIERS 2-stroke, 2½h.p., lamps, tools, new condition, fast, reliable; £20.—Robinson, 41, St. Michael's Rd., Bedford. [7878

CAMPION Combination, 6h.p. J.A.P. engine, 1916 model, perfect condition, only used a few months; £75, or nearest, cost £90.—Grundy, 21, Saxe-Coburg St., Leicester. [X7521

Chater-Lea.

CHATER 8h.p. 3-speed Clutch Combination, accessories, and dickey seat; £55.—Leighton's, opposite Wood Green Station. [7830

CHATER-LEA, 1911, 6h.p. twin J.A.P., 2-speed P. and M. gear, with large 2-seater coachbuilt sidecar; a bargain, £27/10.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [7620

Chater-Lea-Jap.

CHATER-LEA, 8h.p. J.A.P., 2-speed; £33.—Buckingham, 21, Tindal St., Chelmsford. [7713

90° Jap-Chater, 2-speed, and £20 Rudge sidecar; cost in June £110, take about £50, or exchange.—65a, Rosendale Rd., West Dulwich. [X7641

3½h.p. Chater-Lea-Jap, Armstrong 3-speed, and 32 coachbuilt sidecar, lamp, horn, Whittle belt, XI'All saddle, in good running order; £24.—Seen at 248, Bishopsgate, London. [7862

Clyno.

1914½ Clyno, 2½h.p., 2-stroke, 2-speed, clutch, spares, like new; cost over £40, accept £30.—127, Pine St., Nelson, Lancashire. [X7461

CLYNO Combination, 6h.p., spare detachable wheel, 2 lamps, speedometer, and horn, been thoroughly overhauled; £55.—Evans, Garage, Newport, Salop. [7863

1915 Clyno, 2½h.p., 2-speed, hand clutch, Lucas, Long horn, speedometer, heavy Dunlops, accessories, sporting; £35.—Hutton, Kineton, Warwick. [X7578

CLYNO 6h.p., coachbuilt sidecar, countershaft gears, kick starter, beautiful turnout; must sell immediately; nearest £28.—Speechley, 45, Church Rd., Acton. [X7595

CLYNO, late 1914, 6h.p. combination, 3 speeds, clutch, kick starter, spare wheel with tyre, excellent condition; £65.—Lewis, 20, Alleyn Rd., Dulwich. [X7431

CLYNO 6h.p. Coachbuilt Combination, 3 speeds, clutch, and kick starter, spare wheel and tyre, usual accessories, new condition; £65.—P. J. Evans, John Bright St., Birmingham. [7798

Connaught.

1914 Connaught, 2 speeds, complete lamps, horn, etc.; £23.—Cross, Jeweller, Rotherham. [X7592

CONNAUGHT, 2¾-3h.p., late 1915 miniature, almost new; £24/10.—A. Wood, 48, High St., Windsor. [7599

LIVERPOOL.—In stock, Connaught Miniature, £27/10; 2-speed clutch standard model, £45; 1916 models.—Horsman and Co., 12, Hart St., London Rd., Liverpool. [X7160

CONNAUGHT, 1916 models in stock; immediate delivery of miniature and standard models, with 2 or 3-speed gears, also single-speed models.—P. J. Evans, John Bright St., Birmingham. [7799

Diamond.

TWO Diamond 1916 2-stroke single-speed Models, actually in stock.—Sole District Agents, The Walsall Garage, Walsall. [7629

Douglas.

DOUGLAS, 2¾h.p., V, 2 or 3-speed, in stock; from £50/8.

DOUGLAS, 2¾h.p., U, 2 or 3-speed, in stock; from £50/8.

DOUGLAS, 2¾h.p., W, 3-speed, clutch, in stock; £56/14.

DOUGLAS, 2¾h.p., X, lady's, kick-start, in stock; £56/14.

DOUGLAS, 2¾h.p., War Office model, in stock; £54/12.

DOUGLAS Eastern Counties Agents.—The above models in stock for immediate delivery at rock bottom prices; exchanges entertained. Trade supplied. —Tel.: 388. T.A.: Bicycles.—Robinson's Garage, Green St., Cambridge. [6864

DOUGLAS, wants assembling; £6.—39, Fisher St., Hyson Green, Nottingham. [X7518

EX STOCK

We can give delivery from stock of the under-mentioned:

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ALLDAYS-ALLON, 2½ b.p., single speed	£34	0
ALLDAYS-ALLON, 2½ h.p., 2-speed	£42	0
ALLDAYS-ALLON, 2½ h.p., 2-sp. and clutch	£45	0
SUN-VILLIERS, 2¼ h.p., single-speed	£29	10
SUN-VILLIERS, 2½ h.p., 2-speed	£35	10
JAMES, 2¼ b.p., 2-speed	£38	11
NEW RYDER, 2½ h.p., single-speed	£22	13
NEW RYDER, 2½ h.p., 2-sp. J.A.P.	£33	12
ZENITH, 4-5 h.p., countershaft	£68	7
B.S.A., 4½ h.p., 3-sp., all chain	£64	0
B.S.A., 4½ h.p., ditto, chain-cum-belt	£62	0
ALLDAYS-MATCHLESS, 2¼ h.p., single-speed	£27	10
INDIAN, 5 h.p., 3 speeds, Model B	£70	0
INDIAN, 7 h.p., 3 speeds, Model C	£78	0
ENFIELD, 2¼ h.p., 2-speed, 2-stroke	£42	0
ENFIELD, 3 h.p., 2-speed, T.T.	£52	10
ENFIELD, 6 h.p., Combination	£89	5
LEVIS, 2 h.p., Popular model	£28	1

1915 MODELS

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ROYAL RUBY, 2½ h.p., 2-str., 2-sp.	£36	10
ROYAL RUBY, 2½ h.p., ditto, single-sp	£29	10
ROYAL RUBY, 2½ h.p. J.A.P., single-sp	£32	10
ROYAL RUBY, 2½ h.p. J.A.P., 2-speed	£39	10
BLACKBURNE, 3½ h.p., 3-sp. c'-shaft	£67	9
J H., 4½ h.p., 3-speed M.A.G.	£67	0
J.H., 6 h.p., 3-sp, countershaft	£73	10
JAMES, 4½ h.p., 3-speed, Combination	£80	0

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NOTE REDUCED PRICES.

REX, 1914, 8 h.p., Spacke engine, 3-speed	£48
REX, 1914, 6 h.p., hood and screen	£46
REX, 1914, 6 h.p., 3-speed, coach Sidecar	£50
ARIEL, 1914, 4 h.p., 3-sp., coach Sidecar	£42
TRIUMPH, 1911, 3½ h.p., clutch, and S'car	£22
MATCHLESS, 1914, 8B, M.A.G., 3 speeds	£75
HARLEY, 1915, 7 h.p., Millford Sidecar	£70
ZENITH, 1914, 8 h.p., clutch, Millford	£68
BAT, 1913, 6 h.p., 3 speeds and Sidecar	£52
V.S.-J.A.P., 1913, 8 h.p., 2-speed, Sidecar	£32
JAMES, 1915, 4½ h.p., 3-sp. Combination	£60

SOLO MOUNTS.

BAT, 1915, 4½ h.p., twin, 2-speed, T.T.	£40
DOUGLAS, 1915, 2⅜ h.p., Colonial, T.T.	£40
REX, 1909, 3½ h.p., 3-speed, handle start	£21
ENFIELD, 2¼ h.p., 1910, belt drive	£14
ENFIELD, 1915, 3 h.p., T.T., 2 speeds	£42
BLACKBURNE, 1914, 3½ h.p., 3 speeds	£50
HUMBER, 1914, 2 h.p., 3-sp., open frame	£23
INDIAN, 1914, 7 h.p., T.T., clutch	£42
O.K., 1915, 2½ h.p., 2 speeds, chain drive	£24
F.N., 1912, 2¼ h.p., 2-sp., shaft drive	£17
ROVER, 1914, 3½ h.p., 3-speed, T.T.	£44
P. & M., 1914, 3½ h.p., 2 speeds, little used	£56
RUDGE, 3½ h.p., clutch model, very fast	£20
INDIAN, 1914, 7 h.p., electric equip., 2-sp.	£48
P. & M., 1913, 3½ h.p., 2-sp., handle start	£40
VELOCETTE, 1915, 2½ h.p., 2-sp., 2-stroke	£32
ZENITH, 1913, 3½ h.p., clutch	£38
NEW HUDSON, 1915, 2½ b.p., 2-stroke	£25
DIAMOND, 1914, 2¾ h.p., 2 speeds	£30
CALTHORPE, 1914, 2 h.p., 2 speeds	£19
T.M.C., 8 h.p., 3 speeds, spring frame	£14
ALLDAYS-ALLON, 1915, 2-str., 2-speed	£34

LIGHT CARS, &c.

PREMIER, 7-9 h.p., chassis only	£40
VICTOR, 8 h.p., 1913, 2 speeds and reverse	£60
WARNE, 1914, 3 speeds and reverse	£100
OVERLAND, 1916, Model 83, 5-seater, like new, all equipment	£225
CADILLAC, 1914, 20-30 h.p., 6 speeds, self-starter, etc., only done 6,000	£280
STANDARD, 1914, 9.5 Light Car, dickey, just thoroughly overhauled and repainted	£188
RALEIGH, 11 h.p., 1915, dynamo, all equipment, only done 1,500	£190

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MOTOR CYCLES FOR SALE.

Douglas.

1910 Douglas, 2-speed, with lamp, horn, etc.; 19 gns.—Julian, Broad St., Reading. [X5539

DOUGLAS Model U, 3-speed, new order; £45.—Peaker, Gibbs Rd., Newport, Mon. [X7536

DOUGLAS, 2 speeds, good tyres, etc.; £26/10.—Buckingham, 21, Tindal St., Chelmsford. [7699

DOUGLAS, 1914, 2-speed, speedometer, lamps, like new; £37.—11, Luna Rd., Thornton Heath. [7790

DOUGLAS, complete, T.T., ridden 900 miles, perfect.—Sergt. George, 5th North Staffs. Regt., St. Albans. [7810

DOUGLAS, War Office model, used few times by officer on leave, as new; £47/10.—Officer, c/o Motor Supply, Chard. [7893

1915 Douglas 4h.p. Combination, absolutely like new, Lucas lamps, horn, etc.; £72.—Cross, Effingham Sq., Rotherham. [X7593

1915 3-speed 2¾h.p. Douglas, nearly new, exceptionally fast; £45, no offers.—Edgerton, 19, Lewis Grove, Lewisham. [X7624

SUFFOLK.—All new Douglas models in stock.—T. H. Nice and Co., Hyde Park Corner, Ipswich, and at Bury St. Edmunds. [7643

LATE 1914 2¾h.p. T.T. Douglas, 2-speed, condition new, lamps, horn, long exhaust; 37 gns.—Oakdene, Anerley Park, S.E. [7644

DOUGLAS, 1915, immediate delivery any 2¾h.p. model, including War Office black Douglas.—Moffat, Yeovil. Tel.: 50. [9203

DOUGLAS.—Immediate delivery from stock; not agents only, but Douglas experts and specialists. —Gibb, Gough, Gloucester. [X3538

DOUGLAS, 2¾h.p., clutch, 2 speeds, lamps, and horn, footboards, good condition; £24, or exchange.—Markham, 345, Edgware Rd., W. [X7482

DOUGLAS, 1915, 4h.p., 2-speed, tyres new, accessories, lamp; accept nearest offer £50.—Lieut. Armstrong, Warminster Garage, Warminster. [X7424

DOUGLAS, 1912, 2¾h.p., 2 speeds, clutch, footboards, 1914 engine, new Clincher tyres, accessories, and spares; £30.—104, Palace Gardens Terrace, W. [7886

DOUGLAS, Douglas, Douglas.—Immediate delivery model V, 2-speed, £50/8, and war model £54 12, actually in stock.—Alexander's, 115, Lothian Rd., Edinburgh. [7001

1915 Douglas, 2-speed V, 2,000 miles, Lucas lamp, tail lamp, horn, tools, etc., engine guaranteed condition perfect; £42.—Robinson's Garage, Green St., Cambridge. [0648

1913 T.T. 2-speed Douglas, good condition, tyres good, 2 lamps, generator, horn, speedometer, Senspray carburetter; £32.—Turner, 223, High Rd., Kilburn, N.W. [7774

1913 2¾h.p. Douglas, 2 speeds, T.T., lamp and horn, knee grips, long exhaust, new back Dunlop, fast, recently overhauled; £32, or exchange.—Markham, 345, Edgware Rd., W. [X7481

1913 Douglas, 2-speed, clutch model, just overhauled by makers, lamp, accessories, complete, perfect condition; £33, bargain.—Bunting, Wyvenhoe, Southbourne, Bournemouth. [X7155

DOUGLAS.—There is no reason why you should wait, if you want a Douglas. Get right into touch with the people who can deliver, and avoid disappointment. —The Colmore Depot, 31, Renshaw St., Liverpool. [7821

DOUGLAS, 3-speed Colonial model, 1915, very little used, lamp, horn, speedometer, spares, tyres good; owner ordered out, £47; also Watsonian sidecar, £4.—Box 9,822, *The Motor Cycle* Offices, Coventry. [X7498

DOUGLAS, 1915, 2¾h.p., 3-speed gear, only run 300 miles, in absolutely new condition; £46; exchanges entertained.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, 599, High Rd., Tottenham, London, N. [7054

DOUGLAS, 1914, 3½h.p., kick starter, clutch, 2-speed, large new Miller head, tail lamps, Low generator, new back tyre and spare, all tools, excellent condition; £48, or part exchange Morgan.—Capt. Hepworth, Thames Haven. [7011

DOUGLAS Model U, £50/8; Douglas Model V, £50/8; War Office Model, £54/12; Douglas Model W, £56/14; Douglas Model X, £56/14.—Above models actually in stock at Sole Wholesale and Retail Midland Distributing Agents, Colmore Depot, 31, Colmore Row, Birmingham. [X2344

Eagle.

COVENTRY Eagle, nearly new, 2-stroke; £25.—Buckingham, 21, Tindal St., Chelmsford. [7705

Enfield

ENFIELD 6h.p. Combination, 1914½; £62. — 78, Wolfington Rd., West Norwood. [0750

ENFIELD, 1915, 3h.p., Lucas head lamp, rear lamp, very little used; £40, or offer.—331, Holloway Rd., N. [7815

ENFIELD 1915 6h.p. Combination, perfect, little used, lamp, and horn; £74.—Roberts, Church Bank, Bolton. [X7560

ENFIELD, 1912, 2¾h.p., twin-cyl., Bosch mag., running order; £10.—Beauland, 6, North St., Scarborough. [X7419

MOTOR CYCLES FOR SALE.

James

JAMES, 1915, 4½h.p., 3-speed countershaft gear, clutch, and kick-starter, chain drive. Cancelet sidecar, with Lucna electric lighting outfit, Lucas electric horn, inspection lamp and plug, brand new, not ridden 400 miles; owner giving up cycling; cost £117; any inspection; £90, or nearest offer; will pay purchaser's single train fare.—Bishop, Headland Park Rd., Paignton, Devon. [X7523

J.A.P.

6h.p. J.A.P in a No. 5 Chater frame, spring forks, mag. (Bosch), in perfect condition; £15.—Jones, The Broadway, Muswell Hill. [7876

LAST Year's 8-10h.p. Overhead J.A.P., 7in. adjustable pulley, Stewart 80 m.p.h., Stewart-Warner horn, 2½in. Palmers, showroom finish; £45.—W. Watson, 27, Spencer Park, Wandsworth Common, S.W. [7782

J.H.

LIVERPOOL.—We can deliver from stock 6h.p. J.H., with M.A.G. engine, 3-speed countershaft, all chain drive.—Horsman and Co., 12, Hart St., London Rd., Liverpool. [X7161

Kerry.

KERRY-ABINGDON, 3½h.p., 1912, free engine, speedometer, lamps, etc., excellent condition; £20.—Mylam and Co., 197, London Rd., W. Croydon. [7857

Lea-Francis.

LEA-FRANCIS 1915 Twin, speedometer, horn, lamp set, done 500 miles only; accept £65 nett, cost £78/10.—Sergeant Bloom, c/o Bastin, Claverton St., Bath. [7848

LEA-FRANCIS, 1915, 3½h.p. twin, 3-speed countershaft, semi T.T. bars, Lucas head light, mechanical horn; £60.—A. Downie, 19, Haymarket Terrace, Edinburgh. [X7372

Levis.

LEVIS, 1915, little used; £19/10.—Leighton's, opposite Wood Green Station. [7826

1916 Levis Popular in stock; £32.—Williams, A.J.S. Agent, Chapel-ash Depot, Wolverhampton. [X7600

LEVIS Popular Model, one only at the old price: £28/1.—Sole District Agents, Walsall Garage, Walsall. [7628

LEVIS, 1914, Lucas lamp set, etc., perfect; £19/10.—Pickrell, Royal Flying Corps, 108, Church St., Edmonton. [7792

2¼h.p. New Levis models just delivered from works, £28/1 cash, or deferred payments.—Wauchope's, 9, Shoe Lane, London. [X7558

1915 Levis, Popular, lamp, horn, condition perfect; any trial; what offers?—Box L322, *The Motor Cycle* Offices, 20, Tuor St., E.C. [7908

1915 Levis, 2¼h.p., Popular model, absolutely in stock; £28/1; exchanges; easy terms.—Julian, Broad St., Reading. 'Phone: 1024. [X6410

LEVISES.—We have seven models in stock; deferred payments and exchanges entertained.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7685

LEVIS 2-stroke Motor Cycles, latest 1915 models.—Sole London and district agents, Cars and Motor Sundries, Ltd., 175-177, Shaftesbury Av., London, W.C. 'Phone: 1432 Regent. [0711

LEVIS-POPULAR, 1915, splendid condition, semi T.T. bars, fully equipped; best offer over £21 secures this bargain.—Box L280, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7570

Martin.

MARTIN-J.A.P. Racy Motor Cycle, 3 speeds, splendid condition; £20 cash. Buckingham, 21, Tindal St., Chelmsford. [7697

Matchless

1913 7h.p. Matchless, Cancelet sidecar, all accessories; £55, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0721

7-9h.p. Matchless, new September, 1914, and sidecar, complete with Cowey speedometer, Lucas lamp and horn, splendid condition; £70; any trial given.—Clarke, Linden Grove, Middlesbrough. [X7570

MATCHLESS 1914 8B Combination, trip speedometer, lamps, horn, etc., perfect throughout; £70.—Arthur Mylam and Co., 197, London Rd., W. Croydon. 'Phone: 2379. Open Sundays. [7562

1914 8h.p. Matchless, 2-speed, with magnificent coachbuilt sidecar, hood and wind screen, combination in condition like new; sell £60, or exchange lower power and cash.—141, Marsh House Lane, Warrington. [X7532

Minerva.

MINERVA, 3½-4h.p., waterproof Bosch, good tyres, perfect; £12/15.—1, Ebner St., Wandsworth. [X7621

MINERVA, 2¼h.p., splendid engine, mag., B. and B., tyres equal new, too large reason disposal; wants timing; must sell; £7.—Micklethwaite, Cumberworth, near Huddersfield. [7733

Moto-Reve.

MOTO-REVE Twin, lightweight, mag., Druids, seen running; £8/10.—Speechley, 45, Church Rd., Acton. [X7596

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MOTOR CYCLES FOR SALE.

Motosacoche.

MOTOSACOCHE, 1911, condition as new, must sacrifice £9.—Walters, West St., Retford. [7664

New Comet.

1915 New Comet, 2-stroke Rudco engine, 2 speeds, footboards, shop-soiled, bargain, £26, or ex lounge.—Markham, 345, Edgware Rd., W. [X7480

New Hudson.

NEW Hudson, 1914, 3½h.p. J.A.P., T.T., special fast machine; £22.—Percy and Co., 557, Loxton Rd., London. [7757

NEW Hudson Big Six Combination, unsoiled, speedometer, etc.; £60.—Roberts, 27, Crescent Grove, Clapham, S.W. [7764

NEW Hudson Big Six Combination, 1914, in good condition; £55.—Spedding, Dental Surgery, Deane Church Lane, Bolton. [X7540

NEW Hudson Big Six, £92/8, actually in stock; also model C 2-stroke, £38; deferred payments; exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7686

NEW Hudson, 1915, 2-stroke, 2-speed, Model de Luxe, splendid order, Lucas lamp set, horn, Stewart speedometer; £34, or near offer.—Williams, Overleigh, Towyn, Merioneth. [7658

New Imperial.

1916 New Imperial, 2 speeds, 2¼h.p. J.A.P. engine; in stock; 35 gns.—Cross, agent, Rotherham. [X7594

NEW Imperial-Jap, 1915, 2¾h.p., 2-speed, shop-soiled; 30 gns.—Julian, Broad St., Reading. 'Phone: 1024. [X6408

NEW Imperial-Jap, 2¾h.p., 1915½, 2-speed, new August; enlisted; £27/10.—Mason, 89, Oxford Rd., Acock's Green. [X7602

NEW Imperial, 1915, 2¾h.p., 2 speeds, complete accessories, new condition; £30.—P. J. Evans, John Bright St., Birmingham. [7804

1915 2¼h.p. New Imperial-Jap, 2-speed, very little used, new condition, guaranteed; £28.—Newsome, Keswick Rd., Blackpool. [X7524

NEW Imperial-Jap, 1915, 2¼h.p., 2-speed, L. and H. lamp, horn, accessories, mileage 900, perfect; £29.—16, Pentland St., Wandsworth. [7735

NEW Imperial-Jap, both models in stock, with and without clutch and kick starter, £36/15 and £43/1.—Crow Bros., 190, High St., Guildford. [7725

NEW Imperials, 1916 models, in stock; sole London agents; trade supplied; few 1915 shop-soiled at reduced prices.—A. P. Rey, 173, Gt. Portland St., London, W. [7832

NEW Imperial, 2¼h.p., 2-speed, May, 1915, enamel and nickel excellent, engine perfect, done 950, tyres good, head light, accessories; £28.—Hine, Whitegates, Woking. [7817

NEW Imperials, 1916 models, in stock; light tourist, with 2 speeds, also kick starter models; ladies' machines, prices from 35 gns.—P. J. Evans, John Bright St., Birmingham. [7805

NEW Imperials.—These famous medium-weights are the finest value obtainable. Delivery from stock, and prices from 35 gns.—The Colmore Depot, 31, Renshaw St., Liverpool. [7822

2¾h.p. New Imperial-Japs, latest models, just delivered, 2-speed and free engine, an ideal lightweight; £36/15; cash, extended payments, or exchange.—Wauchope's, 9, Shoe Lane, London. [X7542

Norton.

LIVERPOOL.—1916 Nortons from stock, big four, 3-speed countershaft, all chain drive De Luxe sidecar combination, £85.—Horsman and Co., 12, Hart St., London Rd., Liverpool. [X7162

NORTON Big Four, torpedo cane sidecar, on De Luxe chassis, Starmey-Archer 3-speed countershaft, 3in. tyres, chain-cum-belt; cost over £80 last month, 70 gns.—Chatfield, 2, Marina, Bexhill. [7765

NORTONS, 1916, in stock for immediate delivery; T.T. models, 3½h.p. and 4h.p. big single coachbuilt combinations, both sporting and de luxe; prices from £50.—P. J. Evans, controlling Birmingham agent, John Bright St. [7806

N.S.U.

N.S.U. and sidecar, 2 speeds, mag.; £14/10, or nearest offer.—Speechley, 45, Church Rd., Acton. [X7597

N.S.U., 2¾h.p., 2-speed, F.E., mag., good condition; £8/10.—53, Lauderdale Rd., Merton, Wimbledon. [7889

5-6h.p. N.S.U. Twin, excellent order; accept first offer over £25.—Seen Steele's Garage, Steeles Rd., Haverstock Hill. [7660

N.S.U. Twin, Indian red, 2 speeds, ample power for sidecar; bargain, £19, or exchange.—Markham, 345, Edgware Rd., W. [X7478

N.S.U., 1914, 3½h.p., 2 speeds, free engine, spring frame, speedometer, lamp, and horn, splendid order; great bargain, £26.—Markham, 345, Edgware Rd., W. [X7479

3½h.p. N.S.U., new piston and mag. fitted in 1915, A.S.L. air spring frame, new back studded tyre, B. and B. drip feed; £18.—28, Manchester Rd., Walkden, nr. Manchester. [X7515

MOTOR CYCLES FOR SALE.

N.S.U.

N.S.U., 1913, 3½h.p., 2-speed, free engine, well sprung front and back, m.o.v., adjustable tappets, lamp, tools, etc., guaranteed good condition; sacrifice £19.—No. 9,823, *The Motor Cycle* Offices, Coventry. [X7514

3½h.p. N.S.U., overhead valve, mag., adjustable pulley, very low dropped frame, Lycetts La Grande saddle, good tyres, new Clincher on back, spring forks, T.T. bars, torpedo tank, B. and B.; £12, or near.—Ginns, Carleton, Carlisle. [7905

N.U.T.

N.U.T., 1915, 2¾h.p. J.A.P. T.T. twin, overhead valves, done 200 miles, only ten days in use, as new; property of army officer; £65.—A. Downie, 19, Haymarket Terrace, Edinburgh. [X7375

O.K.

O.K. Junior, 1914½, 2-speed, lamp, horn, completely new; £22.—Bailey, Hope Lane, Adlington, Macclesfield. [X7577

O.K., 1915, 2h.p., 2-speed, lamp, horn, splendid condition; £24.—Jotcham, Hillesley, Wotton-under-Edge. [X7382

O.K., 2¾h.p., 1914 (late), 2-speed, free engine, 4-stroke, fitted with speedometer, lamps, etc.; Christmas bargain, £52/10.—Newnham, 223, Hammersmith Rd., W. [7767

O.K. Junior, 1915, 2-speed, in splendid condition, very little used; original price £33/10, to be cleared at 21 gns., very great bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X2346

Omega.

OMEGA, 1915¾, 3h.p., 2 speed, 2-stroke, new machine; going at £32; perfect.—Webb, Belmont, Surrey. [7839

P. and M.

P. and M. Lightweight, 2-speed, free engine, Bosch mag., good condition; £13.—Pantling, Wing, Bucks. [X7425

P. and M.—We have a 1914 2-speed kick starter model, very good order, £45; deferred payments and exchanges entertained.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7688

P. and M., coachbuilt sidecar, new March, 1914, only ridden 5,000 miles, complete with Lucas lamps, horn, Cowey speedometer, and insurance policy; £48/10, rare bargain.—The Walsall Garage, Walsall. [7626

Peugeot.

3½h.p. Peugeot, 2-speed, and F.E., with sidecar, mag., grand puller; any trial; just overhauled; splendid condition; absolute bargain, £25.—Clark, Garage, Long Melford, Suffolk. [7770

Precision.

1913 3¾h.p. Precision, and wicker sidecar, good condition; £24.—Dyball, North Market Rd., Gt. Yarmouth. [X7611

Premier.

3½h.p. Premier, 3 speeds, as good as new; £30, with P.H. lamp and horn.—The Garage, Whitland, S. Wales. [X6149

7-9h.p. Twin Premier, 1914, 3-speed countershaft, Swan 16 gn. sidecar, grand order; £65, cost £100.—P. Riddelsdell, Boxford, Suffolk. [7696

PREMIER, 1915, 3½h.p., 3 speeds, military type, complete with lamps, speedometer, the Long horn, only run 600 miles; bargain, £49/10.—4, Grosvenor Rd., Aldershot. [7647

PREMIER, 3½h.p., 1911, and accessories, recently overhauled by makers, and fitted with 1915 parts, excellent condition; trial; can be seen Saturdays or Sundays; £23.—Gerard Cobb, The Grove, Esher. [7659

Quadrant.

QUADRANTS.—1916 all-black models can be obtained from stock at the following addresses:

QUADRANTS.—Quadrant Motors, 78, Gt. Queen St., Kingsway, W.C. Tel.: Hol. 5283.

QUADRANTS.—Wauchope's, 9, Shoe Lane, Fleet St., E.C. Tel.: Hol. 5777.

QUADRANTS.—Elce and Co., Bishopsgate Av., E.C. Tel.: Avenue 5548.

QUADRANTS.—Service Co., Ltd., High Holborn, W.C. Tel.: Central 260.

QUADRANTS.—Newsome and Fletcher, Ealing Broadway, W. Tel.: Ealing 1337.

QUADRANTS.—Wm. Whiteley, Ltd., Queen's Rd., W. Tel.: Park 1.

QUADRANTS.—W. H. Clack, Tudor Rd., Hackney, N. Tel.: Dalston 2722.

QUADRANTS.—D. C. Lamb, High St., Walthamstow. Tel.: Walt. 169.

QUADRANTS.—D. C. Lamb, High Rd., Wood Green Tel.: Hornsey 1956.

QUADRANTS.—Quadrant Motors have a variety of second-hand Quadrant motor cycles for disposal.—78, Gt. Queen St., Kingsway, W.C. [7831

LIVERPOOL.—Latest model 4½h.p. 3-speed all-chain Quadrant sidecar combination; £72.—Horsman and Co., 12, Hart St., London Rd., Liverpool. [X7163

4½h.p. Quadrants, latest new 1916 models, chain-cum-belt transmission, B.S.A. 3-speed gear, free engine, and kick start; delivery from stock; price £60; exchange or easy terms.—Wauchope's, 9, Shoe Lane, London. [X7559

Under a spreading Chestnut tree
A mournful Cyclist stands;
A very "fed up" man is he,
With black and greasy hands;
For his troubles with the engine parts
Seem endless as the sands.

And children coming home from
A dozen strong or more; [School
Just love to get between his legs,
They want to "hear it roar."
He knows alas that burning sparks
Will fly from plugs no more.

Toiling—grousing—sorrowing,
One thing in life he knows;
Next morn will see a task begun:
To Godfrey's shop he goes
And buys a Power Plus INDIAN
Before the evening's close.

Week in, week out, from morn till
You can hear his engine roar, [night
You can see him swing his trusty bike
At speed up one in four—
And the Village Blacksmith died
with fright
As he stood at his smithy door.

We are more than sorry that the exigencies of rhyme compel us to deprive the Village Blacksmith of the night's repose awarded him by the gentle Longfellow long before the advent of the Power Plus Indian. We are sure that the Village Blacksmiths of to-day (if there are any left) will be proof against the phenomenal speed of the Power Plus Indian flashing past their smithy doors; especially when they learn that it is just as easy to ride this wonderful machine with "measured beat and slow" as it is to attain a speed which it would be unwise to mention.

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3½h.p. Quadrant, fitted with variable gear, sound condition; £20; guaranteed.—Wauchope's, 9, Shoe Lane, London. [X7545

Radco.

RADCO, 2-stroke, 2 speeds, splendid order; £19/10.—Buckingham, 21, Tindal St., Chelmsford. [7700

RADCO Lightweight, 1915 model, nice condition; £20, complete with accessories and tools.—Wauchope's, 9, Shoe Lane, London. [X7560

Rex.

6h.p. Rex Combination, 2-speed, hand-starter; £35.—Lunn, Garage, Market Sq., Evesham. [X7601

6h.p. 2-speed Twin Rex and sidecar; £20; wants repair.—Rundle, 135, Brook St., Stepney. [7811

6-7h.p. Rex, 1913, 2-speed machine, with coachbuilt sidecar, fine set, excellent condition; £37/10.—Finch, 19, Austin Av., Stockton-on-Tees. [X7571

REX 1913 6h.p. Combination, De Luxe model, cane sidecar, wants overhauling; special bargain subject unsold, £17/10.—J. Maudes, 100, Gt. Portland St., London, W. [7843

Rex-Jap.

BRAND New 1913 Rex-Jap, 2-speed, and free engine model, shop-soiled only; £45, if fitted with new Canoelet sidecar £55.—Wauchope's, 9, Shoe Lane, London. [X7561

REX-J.A.P., 1914, 8h.p., countershaft 3-speed gear, enclosed chain drive, kick starter, automatic lubrication, sidecar lugs brazed to frame, 650×65 Kempshall tyres, equal to new; £50.—The Premier Motor Co., Aston Rd., Birmingham. [7895

Royal Ruby.

ROYAL Ruby, 2-stroke, nearly new; £22.—Buckingham, 21, Tindal St., Chelmsford. [7704

Rover.

ROVER, 1915, T.T. model, practically a new machine; £38/10.—Walsall Garage, Walsall. [7634

ROVER, 3½h.p., 1913, free engine, and coachbuilt sidecar, in perfect order; £23.—Percy and Co., 337, Euston Rd., London. [7759

ROVER, T.T., 3-speed, new 14 gn. Montgomery, footboards, handle starter, absolutely as new; must sell, £46.—Jeavon's, Draper, Lye, Stourbridge. [X7573

3½h.p. T.T. Rover, 1914, indistinguishable from new, absolutely faultless, mileage under 600; exchanges, or sell £38.—1, Welbeck St., Darlington. [7870

ROVERS in stock; immediate delivery of T.T. and sporting machines; early delivery of countershaft models.—P. J. Evans, controlling Birmingham agent, John Bright St., Birmingham. [7807

1913 T.T. Rover 3½h.p. Motor Cycle, fitted with Lucas head lamp, horn, speedometer, tools, etc., in splendid condition, tyres nearly new; £30.—F. E. Wootten, 55, High St., Oxford. [7854

Rudge.

RUDGE Multi, 1914, T.T., 3½h.p.; £34.—Moody, 444, Fishponds Rd., Bristol. [7788

1915 Rudge Multi, 3½h.p., sporting sidecar; £42/10.—Lieut. Harvey, Charlton House, Cheltenham. [7847

1913½ 3½h.p. Rudge Multi, good condition except one cover; £30.—Robinson, 41, Michael's Rd., Bedford. [7889

RUDGE, 1913, 2 speeds, and free, sidecar, quick detachable; £32, or lightweight part.—48, Clifton Av., Wembley. [7642

ISLE of Man T.T. Rudge Multi, 3½h.p., 1915, lamps, etc.; £48.—Morgan and Maxwell, 80, High Rd., Streatham, London. [0751

1914 5-6h.p. Rudge Multi and Swan sidecar, Miller lamp; £42, or near offer; fine condition.—The Garage, Whitland, S. Wales. [X6148

SEVERAL good and very cheap Rudges for sale; send for list.—Morgan and Maxwell, the London Motor Mart, 80, High Rd., Streatham. [0752

T.T. Rudge Multi, 1914, special engine, ran in Nice trial, Lucas lamp set and horn, very fast; no offers, £40.—Apply, Weslake, Clyde House, St. Thomas, Exeter. [X7503

RUDGE Multi, 1915, 3½h.p., hardly used, in splendid condition, complete with accessories; owner enlisted; £45, or nearest offer accepted.—123, Queen's Rd., Finsbury Park, London, N. [X7628

1916 Rudge Multi, 3½h.p., standard model, just received; £58/15; best terms for cash, exchanges, or extended terms.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0552

Scott.

SCOTT, 1914, and Myers sidecar, perfect machine, only run 3,800 miles; £50.—78, Bedford St., Liverpool. [7718

T.T. Scott, very fast, lamps, horn, speedometer, beautiful condition throughout; £26, or close offer considered.—Lamb, 113, Bonnerhill Rd., Kingston. [7645

SCOTT, 1913, splendid condition, tyres as new, Lucas lamp and horn, Cowey speedometer; £40.—Castle Motor Co., Ltd., Showroom, Kidderminster. [X7527

SCOTT, 1914½, and Canoelet, done 1,000 miles, condition like new, extremely carefully kept, with lamp, tools, spare tyre; £58.—Eades, 63, Wilton Rd., Birmingham. [X7501

MOTOR CYCLES FOR SALE.

Miscellaneous.

1915 2¾h.p., 3-speed, all chain drive (enclosed), excellent condition, 2 lamps, 2 generators, tools, etc.; £47, or near offer; seen by appointment.—Barrett, 142, Denmark Hill, S.E. [X7541

FOR a Real Bargain in second-hand motor cycles, cycle cars, gears, magnetos, etc., you should call or write Morgan and Maxwell, the London Motor Mart, 80, High Rd., Streatham, who can positively save you pounds, shillings, and pence. At the moment we have A.J.S., American Excelsior, Ariel, A.S.L., Bat, Bradbury, Calthorpe, Chater-Lea, Clyno (2 and 4-stroke), Douglas, Enfield (6h.p. combination, cheap), F.N. (several), Harley-Davidson (1915), Humber, Imperial-Jap, Indian, Ixion 2-stroke, Hazlewood, Matchless, Moto-Reve, Motosacoche, New Hudson, N.S.U. (several), Premier (combination, cheap), Rover (several), Rudge, Singer, Triumph, Zenith; several cheap sidecars; A.C. Sociable for sale cheap; also H.S.M. cycle car and Wall tricar; over 150 motor cycles in stock. Hours 9.30 to 10; Wednesdays 1 o'clock. [0748

SECOND-HAND Motor Cycles.—We carry the largest and best stock in the Kingdom. For instance, the following lots: 1915 Veloce, £24; 1914 ditto, £21; 1915 Sun-Villiers, £20; slightly used 11J Harley-Davidson combination, £75; 1915 O.K., £22; 1915 demonstration Rover, complete with lamps, and speedometer, £56; 1913 Chater-Lea, with 25 gn. Gloria sidecar, £40; 3½h.p. 3-speed Ariel, £30; 1913 3½h.p. Premier and sidecar, £32/10; 1912 water-cooled Rex and sidecar, £25; 1914 2¾h.p. 3-speed A.J.S., £36; 1914 Enfield combination, with accessories, wind screen, and hood, £58; 1915 £70 3½h.p. 3-speed Triumph, as new, £40; 1911 free engine Triumph, £20; 1911 free engine Triumph, with footboards and handle starting, £20; 50 more in stock. Send for detail list, post free. No reasonable offer accepted.—Colmore Depot, 31, Colmore Row, Birmingham. [X7422

F. MEDCALF and Co., Colchester. 'Phone: 171.—We have for disposal the following motor cycles: 6h.p. 1913 Rex-Jap twin and sidecar, £30; 3½h.p. 1914 Rudge, T.T. model, £30; 2¾h.p. 1915 Douglas, 3-speed, £40; 1914 Triumph, 2-speed, 2-stroke, £30; 4h.p. 1915 B.S.A., 3-speed, chain-cum-belt, £48; 3½h.p. 1913 B.S.A., 2-speed, £30; 2½h.p. 1914 Levis, 2-speed, 2-stroke, good condition, £27; 3½h.p. 1914 Sunbeam, 3-speed, as new, £57; 2¾h.p. 1914 Douglas, 2-speed, £38; 3½h.p. 1914 Premier, with 2-speed countershaft gear, £28; Douglas magneto, £4; 80 coiled motor cycle belts, all sizes, from 3/6 each; Douglas frame, £1; B. and B. carburetter, 23/-; one Bosch magneto, £3; coachbuilt sidecar, £4; several speedometers, second-hand, little used, from 35/- each. We will exchange any of the above motor cycles, etc., for the following, with cash adjustments: Good make, 2-stroke engine, motor cycle rims, motor cycle mudguards, head lamp sets, cycle or motor cycle lamps, stands, or footrests, car foot pumps, jacks, tail lamps, tyres, Ford parts. [6380

HEBDEN'S Motor Mart, Burnley.—Clearance sale to make room for 1916 models. Have in stock: 1916 Enfields, all models; Douglas, War Office model; 1915 7-9h.p. Indian and sidecar, 3-speed, hood, screen, etc., to clear offers accepted; Harley-Davidson, model 11F, just delivered, offers; 1915 Wolf Peco, 2-stroke, 2-speed, to clear; 1915 Wolf, 2½-3h.p., 2-stroke, 2-speed, offers; 1915 2¼h.p. Enfield, as new, 2-speed, £30; 1914 B.S.A., T.T., perfect, a gift, £38; 1913½ Zenith-Jap, Gradua gear, new tyres and belt, a gift, £30; 1912 Humber, 1914 engine, and new C.B. sidecar, perfect, £36; 3½h.p. 2-speed Triumph and Turner C.B. sidecar, a gift, £30; 1916 2½h.p. New Imperial, 2-speed, clutch, and kick-starter, 41 gns.; 1914 5-6h.p. Rudge Multi and sidecar, new tyres and belt, speedometer, lamp, horn, hood, etc., as new, cost £95, accept £59; 1915 8h.p. Williamson, water-cooled, and sidecar, complete, cost £110, accept £80, as new; new Williamson cycle car, water-cooled, 3-speed, Douglas engine, list £120, best offer or exchange.—Hebden's Motor Mart, St. James St., Burnley. Tel.: 488. [7906

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PHŒNIX Sidecars and Phœnix Sidecar Bodies.—We are actual manufacturers. Established 1889.

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PHŒNIX Sidecars.—1916 list now ready; immediate delivery; largest stock in London.

PHŒNIX Sidecars.—100 complete sidecars always in stock; Harley and American models.

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THE Plug for two-strokes.

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18 GN Sydenham Sidecar, £8; rear driven [illegible] meter or 28×3 tyres and rack. Graham, [illegible] Rd., Wrexham. [7744

SIDECARS.—Several bullet-shaped coachbuilt bodies, with or without chassis complete.—Write, Bevan and Holt, Ltd., Belgrave Rd., Leicester. [0716

SPECIAL Sidecars to suit American Excelsior and Harley-Davidson; Cape hoods 30/-, wind screens 17/6; splendid value in lightweight model at £8.—Melville Sidecars, Halifax. [X1044

IF You Want one of the best makes we have in stock Canoelet, Mills-Fulford, Indian, and Watsonian.—Lamb's, 151, High St., Walthamstow, and 60, High Rd., Wood Green. [7699

HARLEY-DAVIDSON Canoelet and Gloria Sidecars in stock, body and chassis enamelled H.D. grey, 28×3in. Dunlop R.S. tyre, etc.; prices 15 gns. to 27 gns.; trade supplied.—The Premier Motor Co., Aston Rd., Birmingham. [7697

THE Juno, £10/10, 19/3 month; Watsonian featherweight, E, £6/13/6, 12/3 month; Enclosed, £8/18, 12/8 month; G, £9/19/6, 18/4 month; H, £10/10, 19/3 month; Watsonian cabriolet, £12/12, 22/9 month.—Seen at 248, Bishopsgate, London. [7691

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BARGAINS; Must Clear.—Three 1913 paired cars, from £35; please call.—Liquidator, 10c, Waylett Place, West Norwood. [X7616

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CAMBER Coach Bodies, £3/10; lists free.—Bright and Hayles, 73, Church St., Camberwell. [7776

CAMBER Coach Tandem Model, £4/12/6.—Bright and Hayles, 73, Church St., Camberwell. [7778

CAMBER Lightweight Models, under 20 lb.; £3/5.—Bright and Hayles, 73, Church St., Camberwell. [7777

CLEARANCE of Torpedo Coachbuilt Bodies from £1/10 to £4; list free.—The Premier Motor Co., Aston Rd., Birmingham. [7586

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1913 Duo Cycle Car, 8h.p. J.A.P., equal to new; £55, or near offer.—J. Williams, 80, Delaney St., Regent's Park, N.W. [X7462

MORGAN Grey Sporting Model, ready for immediate delivery; £94/10; cash exchanges considered.—The Walsall Garage, Walsall. [7631

MORGAN, Grand Prix, 1915, 700×80 tyres, speedometer, Lucas lamps and horn, perfect; £110, or near offer.—Mylam and Co., 197, London Rd., W. Croydon. [7858

MORGAN, 1914, sporting model, disc wheels, hood and screen, speedometer, fully equipped and like new; bargain, £75.—Percy and Co., 337, Euston Rd., London. [7755

MORGAN, sporting model, special body, with side door, upholstered real leather, hood, hood cover, car tyres, speedometer, etc., red, new condition; £75; lightweight part exchange.—Petty, 199, Piccadilly Regent 4838. [7729

8h.p. J.A.P. Water-cooled Engine, back axle, with 2-speed gear and connections, set of wheels complete with Palmer tyres, pair of side frames, silencer, and radiator, ready for being assembled to make a cycle car; what offers?—The Royal Ruby Cycle Co., Manchester. [0705

BARGAINS.—Must clear following 2-seaters: 10h.p. Adams, 1910, £40; 8-10h.p. Jackson sporting, m.o.t.v., Bosch, £45; 9h.p. Riley Baby cycle car, 5 detachable wheels, mag., £50; 12h.p. Sizaire-Naudin sporting, bulbous back torpedo, 50 m.p.h., £65; 20h.p. sporting Darracq, bulbous, dynamo lighting, disc wheels, £85; several others, 4-seaters, landaulets, chassis, etc.; please call; offers.—Liquidator, 10c, Waylett Place, West Norwood. [X7617

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6h.p., Rover 2-seat, Little Car, 3 speeds, hood, screen; £25.—187, High St., Tooting. [7836

SINGER Car, 10h.p., 1913, very smart; £135.—Buckingham, 21, Tindal St., Chelmsford. [7707

CROSSLEY Coupe Car, suit doctor; £230, or part exchange.—Buckingham, 21, Tindal St., Chelmsford. [7710

SIZAIRE 9h.p. 2-seat., Stepney, lamps, etc., reliable little car; £35.—Mylam and Co., 197, London Rd., W. Croydon. [7859

FORD 1913 Touring Car, just done up and repainted; £90, or part exchange.—Buckingham, 21, Tindal St., Chelmsford. [7708

DE DION, 6h.p., good 2-seater, in excellent running order; bargain, £20, or would take good motor cycle level deal.—96, Crown St., Ipswich. [X7614

G.W.K. Light Car, 1916, latest model, just arrived from works; immediate delivery; £178/10.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7667

G.W.K., 1913, hood, screen, 2 head, side, and tail lamps, speedometer, horn, tools, etc., at present being overhauled; £100.—Rex Mundy, 132, Gt. Portland St., W. [7791

CARS FOR SALE.

TRUMBULL 2-seater Car, done only 50 miles, complete with electric lamps, spare wheel and tyre, electric horn; £110, or part exchange.—Buckingham, 21, Tindal St., Chelmsford. [7709

CALCOTT, 10.5h.p., 1916, latest model, the leading light car, dynamo lighting set, and all complete; just arrived from works; immediate delivery.—Wilkins, Simpson, and Co., 24, Sheet St., Windsor. [7666

HUMBERETTE, 1914, water-cooled, hood, screen, 2 head, side and tail lamps, speedometer, horn, tools, etc., 700×80 tyres, in excellent condition throughout; £95.—Rex Mundy, 132, Gt. Portland St., W. [7904

WE Have a 1915 Saxon, ridden 1,000 miles, £120; Chater-Lea, 1913, water-cooled, £85; 1913 Crouch, £65; Morgan, 1915, slightly soiled, £110; motor cycle exchanges and deferred payments entertained.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7689

EXTENDED PAYMENTS.

EXTENDED Payments.—All makes supplied; lowest terms.—Service Co., 292, High Holborn, London. [0618

EXTENDED Payments arranged on new motor cycles of all best makes.—Wauchope's, 9, Shoe Lane, London. [X7567

ELCE and Co. have a large selection of new and second-hand motor cycles and light cars which can be purchased on the most advantageous extended terms.—15-16, Bishopsgate Av., Camomile St., E.C. [0481

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ENGINES.

2h.p. Minerva Engine, silencer, pulleys, belt; 30/-.—Clark, 4, Church Row, South Shields [7657

ENGINE, 4½h.p. 1913 Star, splendid condition, magneto included.—Leighton's, opposite Wood Green Station. [7824

3½h.p. Minerva Engine, mechanical valves, Amac carburetter, silencer, and pulley; 30/-.—Millen, Brunger Farm, Tenterden, Kent. [7743

5-6h.p. Blumfield Twin Engine, carburetter, exhaust pipes, silencer, magneto platform, Bosch magneto; what offers?—Moss's Garage, King's Norton, Birmingham. [X7484

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POPE 9h.p. Twin Engine, complete with Dixie magneto and automatic carburetter, new condition; also new Druid latest pattern fork.—Box 9,827, *The Motor Cycle* Offices, Coventry. [X7500

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PARKER and Rice, Magneto Specialists.—Experts on all magnetos, Bosch, Eisemann, etc.

PARKER and Rice.—Re-winding, re-magnetising, overhauling, etc.; repairs executed with expedition and unapproachable workmanship; low quotations.

IMPORTANT.—Parker and Rice give 12 months' written guarantee with each repair.

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MAGNETO Repairs and all spare parts.—The Runbaken Magneto Co., Ltd., Camp St. Works, Deansgate, Manchester. Tel.: 8266 City (3 lines). T.A.: Runmag Manchester. [0715

The "IVY" Two Stroke

Programme for 1916

The IVY—during the year 1915 has maintained its splendid reputation, and we are assured by letters from our clients that the little machines are giving every satisfaction. We take this opportunity of thanking those past and present riders of the IVY Two-stroke, whose kind patronage has enabled us to put before the public the aristocrat of its type, and to assure potential purchasers that for 1916, although only improved in detail, it is better than ever.

We are retaining all the models which have been such a success last season, viz.:—Tourist, De Luxe, and Lady's two-strokes, with or without 2-speed gears, and are introducing one new model—a 3 h.p. two-stroke (70 x 90) single-cylinder, which will be sold as a solo machine, and with a sidecar as a lightweight combination. This latter, however, will not be ready for delivery before February, 1916.

Tourist Model Fixed engine **£29 10**
2¼ h.p. (64x70)
Solo Machine. 2-speed **£36 0**

De Luxe Model Fixed engine **£34 0**
2¼ h.p. (64x70)
Solo Machine. 2-speed **£40 10**

Lady's Model Fixed engine **£31 0**
2¼ h.p. (64x70)
Solo Machine. 2-speed **£37 10**

3 h.p. single-cylinder two-stroke, 70 x 90 bore and stroke. Solo machine, and with sidecar as combination, with or without 2-speed gear. Prices not yet fixed; deliveries cannot be commenced before February, 1916.

THE ARISTOCRAT OF ITS TYPE

S. A. NEWMAN, Ltd., Aston Cross, Birmingham.

Advance 1916 Folder post free—Catalogue will be ready shortly.

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MAGNETO Repairs of every description by Bosch specialists. Expedition and moderate charges. Magnetos bought and sold. Several 1 and 2-cyl. magnetos in stock.—The Magneto Mart and Repairing Co., 142, Wardour St., W. Gerrard 727. [7679

MAGNETOS, Repairs, Spares.—Repairs to all types at our own works by experts. Re-winding, re-magnetising, spare parts for any make. Prompt delivery guaranteed.—Brooklyn Engineering Co., 1a, Bailey St., Pendleton, Manchester. [X7581

MAGNETO Repairs.—The London and Paris Magneto Co., 154, Gt. Portland St., London.—Lowest prices compatible with good work. Avoid tinkering and excessive manufacturers' charges. Magnetos bought and sold.—'Phone: Gerrard 1908. [7637

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BALATA-CHROME Belts, highly satisfactory all weathers; ⅝in. 9d., ⅞in. 10d., 1in. 1/-, 1½in. 1/2 per foot, post free; extra strong belts for passenger work, with steel drilled eyelets and washers all through, 1in. 1/6, 1½in. 1/9 per foot.—Pollin, Shepherdswell, Dover. [9494

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TANKS Made, repaired, and enamelled.—Bright and Hayles, 73, Church St., Camberwell. [7779

TANKS, tanks, tanks, any shape, to order or repaired; all metal sidecar bodies; general sheet metal work; lists free.—Attwood's, 86, Rusebery Av., E.C. Tel.: Central 12445. [5136

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LEGGATE'S, Edinburgh, for Tyre Valne.

LEGGATE'S, Edinburgh.—For great reductions in brand new clearance tyres. See below for approval terms. Prompt despatch guaranteed.

LEGGATE'S, Edinburgh.—Clearance.—1915 new pattern Clincher Dreadnought, 6-ply fabric, extra heavy, rubber studded, beaded covers, 26×2¼ 31/-, list £2/7/3; 26×2½, to fit 2¼ rims, 31/6, list £2/7/3; 26×2½ 32/6, list £2/10/10.

LEGGATE'S, Edinburgh.—Clearance.—1915 new pattern Clincher de luxe, heavy rubber studded, beaded covers: 26×2, 21/-; 26×2¼, 21/-; 26×2⅜, to fit 2¼ rims, 23/6; 26×2½, 25/6.

LEGGATE'S, Edinburgh.—Clearance.—1915 new Clincher de Luxe, beaded edge, 4-ply fabric, special heavy, rubber studded, "added" non-skid pattern (not recessed) covers, 26×2½, for 2¼ rims, 27/6; special value; absolutely "it" for greasy roads.

LEGGATE'S, Edinburgh.—Standard 1915 Clincher Dreadnought, 3-ribbed, 6-ply fabric, beaded covers, 650×65 39/9, 700×80 44/9, 700×80 for 650×65 rims 44/9; specially made for voiturette rims of extra powerful passenger outfits and light cars.

LEGGATE'S, Edinburgh.—Clearance.—1915 Dunlop extra heavy rubber-studded beaded covers, 26×2⅜, 28/6, list 37/9; 28×2½ (for Indians), 31/-, list 41/3; 28/3 (for Indians or Harley-Davidsons), 33/-, list 44/-.

LEGGATE'S, Edinburgh.—1915 Dunlop tubes, best quality, extra heavy, fully guaranteed, 24×2 6/6, 24×2¼ 7/-, 26×1¾ 6/6, 26×2 6/9, 26×2¼ 7/9, 26×2⅜ 8/6, 26×2½ 8/9, 26×3 9/6, 650..65 10/6, 28×2½ 9/-, 28×3 10/6.

LEGGATE'S, Edinburgh.—These goods are all brand new, and sent anywhere on 7 days' approval against remittance; cash refunded in full if goods not approved of.

LEGGATE and Co., Motor Cycle Specialists, 15, Slateford Rd., Edinburgh. [X7174

26×2¼ Beaded Kempshall; approval; 16/-.—Curd, 17, Gardner St., Brighton. [7791

REDUCED 1915 List Tyre, all makes.—T.A.: Tyres.—Graham, Vine St., Birmingham. [0658

BASTONE'S for Covers and Tubes. See last week's adverts.—228, Pentonville Rd., King's Cross, London, N. [7882

ROM Combination, 700×80, £2/10, list price £3/10; not done 50 miles; too large for own machine.—D.O., 235, Essex Rd., N. After 6 p.m. [7653

7/6 Allowance Guaranteed for old tyre towards nearly all new motor cycle covers.—Particulars to Taylors', Tyre Stockists, Store St., London, W.C. [0626

ECONOMIC for economy in all makes and sizes of covers and tubes from 24×2 to 700×85, both stock and clearance lines; immediate delivery; send P.C. stating your requirements, or refer last week's *Motor Cycle*.—Economic Tyre Co., 137, Lewisham High Rd., New Cross. 'Phone: New Cross 1393. [7872

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WANTED, a motor cycle repairer, must be ineligible for military service, permanency; no one engaged on Government work or living more than 10 miles distant need apply.—Apply, Wauchope's, 9, Shoe Lane, Fleet St., London. [X7548

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BELT FASTENER—

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ALTHOUGH not quite so good as the "STANLEY"—no other Fastener is as good as the "STANLEY"—it is constructed on the same lines, designed by the same brains, and is put forward as the next best. Just the thing to carry as a spare. Better than any other at the price; and it is

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MOTOR Cyclist, invalided officer, capable man, visiting garages and motor cyclists, London and suburbs, desires agency, attractive accessories.—Box L.512, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7661

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CONSULTING Patent Agency, 253, Gray's Inn Rd., London.—Free advice. Inclusive charges. [7777

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REX MUNDY after eight years' competition riding experience, offers expert advice on selection of new and second-hand motor cycles and light car. Second-hand machines examined and reported on. Tuition. Moderate fees.—132, Gt. Portland St., W. [7112

WANTED.

A.

MORGAN and Maxwell purchase for spot cash approved second-hand or new motor cycles, light cars, combinations, sidecars, etc.—Morgan and Maxwell, The London Motor Mart, 80, High Rd., Streatham. [0747

M.

MAUDES' Purchase Second-hand or new light cars, sidecar combinations, motor cycles, or sidecars. Prompt cash.—100, Gt. Portland St., London, W. [6347

WANTED, Bosch magnetos.—Below.

4½h.p. De Dion Engine wanted, perfect condition.—Wortham, Blake, and Co., Waltham Cross. [7820

ACCESSORIES.—Morgan and Maxwell, Streatham. [X2560

WANTED, 4-6h.p. twin engine and magneto.—Rhodes, 32, Bertram Rd., Bradford. [X7460

WANTED, modern frame and magneto for 3½h.p.—Worsdall, Salthouse Lane, Hull. [X7504

H.F. Vulcaniser wanted.—Full particulars and price, Williams, Moncrieff Lane, Glasgow. [7680

WANTED, good Bosch single and 4-cyl. magnetos.—136, Gt. Portland St., London, W. [7841

100 Motor Cycles Wanted, spot cash paid.—Bring or send, Palmer's Garage, Tooting. [7834

WANTED, lightweight motor cycle, good condition: about £10.—Buxton, Hadham, Herts. [7347

WATER-COOLED Engines up to 10h.p., any condition.—Nixon, Brampton, Cumberland. [X6190

POWERFUL Motor Cycle Combination wanted.—R. Johnson, Corchester Av., Corbridge-on-Tyne. [7719

TRIUMPH or modern make; bargain for cash.—Hoult, A.S.C. Depot, Avonmouth Docks. [X7487

MOTOSACOCHE Frame, wheels, etc., to suit 2½h.p. engine.—Borner, Coronation Rd., Sheerness. [X7486

N.S.U. Gear, or Gradua pulley, fit 4h.p. J.A.P., good condition.—56, Bunyan Rd., Walthamstow. [6992

5-6h.p. 1909 Twin Rex, timing half crankcase, or whole.—Pugh, 250, Ongar Rd., Brentwood. [7663

DOUGLAS Frame, 1911 model D, also child's pillion seat, low price.—Edgell, Farrington, Bristol. [X7156

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WANTED, countershaft gear, with kick-starter, also Humber 1913 cylinder.—Millard, Belvedere. [7457

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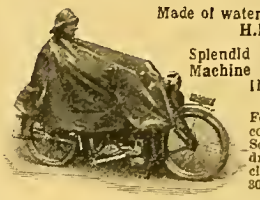

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Twin-cylinder Two-strokes.

NOW that twin-cylinder two-stroke engines are coming to the fore it may be profitable to consider some of their peculiarities and the difficulties which have to be overcome by designers. The engine with side-by-side cylinders and cranks at 180° presents no new problem, the balance is excellent, and the firing intervals are equal. Thus the torque is as good as is possible with the number of cylinders in question; equivalent, in fact, to that of a four-cylinder four-stroke. It is when a designer takes in hand a V twin or horizontally-opposed engine that new considerations arise.

Considering first the V twin, it is obvious that a single-throw crank such as is used on a four-stroke for the torque and firing interval would be but little better than on a single-cylinder. If the angle between the cylinders were 50°, the firing intervals would be in the proportion of 5 to 31 as compared with the intervals, or 41 to 31 (approximately 4 to 3) on a similar four-stroke engine. To obtain even firing, one piston must be at the bottom of its stroke when the other is at the top. Thus in the 50° engine before mentioned the crank which carries the front connecting rod must be 130° in rear of the other, and the balancing of such an engine would be something of a problem in itself.

Turning now to the horizontally-opposed twin with cranks set at 180°, which is so effective as a four-stroke, we find that, while the balance is practically perfect, except for a longitudinal couple due to the cylinders being slightly offset, the firing is equivalent to that of the same engine in its four-stroke form—even, it is true, but in no way superior to the torque of a two-stroke single, namely, one explosion per revolution. This is brought about by both cylinders firing at the same time. To obtain even firing when the explosions are separated one crank must be used, and we at once lose one great advantage of this type of engine, viz., its excellent balance, and revert to the balance of a single-cylinder with a double set of reciprocating parts.

Dispensing with Magnetos.

IT is interesting to consider the future of ignition systems on motor cycles, and the possibility of magnetos sooner or later being dispensed with entirely. Such a suggestion will come as a shock in many quarters where magnetos, by reason of their excellent design and results, have given entire satisfaction, and have proved to be, probably, the most reliable portion of the trustworthy modern motor bicycle. With the growing adoption of dynamo lighting on motor cycles as well as on cars, two entirely separate electrical systems are coming into use, when a properly designed single unit system would suffice. In many cases modern cars have three distinct electrical systems, but there is now a natural tendency to embody these in a single unit system. Thus we find a motor generator which not only starts the engine, but also keeps the batteries for the lamps properly charged, and the batteries, in turn, provide current for the distributer and coil ignition system. Thus, in a single electrical unit the functions of starting, lighting, and ignition are neatly carried out, the generator being used in place of the three electrical machines used in other designs, viz., the dynamo, the starter, and the magneto. The wiring, it must be confessed, is at present very complex, but there is no real need for this, as the generator, coil, and distributer might well be formed in a single unit. It may be that sooner or later the same system will be adopted on side-car outfits, particularly if these become a standardised form of vehicle, as they promise to do, as opposed to the double purpose detachable outfit. On the other hand, we feel sure that motor cyclists would look upon the elimination of the magneto with considerable pangs of regret, for undoubtedly it has given excellent service, and on its adoption years ago gave the motor cycle the biggest fillip it ever received.

An Index to the advertisements in this issue will be found on the page facing the back cover

Novel Speed Judging Test in Holland.

Regularity Trial of the Motor Club Noord-Holland.

Scene at the starting point of the Dutch regularity trial. A number of British machines competed and secured awards.

A FEATURE of the speed-judging test, held on the 12th inst. by the M.C. Noord-Holland, was the method of checking employed. A circular course was chosen and competitors divided into two groups, each departing in an opposite direction. There were coloured signals—two of each colour, one in one group and the other in the second group. When the competitor in the first group met the competitor in the second group carrying the same coloured signal they both stopped and noted each other's time on their time cards. There were also two controls.

The weather was not at all favourable, and the roads were bad. However, twenty riders put in an appearance, and British and American machines were prominent. For most of the run the road followed canals, and, as will be gathered from the pictures, the roads were heavy and slippery. Fortunately, nobody drove into the canal—an actual happening in one Dutch trial some little time ago when the event had reached a stage of great excitement. There were two teams, each consisting of two solo and one sidecar outfit, from the North Holland and South Holland clubs. A. Citroen, secretary of the organising club and a rider whose name is familiar to many of our readers, was a member of the Noord team, and rode a twin-cylinder Simplex. He did well, winning a silver medal. Four riders gained premier awards, *i.e.*, silver medals, and these were mounted on Simplex, J.H., James and sc., and Vulkaan machines. Two bronze medals were awarded to riders of Triumph and Reading Standard machines.

Holland is now the nearest country in which civilian motor cycle competitions are possible. For this reason more interest is attached to the doings of our Dutch friends than might be in times of peace, though we always welcome any news from that country.

At a control in the Dutch trial, a report of which appears on this page. Note the reflections in the canal.

Drilled Countershaft Pulleys.

I have never personally suffered from belt slip on the countershaft pulley of a combination drive, except when the belt had stretched so appreciably that shortening was essential; my experience has been that a taut belt grips a pulley of this size quite firmly, even when there is a lot of water about. However, I was recently examining a machine belonging to an indomitable all-weather fiend, and I noticed that his countershaft pulley was drilled. On this particular make of machine the gear box is rather far back, and the arc of belt contact only extends from the seven o'clock to the eleven o'clock positions of a watch dial. In other words, the contact area is very little, if any, larger than can be obtained by using a smaller pulley set further away from the back wheel, as in the direct belt drive, when the arc of belt contact might extend, say, from the 6.30 to the 11.30 positions. Some of our designers have yet to realise that the combination drive requires (*a*) as large a countershaft pulley as possible; (*b*) as forward a position of the countershaft as is possible; and (*c*) a smallish back wheel pulley; that is, if the full benefit of the design is to be secured. When belt slip is experienced with a taut belt, a drilled pulley will be of some assistance.

The Four-cylinder and its Future.

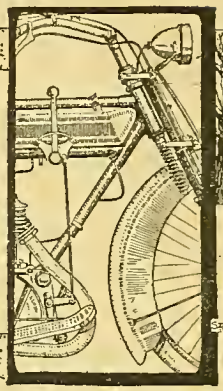
I continue to suffer occasional onslaughts from various correspondents who consider I "damn the four-cylinder with faint praise," and in particular that I have invariably been unjust towards the four-cylinder F.N. Well, I frankly admit that during a long experience of motor cycling, dating back to the very earliest days, I have always regarded the four-cylinder motor cycle engine as the least adapted of all possible designs to the general needs of the average motor cyclist, and my critics should notice that the trade and the public have invariably supported the same opinion with unanimity and force. There has always been a steady demand of a limited character for good examples—formerly the F.N. alone, supplemented latterly by the Henderson. Furthermore, the shaft drive, in the present state of affairs, stands or falls with the four-cylinder engine; it has never really achieved any marked success with any other type of power unit. A clever tuner, with plenty of leisure at his disposal, may be thoroughly justified in enthusing about engines which take five or six times as much keeping in order as a single-cylinder (N.B.—A twin takes more than twice as much tuning as a single, and a four more than twice as much as a twin); in particular, so long as decarbonisation continues to afflict us every 1,000 to 1,500 miles, a heavy engine which cannot be cleaned without being removed from the frame can never become one of the leading popular types, though men of leisure will naturally discount this factor in return for the magnificent running of the first-class four. Mr. Birrell once said that minorities must suffer—it is the badge of their tribe; and until we are all expert tuners with plenty of leisure for tinkering, not only the four-cylinders, but all other comparatively complex types will remain in a minority, however excellently their intrinsic merits may compare with simpler and cruder patterns. For the present, therefore, the four-cylinder enthusiasts form a minority; and their suffering will inevitably take the form of watching the public and the publicists laying heavier stress on the merits of simpler types. When our publishers are multi-millionaires and pension me off, I assure my correspondents that I shall gleefully purchase a regular stud of four-cylinders and begin to enjoy myself. But as long as I work fifteen hours a day and have to effect lightning repairs and adjustments whilst eating up the crowd between two hill-climbs in a Six Days Trial, I must stick to comparatively simple types; and being an honest man, I must communicate my experiences to the general public, whose circumstances are usually parallel, though not identical. Nevertheless, I freely admit that I cannot conceive how a sporting undergraduate, for example, whose sole daily engagement may be a morning lecture, which he generally cuts, can ride a thumping single-cylinder when Hendersons and F.N.'s are obtainable. Is that clear?

Garage-built Cycle Cars.

For some mysterious reason the London suburbs have probably produced more "own transfer" motor cycles than the rest of the world put together; and the output was especially large in the old tricar boom. I resided in London at that time, and whenever one penetrated into the back workshop of the small garage-cum-repair shops, with which the suburbs were dotted, one was pretty certain to find some quaint and gigantic monstrosity of a tricar in course of completion, usually to a customer's design as well as to his order. I doubt whether these freak machines, which were usually of the sporty and speedy order, ever made any serious contribution to contemporary design. But there is no reason why a locally planned and constructed cycle car should not crystallise into a permanent type. The supply of cycle car components is large, and during the coming winter enthusiasts with eighty or a hundred pounds to spend might do worse than attempt to evolve original cycle cars, with the aid of their local repair man. Anything is better than stagnation, and it is very questionable whether the supply of standard bicycles and cycle cars can catch up to the demand until many months after peace returns. The sole alternative in many cases lies in the purchase of some imported mount; and not all the importations can boast Hendee quality, as some light-hearted experimentalists have already discovered to their cost.

TWIN TWO-STROKES.

Some of the Points to be Considered in Designing Twin Two-strokes.

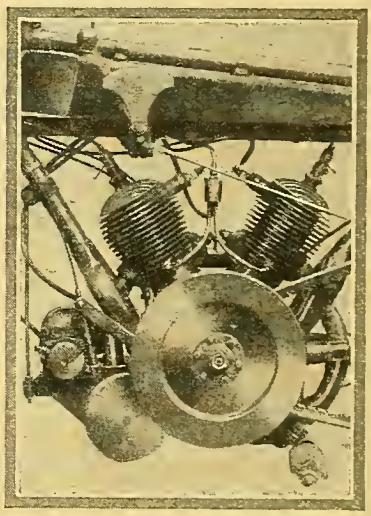


THE majority of motor cyclists seem to think that the two-stroke twin-cylinder engine which is now being experimented with by such a large number of firms can be evolved from standard designs by taking the ordinary two-cylinder motor cycle and altering the castings so that a two-stroke twin is formed. Actually there are a great number of very interesting problems on the successful solution of which the success of the two-stroke machine depends, while the designer gets little or no help from the twin-cylinder four-stroke engines.

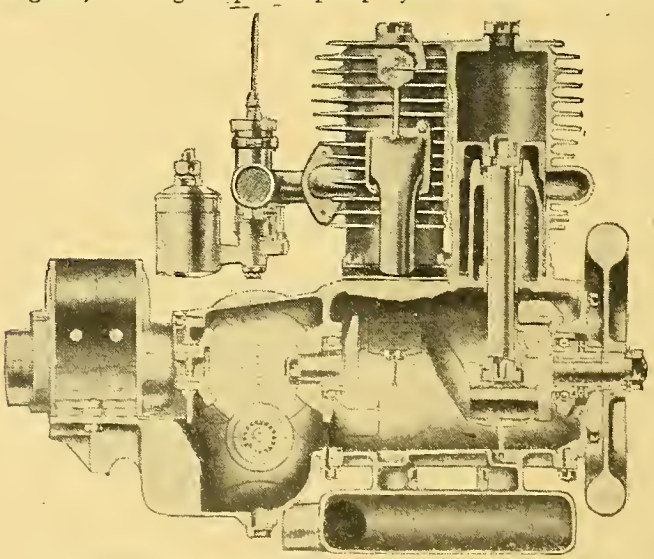
When brought down to representative types, the twin two-stroke is to be found in three forms, namely, the twin upright or inclined side-by-side cylinders, the V, and the horizontally-opposed cylinder design, each having certain advantages and certain disadvantages which have to be weighed very carefully before a decision is made.

The two-stroke twin design is best exemplified by the Scott and Premier, which engines really are separate engines side by side with parallel cylinders and a two-throw crankshaft. Naturally the nature of the crankshaft may vary, since some prefer flywheels within the crank case and the crank itself built up of pins secured to the flywheels, while others employing an outside flywheel have a built-up or solid crank of car type.

Crank case compression is used for these smaller engines, although separate pump cylinders are found when the bore is increased very much, and it is this compressing of mixture within the crank case which is responsible for so much trouble. Actually there is one crank case for the two cylinders, but a diaphragm or wall is cast inside the case to hold the centre bearing of the two-throw crank, and effectually to divide one crank case from that of the other. Obviously more or less lubricant varies the pressure of gas which can be drawn in and forced to the combustion space; obviously, also, the separate compartments must be equally pressure tight, while the casting itself must not warp during cooling. All details, therefore, need very careful attention if an equal charge is to be compressed in each compartment and the engine to run smoothly.



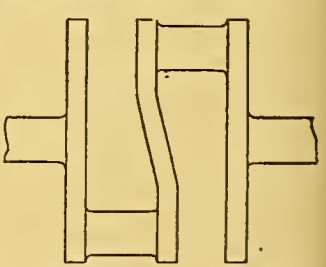
Engine of the V-type twin two-stroke Sun Vitesse.



Part sectional view of the Premier vertical twin-cylinder two-stroke engine.

Even Firing.

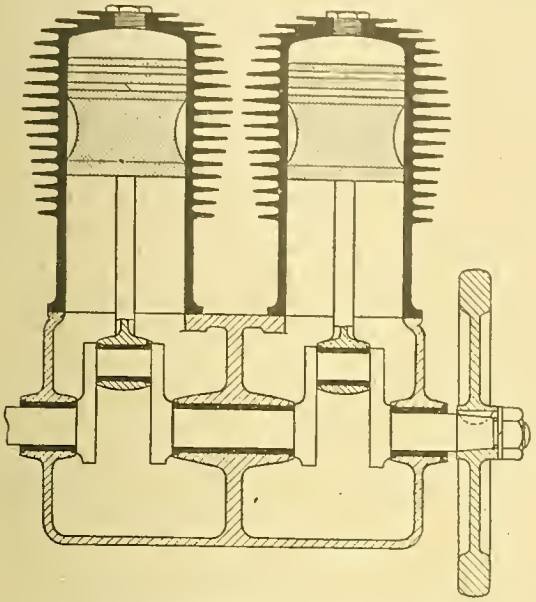
Now to get even firing for a four-stroke two-cylinder engine of this type, the cranks must be set so that both pistons are moving together and reach the top of the stroke together, but the two-stroke cycle makes it necessary to set the cranks at 180°, so allowing one piston to be at the lowest point in its stroke while the other is at the top. Were the four-stroke design to be retained, the engine could still run as a two-stroke, but it would be the equivalent of one very big two-stroke, both charges firing together, while the moving parts



Two-throw crank, so constructed that the opposed cylinders shall be more nearly in line. With this design the pistons reach the end of their travel together.

Twin Two-strokes.—

are as unbalanced as those of the single cylinder engine. In the case where the cranks are at 180°, one cylinder fires as the other finishes its stroke, and the impulses treading on one another's heels, the pull or torque is much more even. But there is a tendency to rock, a tendency best understood if one imagines

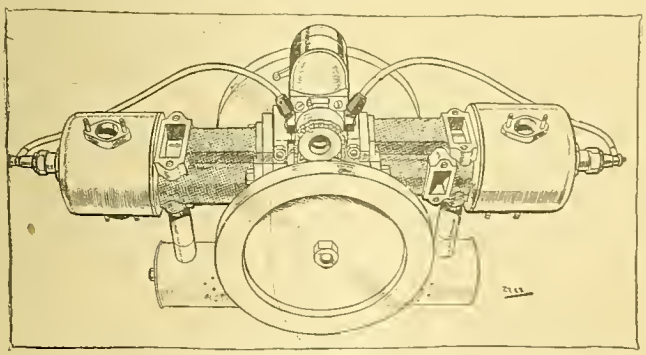


A type of engine in which the cylinders are parallel and vertical, both pistons being at the uppermost positions at the same moment.

the crank case balanced on its centre then one piston pushed down. Obviously the engine would fall to that side, wherefore the frame has to be made to resist this force. If both pistons are pushed down together and equally, the engine would remain steady.

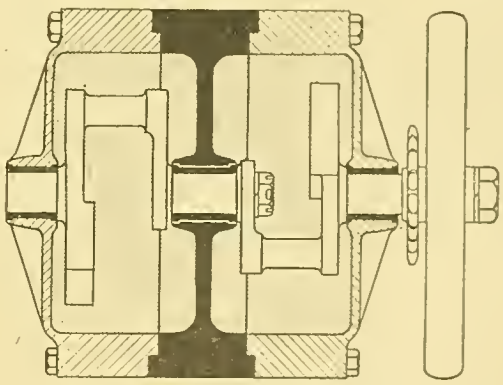
V Twin Two-strokes.

Now as regards the V engine, here we have no point of similarity with the four-stroke V, as once again a partition has to be erected to divide the crank case into compartments, and the utmost care only will prevent leakage through the bearings. As an example, one two-stroke twin has the usual two side plates normally bolted together, but separated by another



Levis twin-cylinder two-stroke engine. The water-cooled cylinders are arranged horizontally, and the cranks are set so as to bring the cylinders as much in line as possible. The pistons move outwards and inwards together.

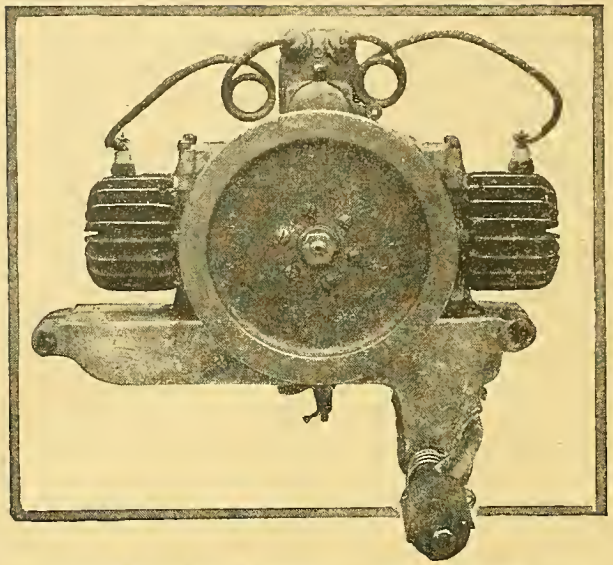
casting, thus making three parts bolted together and with pressure-tight joints. Attached to the additional centre piece is the partition with a bore in the centre holding the centre bearing of the crank, thus dividing the case into two partitions. As it would be impossible to get the crank through this bearing into position, the former is bolted together, the journal (that part of the crank which is in the bearing) having a taper end and a screw thread so that the crank in the next compartment can be secured in place. It is possible to split the partition horizontally, using special means to prevent gas escaping through the joint, so allowing a solid crank to be used and making it possible to place it in position and push down the other half of the partition until the half bearing beds down upon the top of the crank axle. Here again unequal lubrication, leakage, or uneven gas passages from the carburetter will affect the running of the engine. Now with the V-type engine it is necessary to space out the explosions by allowing one piston to be at the top while the other is at the bottom of its stroke. In the four-stroke twin there is but one crank pin and the cylinders are not fired evenly, but in the case of a two-stroke, owing to the separate partitions, the cylinders are out of line with one another, and two pins are necessary. Even then the two pins must be at different positions relative to each other, or the pistons would not be one at the top and the other at the bottom, and even firing would not occur. The angle at which these pins are relative to one another can be set if one knows the angle at



V-type engine crank case, with special piece (shown in black) acting as a wall, and dividing the case into separate compartments.

which the cylinders are set. For instance, with a 50° angle between the cylinders, an angle of 130° between the crank pins is necessary, since this is the only position where one connecting rod is right down while the other is right up. From this it follows that the mechanical balance of a V two-stroke is slightly better than that of a V four-stroke, but, owing to the cylinders being out of line, the same rocking motion is to be met with as was mentioned in connection with the first type of two-cylinder. To make the engine compact, the small end bearing of the connecting rod is not equally on either side of the rod, but all on that side nearest to the centre of the engine, thus allowing the cylinders to be much more nearly in line.

Twin Two-strokes.—



Flywheel side of the twin-cylinder two-stroke Connaught. The platform on which the engine is mounted forms the silencer and also the support for the footrests, the whole unit being secured in the frame by two substantial bolts.

Finally, there is the horizontally-opposed engine similar to the Douglas. Many people know that the Douglas type engine is exceptionally smooth, and this is so because it is well balanced, the pistons moving together and the cranks being at 180°, so that the pistons arrive at the ends of the stroke together. They also know that the centre web of the crank is bent to bring the centres of the cylinders more in line, and to lessen the rocking motion already referred to. If, however, the pistons move outwards together on a horizontally-opposed two-stroke the explosions occur together, and, though the mechanical parts are balanced, the effect would be that of a single large two-stroke. Herein there is the advantage that the engine is as smooth as a four-stroke, and fires as evenly as a two-stroke single, which all will admit is good.

Now, however, comes another difficulty, as this type is difficult to arrange in a frame in such a manner as to be accessible, yet it needs to be more accessible, if possible, because carbon deposit is more apparent.

The twin V looks best and also fits a frame very well, while the twin parallel cylinders can be made up exceedingly well if care is used. So it follows that the twin two-stroke is full of unsuspected difficulties, but since it will be a thing of beauty to handle, when it has even torque and even balance, the battle between the various types now proceeding in experimental shops will be of exceptional interest.

Tyre Repair Patents.

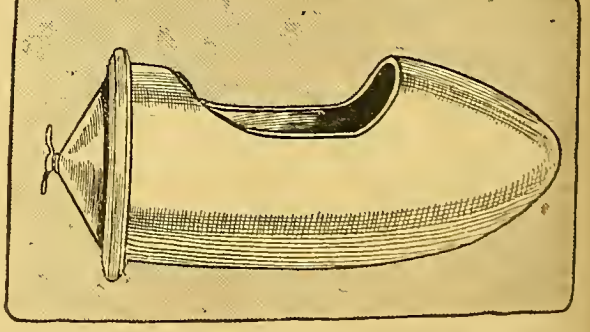
I HAVE received some criticisms of my notes on the Mustikon stud method of repairing inner tubes (*The Motor Cycle* for December 2nd, page 558), the challenge emanating from the patentee of a more orthodox system. My correspondent asserts it is possible to prevent that portion of the tube which underlies a patch from expanding in all directions under inflation by making a patch which is non-elastic in one direction; if the non-elastic axis of such a patch is set at right angles to a split or tear, inflation will not tend to loosen the patch. There is, of course, an alternative system which aims at making the patch and tube equally elastic, so that they expand in the same ratio.

The criticisms continue with statements that (*a*) the lower disc of the Mustikon stud cannot adhere to the inner surface of the tube, because this inner surface cannot be prepared or cleaned, and must be chalky or covered with sulphur; (*b*) that the stem of the plug does not help to seal the puncture, because it can only be inserted if it is a loose fit; (*c*) that the curvature and spring of the outer cup of the stud prevent its being solutioned to the tube over its whole area, and that it can only adhere to the tube by its edges.

All these criticisms are at least exaggerated. I have cut sections of my own Mustikon repairs, and find that the lower disc *does* adhere to the inside of the tube in most cases, seeing that the inflation presses the disc against the tube, and this pressure apparently compensates for the foul nature of the surface. The stem helps to seal the puncture, in my hands at any rate, because I always select a stud which is just too large for the puncture, and stretch the tube to get the stud inserted; I admit a second pair of hands is really desirable for this job, but I have often managed it single-handed. The curved section and springiness of the outer cup do not prevent the whole area of the cup adhering to the tube where the smaller sizes of stud are concerned. I have not yet made a Mustikon repair of a real big gash or split; but I should guess that the cup *might* be inclined to lift where a 3½in. stud was concerned, and I should follow the ordinary rule of pressing such large repairs, *e.g.*, between boards in a vice, wherever possible.

I have only one hint of warning to utter with regard to these handy repair studs, namely, that it is not the easiest job in the world to coax the stud through a hole in the tube, especially when the hole is small.

ROAD RIDER.



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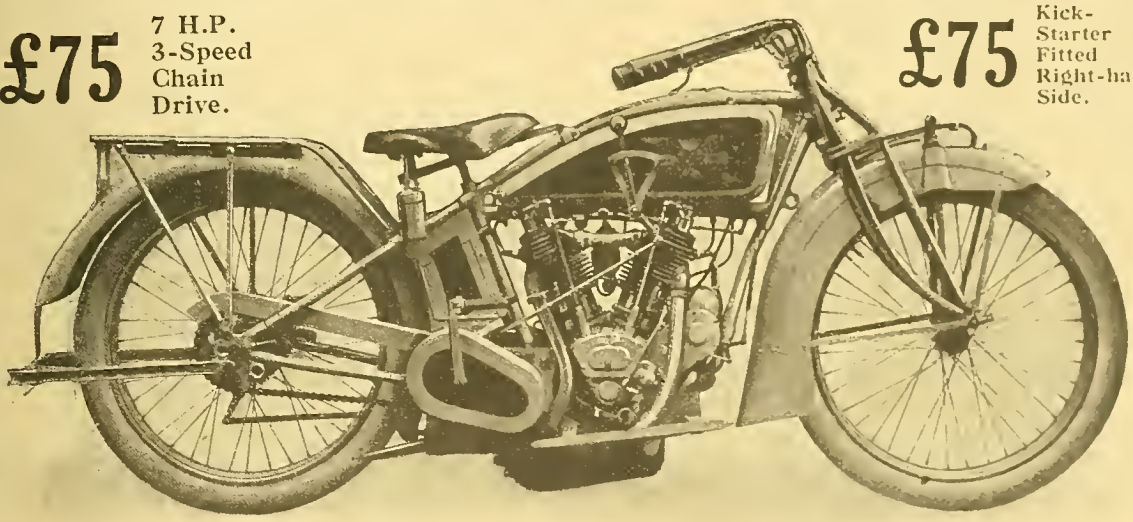

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THE Mysterious Sidecar.

By Dr. A. M. Low, D.Sc., A.C.C.I., Sec. Lieut. R.F.C.

IT is said that there is many a true word spoken in jest, and it is certainly quite remarkable from what humble beginnings many fine ideas have started; the same remarks apply to the sidecar. In this article I am suggesting in some short and unscientific notes that the sidecar is not the success that it might be, even considering the huge numbers seen about, and taking into consideration its popularity, its really practical usefulness, both for pleasure and business, and for business of the sterner sort. Yet the sidecar is a strange compromise.

The Birth of the Rigid Sidecar.

In the early days of the movement there were various discussions on the subject of rigid and flexible sidecars; that is to say, sidecars the wheels of which could move relatively to the motor bicycle, which required balancing. Then, as a natural outcome, it struck people that the machine which could stand up by itself without such strange contraptions as wheels on legs which could be pressed on the road by the foot, like the Jack-no-Skid, would be very comfortable, and would be free from risk of sideslip and general danger. The fact that the machine was rigid and would stand still by itself naturally led to it being made more comfortable, and then, suddenly forgetting that the strains which used to be balanced by the *body* of the motor cyclist were being transferred to a few miserable tubes usually bent into extraordinary shapes, designers set to work straightaway to bring out sidecars looking like cabriolets. With the exception of thickening up the metal, little was done to take up strains really scientifically, and, more serious still, to absorb them. In the last A.C.U. Six Days Trial I ventured to criticise severely the fact that rough roads broke up and bent the sidecar outfits, with the exception of one or two which were built up as units, or, in other words, like small cars.

The Stresses to be Considered.

Now, in any design of motor vehicles to be used on the road, there are not only the stresses of weights to be taken into consideration, but there are an infinitely greater series of stresses set up by jolting. Jolting remains to this day the most unsatisfactory part of motor cycling, and yet the sidecar body is often beautifully comfortable. Why is this? Simply because scarcely anyone has attempted to absorb the road shocks of the sidecar frame, since designers have simply made the passenger comfortable by the elaborate springing of his own weight, forgetting that the sidecar chassis often takes enormous shock loads and the large proportion of the stresses caused by the weight of the motor cycle and rider, particularly when the machine is being driven round a corner.

The consequence is that, in order to make the whole outfit stand the strain, we have all sorts of auxiliary stays, claims by the makers for straightness of tubing, and other excellent points; while the whole chassis, including that of the motor bicycle, has to be made strong enough to stand the road shocks and the various side loads imposed upon the whole vehicle, if twisting and straining are to be prevented.

The Sidecar as a Complete Vehicle.

Notice that I refer to it as a vehicle as apart from an attachment, as it can no longer earn this name in many cases. An attachment pure and simple would not throw further strains on a machine other than by absorbing some of the engine power, nor would it be of such a design that it could practically never be detached. Most sidecar outfits of the particularly satisfactory type are simply vehicles, and it is strange to think that with their speed, economy, reliability, half-comfort, and unmechanical appearance—to quote the good and bad points—they still represent one of the cheapest and most satisfactory forms of conveyance known. It is *mysterious* to think that, whereas half a machine is comfortably enclosed and sprung, the unfortunate owner and driver is in the majority of cases, and then only with great difficulty, given any comfort at all, and one is compelled to think that other types of vehicles may in time come in; but I trust not at the other end of the stick, for when we see both passenger and driver in the sidecar, and the bicycle turned into an attachment to the sidecar, instead of the sidecar to the bicycle, it should make us smile or weep—if we are philosophically minded.

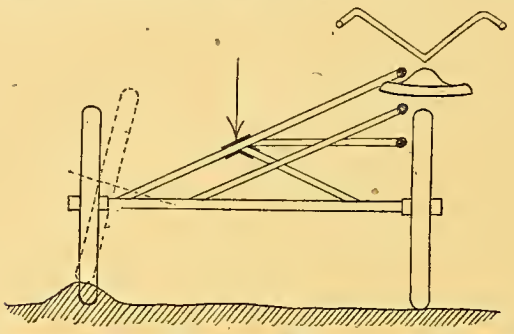
Rigid sidecar outfits are very nice as vehicles if everything is sprung, and the occupants are comfortable, clean, and happy, but I am not wishing to write on these points, as I want to enter a plea for development along the lines on which the original sponsors of the sidecar expected to see progress.

Detachability and Lightness Desirable.

Assume that the sidecar machine steers well, and is already cheap and good, there is little to be gained in having steering sidecar wheels, and similar devices. We will take it for granted that the rider of a sidecar machine is somewhat of a sportsman, and does not mind a little discomfort. If this is so he would surely like to have a free machine which he could sometimes ride solo, and this is one point I wish to labour.

The Mysterious Sidecar.—

I would like to see it admitted that the sidecar is a satisfactory but mysterious monstrosity, and I would like to see it admitted that it is meant, in the case of lighter vehicles, to be a unit attachment. In this case it means that the sidecar must be *very* light in order that the motor bicycle will not be interfered with and can remain of a size and build suitable for solo work. It must, moreover, be comfortable and easily detached, and most of these points could be obtained by springing the sidecar in every way, and



The ordinary sidecar chassis must be *nearly* rigid. To obtain strength, however, by absolute rigidity, means that weight is increased immensely without even achieving any safety limit over the enormous loads not due to reasonable weight, but to bouncing and rock shock. This shock *must* be met, and it should not be allowed to do away with the whole idea of the detachable sidecar.

constructing it in a somewhat novel manner, so that the road shocks may be absorbed in such a way that the necessity for *rigidity*, which has brought about the *weight* of the present attachment, is removed. A light vehicle can be sprung just as well as a heavy one if only it be remembered that there are other and better types of springs than quarter elliptic.

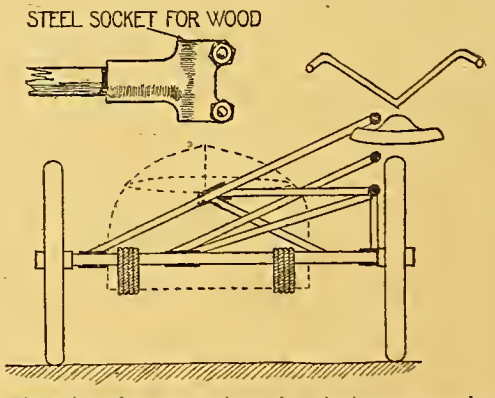
Points for Designers.

Now, in ordinary engineering design, such as in the construction of a bridge, a deflection will take place if the bridge is subjected to bumping, although it may be quite strong enough to stand the strain of a direct load, and the bumps would probably break it down. The same thing happens in the sidecar. The remedy for a detachable "bridge," which is light and handy, and can be used to cross any stream, like a sidecar on a motor bicycle, is to make it so that the deflection does not greatly increase the *loading* on the main parts. All mechanism and all cars spring enormously, and every part of a motor car chassis, including the frame, whips and bends in all directions. Designers should endeavour not to prevent this, but to make the units so that interflexibility does not matter, does not cause extra strain, nor prevent satisfactory working.

I have often thought that lessons from aeroplanes might be learnt by many designers, and I said as much nearly four years ago. On an aeroplane the chassis takes the weight of the machine, which is quite light, but it also has to withstand enormous shocks, both on landing and when the aeroplane is being taxied along the ground. Notwithstanding, breakages very seldom take place. Now the landing chassis of an aeroplane is just like a sidecar, being really an attachment, and I am proposing that cheap and light sidecars could be made on this principle. If this were done such an attachment when fixed to a motor bicycle would be very light and flexible, and quite rigid from the point of view of standing alone, but the whole chassis would have a slight amount of springy play. Also the combination as a whole would look smart, and anyone could have such an attachment fixed to his machine and attach it without the least difficulty.

The Advantages of Flexibility.

By saying that the machine should be interflexible, I do not mean to imply that the frame should be sprung as much as the wheel. It would be like a shock-absorber on a quarter-elliptic spring which gives way before the main spring. With a flexible chassis the body could be slung on rubber stretchers, and, even if only a couple of inches whip in the chassis were allowed for, enormous strength could be obtained, and, by having taken up the shock, the strength would be there by simply making the machine very little heavier than would be necessary to carry the direct load. The direct load is very little more than the weight of the passenger. If the modern light sidecar combination is used on rough roads, it is very uncomfortable and not always safe, and, moreover, often considerably strains the motor bicycle; but if the strains on the motor bicycle are localised on the vehicle for which it was designed, the sidecar stresses imposed on the machine when cornering could be absorbed on the chassis of the whole outfit, which will be immensely strong. Were the chassis made of wood, for example, it would be difficult to avoid getting even more strength than was necessary. Such a chassis could easily be arranged to clip on to the machine, with the result that we should have excellent springing and plenty of comfort—just as upon an aeroplane



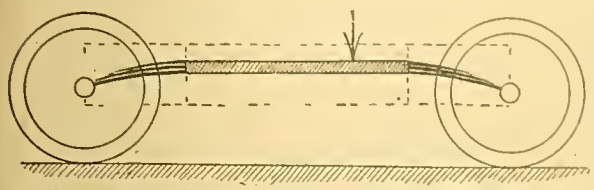
A sidecar for safety cannot have the wheel sprung much more than is allowed for a flexible chassis to take up *shock*, but cheap comfort for passengers is obtainable by a mixture of this "aero-springing" to the seat and flexibility of support. The unsprung weight is also reduced.

chassis—and, what is more, the outfit would not look in the least peculiar. It does not matter a bit if the wheel has not a parallel motion, as there is very little load on this wheel when running, and an up and down movement of three inches at a radius of three feet would be quite negligible. That it *is* negligible I have proved for myself, for I have tried a similar system on a fairly heavy light car, and also on an ordinary Bedelia cycle car, and, added to the comfort, cheapness, and safety, would be the excellent reliability, general satisfaction, and the wonderful value which the sidecar undoubtedly affords. Such a vehicle would not be over luxurious, but much more comfort-

The Mysterious Sidecar.—

able than most light sidecar outfits, and available to the thousands who do not want the cabriolet-omnibus type of attachment.

I have deliberately endeavoured to make out the reasons for this suggestion rather than enlarge upon



If to any type of chassis or "bridge" no springs are fitted, the girders, apart from heat expansion and so-called crystallisation, must be made many times thicker than necessary, for the shock or bouncing load may be six times greater than the direct weight.

the details themselves, because these can be suggested by individuals when once the basic facts are explained, and it is always more valuable and interesting to have to be original than to work out details of other peoples' ideas.

To make a rigid chassis as strong as one which is slightly flexible entails practically the doubling of its weight, and this entails expense, whereas a sidecar chassis should cost about 30s. each at the outside. It is not saying too much to state that the average sidecar, though sprung no better than a farm cart, is expected to travel at forty-five miles an hour. The springing of the sidecar wheel is not pleasant as a rule, and, in my opinion, unnecessary, while rigidity is dangerous, and it is bad for wear and bad for the pockets. While on this subject I would say that the Ford car owes most of its success to its general lack of rigidity.

All I have written so far is a matter of suggestion, and I can only hope that critics will be able to learn therefrom, and not criticise in a purely destructive manner.

STANDARDISATION.

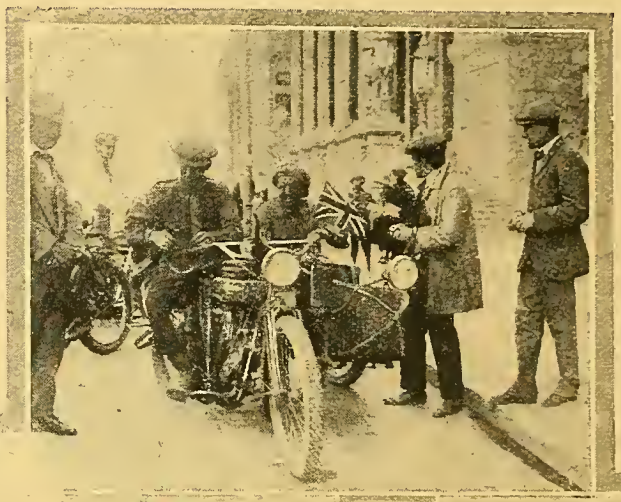
A CROP OF VEXATIOUS EXPERIENCES. By "Ixion."

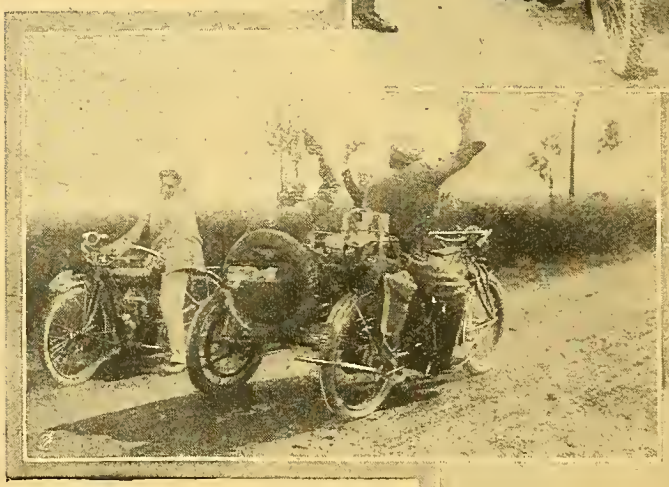
EVERY now and then I utter a mournful plaint on the utter lack of standardisation which marks the British motor trade, and this week I have had some lovely examples of the medley of sizes and measurements which is deemed inseparable from the industry. A *confrère* on *The Light Car* and myself set out in company, and ere long he struck a humoursome trouble which resulted in his being hauled home by a clothesline secured to the tail of a taxi; when he got his diseased 'bus safely in garage he presently found two nuts, each neatly housed in the recesses of a projecting tube, each of which had to be removed, and for neither of which an unusually full garage equipment could furnish a tube spanner. I love to see an engineer—and a conceited one at that—knocking nuts off with a hammer and chisel in public; it is excellent moral discipline for these swanky birds. The next night my colleague came in to admire the workmanlike fashion in which I proposed to fit out a new bicycle. The job looked simple. I had merely to fix two dry batteries on its tail, plus a hooter and lamp on its front. The back chain stays were so short, and so lumbered up with brakework, that the tail lamp wouldn't go on them, and after an impassioned argument I excited his derision by mounting it on one leg of the stand. Then we got to work on the head lamp battery, which was supposed to clip over the carrier bar, with a secondary clip on a carrier strut. The clips were the wrong size, thanks to the controversy which exists in the trade as to the best diameter for carrier tubing, and as to whether it should be round or D-shaped. I bent up some fresh clips. Then the strut clip proved to be fitted at quite the wrong angle, and some dishonest friend had eloped with my box of drills. Amidst shrieks of laughter I refitted the clip with the aid of a hammer, a large nail, and a rat-tail file. Then the handle-bar tube was found to be $\frac{15}{16}$ths, while the hooter clip, plus liners, was only adapted for 1in. or $\frac{7}{8}$in. bars; I accomplished miracles with sandpaper packing. The bicycle—like most modern machines—was innocent of a lamp bracket, and I set to work with an English bracket and an enemy-made lamp, which required much adapting to each other, not to speak of the cunning dispositions of the Bowden wires and front brake work, which almost prevented a tongue bracket from finding a lodgment of any kind on the handle-bar stem. We ended a quarrelsome and hilarious evening by speculating whether we shall ever get standardisation of such universal components as handle-bars, chainstay tubing, carrier tubing, lamp brackets, and the like, until some mammoth financier concentrates the entire industry into a single Trust.

Mr. Paula Rosa, jun., vice-president of the Rio de Janeiro Motor Club, and his Premier 3½ h.p. two-speed sidecar outfit.

Johannesburg to Cape Town by Sidecar.

SCENES ON THE SUCCESSFUL 1,000 MILES SIDECAR JOURNEY.





WHAT is claimed to be the first attempt to ride a motor cycle from Johannesburg to Cape Town was successfully accomplished last month by Messrs. Percy Hunt and Charles Morley, of Johannesburg, South Africa, on a 7 h.p. Indian sidecar outfit.

Johannesburg was left on Saturday, November 13th, at 3 p.m., and after an adventurous journey Cape Town was reached on the following Friday at 4.30 p.m. The distance is about 1,075 miles, and the net running time was 55¼ hours, which gives an average speed of nearly 19½ miles an hour—a remarkably high average when one thinks of the rivers to be forded and other difficulties to be overcome.

It is interesting to compare the foregoing figures with those relating to a run over the same course made in September last by a Napier car. In this case the start was from Salisbury, Rhodesia, which is nearly as far north of Johannesburg as the latter place is from Cape Town. The Napier, which was driven throughout the the trip by one man, Mr. A. C. Henderson, broke the journey at Johannesburg, and the route followed thence to Cape Town appears to be the same as that followed by Messrs. Hunt and Morley on the Indian sidecar. The latter made quicker progress than the Napier in both gross and actual running time. The actual running time of the car was 61 hours and of the sidecar 55¼ hours, but it is important to remember in comparing these figures that two men shared the driving of the sidecar, while one drove the car throughout, though the car driver had a companion.

One of the toughest propositions successfully tackled by Hunt and Morley was getting across the Modder River, which at the point and time of crossing was 100 yards wide. In investigating its depth Morley had a narrow escape from drowning, but finally men and machine got across, the former taking off the magneto and then pushing the outfit across.

Travelling through the night on one part of the trip they came across a party of Hottentots, who were so startled by the two headlights attached to the Indian outfit that they left their fire and dashed into the surrounding bush. A little later a mule team was met, and as the mules had apparently never seen a motor vehicle before, the consequences were rather disconcerting for the waggon driver.

Some trouble was caused on a portion of the trip by a warm following wind, which caused the engine to get very hot and great discomfort to the men themselves. However, these and other difficulties did not prevent a splendid run being made.

(1) The end of the run. Messrs. Hunt and Morley at Cape Town.

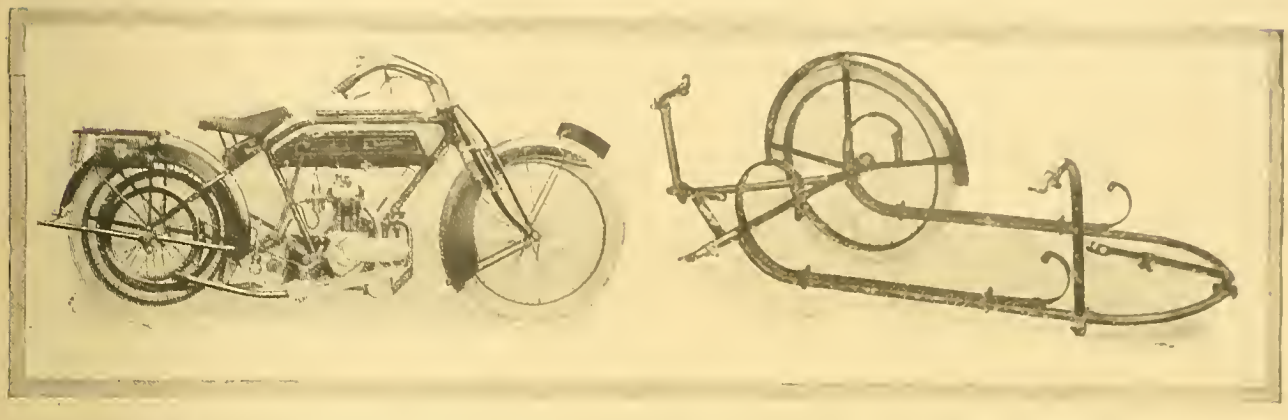
(2) Other motor cyclists raise a passing cheer as the Indian outfit rushes by.

(3) After a night's sleep on the Veldt—getting ready again for the "road."

(4) The "road" between Hopetown and Strydenburg, where the Indian skidded in the sand towards the bush. Hunt has a reviver whilst his companion uses the camera.

Alterations to the Latest Blackburne.

Single-cylinder Engine, 499 c.c., with outside Flywheel; Three-speed Countershaft Gear; Chain and Belt Drive.



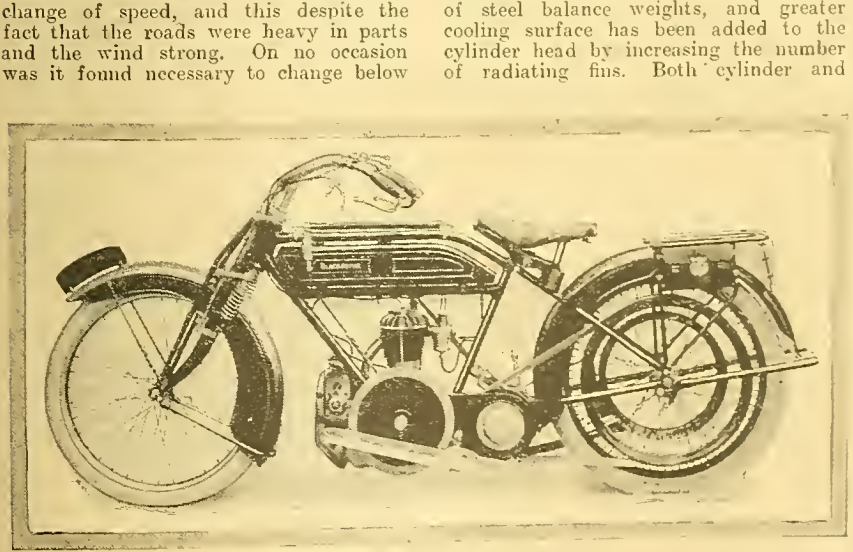
(Left) The 3½ h.p. 1916 model Blackburne. Note the method of operating the clutch from handle bar and neat trouser guard
(Right) The Blackburne sidecar chassis, showing at the rear the new triangulated strengthening stay.

THE Blackburne 3½ h.p. motor bicycle has a reputation for sound design and excellent wearing qualities which is not surprising when it is taken into consideration that it owes its origin to the brains of young and keen riders whose road experience was considerable before its design was finally settled. Though we had ridden the machine solo on previous occasions we had had practically no experience of it as a sidecar mount, so we took the opportunity of travelling to the works at Tongham, near Aldershot, in one of the latest models, which was driven by Mr. G. Q. Roberts. The journey down was accomplished most comfortably, and the single-cylinder engine pulled remarkably well, its heavy ontside flywheel allowing it to "hang on" to top on the hills, and to climb most of the rises *en route* without a change of speed, and this despite the fact that the roads were heavy in parts and the wind strong. On no occasion was it found necessary to change below second, and on this speed the machine was quite fast. On the summit of the Hog's Back we took control, and were soon bowling along that wonderful road at quite a comfortable pace. We found both the Sturmey-Archer gear and the handle-bar actuated clutch smooth in action and easy to operate. The engine is well balanced, and the steering of the combination is all that can be desired. At the end of the run we were gratified to note that the whole machine was exceedingly clean, the frame being free from mud, and the crank case devoid of any traces of oil, a most desirable feature.

Latest Modifications.

There have been no very drastic alterations in the new model Blackburne. As regards the engine, the balance of this has been improved by the adoption of steel balance weights, and greater cooling surface has been added to the cylinder head by increasing the number of radiating fins. Both cylinder and cylinder head are beautifully cast, the fins being thin and well finished, while as to the head, the fins immediately adjacent to the valve ports are ¼in. higher than the others, thus allowing the heat in the hottest portion to be dissipated quickly. The valve ports have been considerably deepened to allow the gases a free passage. This has necessitated lengthening the connecting rod to a certain extent in order that the compression may remain unaltered. A new piston has been introduced which has the two rings at the top instead of one at the top and the other at the bottom as formerly. This has been found to be better from the lubrication point of view, as, though the bottom ring in the lowest portion of the piston is claimed to steady it in the cylinder. Mr. J. S. Holroyd, the works manager, considers that this is a fallacy, as the piston can still rock in the ring. In the latest piston there is a groove in the lower extremity to collect oil, and the bottom edge is rounded off.

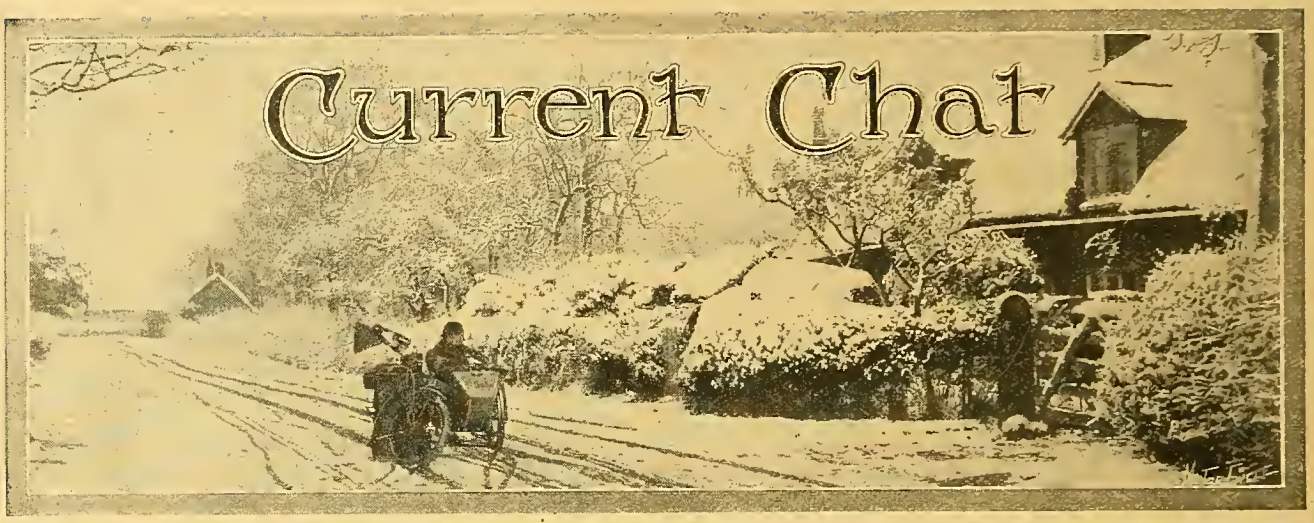
Other improvements consist in the fitting of new footboards with heel plates at the back, a Splitdorf magneto (which is well protected from the elements), and the latest pattern Amac carburetter. Not the least important is the provision of a suitable guard for protecting the driving chain.



Transmission side of the latest Blackburne, showing outside flywheel, a distinctive feature of all Blackburne models since No. 1 was manufactured.

Sidecar Alterations.

Messrs. Burney and Blackburne manufacture a special sidecar for their motor bicycle. The frame is of the dropped pattern the principal portion of which consists of a single U-shaped tube, the rear extremities of which curve upwards to the axle, which has now been strengthened by means of a triangular stay capable of being used as a luggage platform or a spare petrol tin carrier. The support running from the seat-pillar of the motor bicycle is attached to the apex of the triangle. The sidecar is attached to the machine at four points. On the road we found the sidecar to be most comfortable and well sprung.



TIMES TO LIGHT LAMPS.

GREENWICH TIME.

Dec.	30th	... ...	4.57 p.m.
Jan.	1st	... ..	4.58 ,,
,,	3rd	... ..	5.1 ,,
,,	5th	... ...	5.3 ,,

In London half an hour earlier.

Fallen Trees.

The gale on Monday brought down many trees, with the usual consequence of blocked roads. Two horses had a narrow escape in the neighbourhood of Birmingham, but up to the present we have heard of no motor cycling accidents from this cause. Apart from this, the gale benefited the roads considerably.

Well-known Colonial Rider joins the R.F.C.

Mr. A. G. Salmon, the South African rider and record holder on a Norton motor cycle, has arrived in England for the purpose of taking a commission in the R.F.C. His knowledge of the internal combustion engine and wireless telegraphy should stand him in good stead in this famous corps.

Troubles Never Come Singly!

A member of the staff who was due at our Coventry office at 10 a.m. on Tuesday commenced a trip from town by road at six o'clock. Progress, however, was twice delayed by fallen trees, which entailed a detour in one case, but trouble was not over, for a couple of punctures (one in the dark) and a choked carburetter livened the proceedings on this very cold and windy ride, which took two hours longer in consequence.

The Fleet and Motor Cycles.

At the present time a series of lantern slides prepared by *The Motor Cycle*, depicting motor cycling events held during the last two or three years, and certain motor cycle sections of the Army, are on the high seas being exhibited to our brave lads in the Navy. The slides are in the care of the Chaplain of H.M.S. *Antrim*, who has kindly undertaken to pass them on to other ships in company with the *Antrim*. We should be very happy to lend the set of slides to other naval officers for the benefit of the men on board on receipt of an application to that effect.

Motor Cycles in Macedonia.

The paragraph in another part of this issue referring to the absence of motor cycles in Macedonia evidently refers to one section only, for we have a letter from a lieutenant in the R.E., who says that "the go-anywhere motor cycle is doing its duty bravely amongst the rocky hills and muddy valleys of Greece and Serbia."

Development of Military Motor Cyclists in U.S.A.

The war has caused the United States Government to overhaul and enlarge its naval and military resources, and the mechanical side of the subject is receiving a good deal of attention. The employment of motor cyclists for various duties such as are covered by British riders has been decided upon. One instance in which they will be employed is as scouts to large armoured cars, and we learn that a motor cycle squad will be included in the armoured motor car train with which the New York National Guard is to be equipped during the coming year

The Repair of War Crocks.

Like most other firms, Messrs. Burney and Blackburne are engaged in war work. Now, in these days, it is obviously unwise to say much in this direction, but there can be no harm in mentioning that a portion of this consists in repairing war-worn motor cycles—warriors battered and smashed, and often bullet torn—which arrive from the Front. We saw several makes of machines, and most of these had been soundly repaired, and were resplendent in fresh coats of enamel in the official W.D. colour. But the "wrecks" before treatment were pitiable to behold.

SIDECARS AND ACCESSORIES.

In "The Motor Cycle" of January 27th a feature will be made of the latest sidecar attachments and motor cycle accessories.

SPECIAL FEATURES

TWIN-CYLINDER TWO-STROKES.

OVERSEAS TRIALS.

THE MYSTERIOUS SIDECAR.
By Dr. Low.

Irish Christmas Trial.

We are able to publish in this issue an account of a Bank Holiday motor cycle trial held in Ireland. It was apparently the only competitive event this Christmastide.

Despatch Rider Recruits.

We learn on excellent authority that the War Office will shortly issue revised instructions respecting the recruiting of motor cyclist despatch riders in the R.E. The instructions are expected to bear upon the new conditions brought about by Lord Derby's scheme.

Motor Cycles and Head Lights.

According to the new lighting regulations (reviewed in our last issue), in certain areas head lights are prohibited. This, one might reasonably suppose, would mean that no motor bicycles can be used after dark in the streets, since these vehicles use head lights only, and have no side lamps. We were, however, informed definitely by an official at the Home Office the other day that this was not the case, and that all the authorities concern themselves with is the size and power of the lamp.

Boat-shaped Sidecars.

M. Vallée-Picaud, who may be remembered by some of our readers as the driver of a Clyno in the different Continental trials, such as the Paris-Nice, in writing to us says that he has been very interested in the different shaped sidecar bodies, especially those resembling boats, and reminds us that his firm manufactured a boat-shaped sidecar body as far back as 1913, which was known as "The Skiff." It was taken through a number of French trials, such as the Paris-Nice and Marcelle-Lyon pas les Alps. M. Vallée-Picaud says he thinks it can claim to be the first "boat" to be taken to the top of the Alps.

Note the Date!

Sidecar attachments and accessories for motor cycles will form the chief contents of a special issue of *The Motor Cycle* to be published on Thursday, January 27th.

Result of a Collision.

Returning to Bisley from home on his motor cycle, Sergeant F. H. Brown, M.M.G.S. (late of the Rex Co.), ran into a car coming out of a side road and broke his right arm. He is at present in hospital at Oxford, and doing well.

Christmas Riding Conditions.

Those who used their motor cycles this Christmas to journey home or to friends experienced very bad weather. On Christmas Day it rained almost continuously, Sunday was a little better with showers only, but on Boxing Day there was a heavy gale, which rendered motor cycling most uncomfortable, but not impossible, for we met many riders —a large proportion khaki-clad.

Average Prices.

We give below the average prices of second-hand models offered for sale in *The Motor Cycle*. Where it is possible to obtain a sufficient number of each model the average for the past week is quoted. If there were not at least two advertisements, then the last occasion on which they were quoted is given.

Make.	Year.	H.P.	* Average for last week.	Latest weekly average obtainable
A.J.S.	1915	6 3-sp. sidecar	—	£90
„	1914	6 3-sp. sidecar	£72	—
„	1913	6 3-sp. sidecar	£52	—
„	1915	2¾ 3-speed	£51	—
Allon	1915	2¾ 2-speed	—	£36
Ariel	1914	3½ 3-sp. sidecar	—	£53
Bradbury	1914	4 3-sp. sidecar	—	£47
B.S.A.	1915	4½ 3-sp. sidecar	—	£70
„	1914	4½ 3-sp. sidecar	—	£56
„	1913	3½ 2-sp. sidecar	£44	—
„	1913	3½ 2-speed	—	£31
Calthorpe	1914	2 2-speed	£17	—
Clyno	1914	6 3-sp. sidecar	—	£63
„	1913	6 3-sp. sidecar	—	£50
Douglas	1914	2¾ 2-sp. kick start	—	£38
„	1914	2¾ 2-sp. T.T.	—	£40
„	1913	2¾ 2-sp. T.T.	£32	—
Enfield	1915	6 2-sp. sidecar	£75	—
„	1914	6 2-sp. sidecar	£64	—
„	1913	6 2-sp. sidecar	—	£49
„	1915	3 2-speed	—	£45
„	1914	3 2-speed	£37	—
A. Excelsior	1914	7 2-sp. sidecar	£48	—
H.-Davidson	1915	7 3-sp. sidecar	£79	—
Indian	1915	7 3-sp. sidecar	£74	—
„	1914	7 2-sp. sidecar	£60	—
„	1914	7 T.T. free engine	—	£44
James	1915	4½ 3-sp. sidecar	£75	—
Lea-Francis	1915	3½ 3-speed	£63	—
Matchless	1914	8 3-sp. sidecar	£70	—
New Imperial	1915	2½ 2-speed	£29	—
„	1914	2½ 2-speed	—	£26
O.K.	1915	2 2-speed	£23	—
„	1914	2 2-speed	£23	—
P. & M.	1913	3½ 2-sp. sidecar	—	£43
Premier	1914	3½ 3-sp. sidecar	—	£49
„	1913	3½ 3-sp. sidecar	—	£44
Rex	1914	6 2-sp. sidecar	—	£48
Rover	1915	3½ 3-sp. sidecar	—	£56
„	1914	3½ 3-sp. sidecar	—	£41
„	1913	3½ 3-sp. sidecar	—	£40
Rudge	1915	3½ multi	£47	—
„	1914	3½ multi	£37	—
„	1913	3½ multi	—	£29
Scott	1914	3½ 2-sp. sidecar	£54	—
„	1913	3¾ 2-sp. sidecar	£48	—
Singer	1913	3½ free engine	—	£23
Sunbeam	1915	6 3-sp. sidecar	—	£66
„	1914	6 3-sp. sidecar	—	£50
„	1915	3½ 3-speed	—	£63
„	1914	3½ 3-speed	—	£52
Triumph	1914	4 3-sp. sidecar	£50	—
„	1914	4 3-speed	£40	—
„	1913	3½ 3-sp. sidecar	£47	—
„	1913	3½ 3-speed	—	£38
Williamson	1914	8 2-sp. sidecar	£62	—
„	1913	8 2-sp. sidecar	—	£55
Zenith	1914	6 Gradua sidecar	£56	—
„	1914	8 Gradua sidecar	—	£67

Greetings from the Front.

We have to thank many of our readers for the Christmas cards and New Year greetings which have come to hand during the past few days. Many are from well-known riders at the Front, and actually include messages from Macedonia, Gallipoli, and Italy.

Breaches of the Lighting Regulations.

An Army Lieutenant who signs himself "BB 2148" writes: "I should like, through the medium of your excellent paper, to warn motor cyclists who reside near Tyneside against driving at all fast on foggy nights. The other night, on a journey of only four miles, I encountered a cyclist with a red head light, and a mile further on a cart with a white rear light. If vehicles are found on the roads in this condition, I consider they should be fined much more heavily than those who merely exceed the speed limit. If I had been driving fast at the time, I should have had a bad accident in either case."

The Motor Cycle Club of South Australia.

On November 6th a flying start half mile speed test was held on the Fullarton Meadows road, with the times as follows:

CLASS 1.—UP TO [illegible] C.C.

		Time
1	L. Warren ([illegible] Elliott Special)	40
2	J. V. [illegible] ([illegible] Lewis)	58

CLASS 2.—[illegible] TO [illegible] C.C.

1	J. H. Gilbert ([illegible] I.A.P.)	41
2	G. Fraser ([illegible] Lea)	47
3	C. S. Lindsay ([illegible] Douglas)	60

CLASS 3. STANDARD AND PRIVATE OWNED MACHINES UP TO 600 C.C.

1	L. Warren (3½ Elliott Special)	*44s.
2	T. B. Ragless (3½ Kent Roadster)	53s.
3.	L. E. Kotzur (3½ Kent)	54s.

CLASS 4. T.T. STRIPPED MACHINES UP TO 500 C.C.

1.	W. A. Driver (3½ Lewis)	29s.
2.	E. E. Kotzur (3½ Kent Special)	29s.
3.	H. A. Behren (3½ Peerless)	34½s.

CLASS 5. OVER 600 C.C.

*1.	E. C. Wagner (8 Blue Spec-Jap)	27s.
2.	N. K. Torode (7 Indian)	27½s.
3.	C. E. Nalty (7 Indian)	28½s.

*Fastest time of the day.

CLASS 6.—PASSENGER MACHINES UP TO 600 C.C.

W. Courtney (3½ Lewis C.) .. 52⅘s.

RIDING A MOTOR CYCLE IN A COMMUNICATION TRENCH.

A British despatch rider in the Dardanelles carrying a message up to the Brigade headquarters after getting into the communication trench.

MOTOR CYCLING IN NORTHERN INDIA.

The Account of a Trip into Kashmir.

I HAVE frequently read most interesting accounts in *The Motor Cycle* of trips on motor cycles through the British Isles and elsewhere, and think that readers would be interested to hear about one recently performed in Northern India.

The particular route followed was from Peshawar to Srinagar. There are two roads from railhead to Srinagar, one *via* Murree, and one *via* Abbottabad. We chose the latter, as coming from Peshawar it was the nearer. Our outfit was a 3½ h.p. three-speed 1913 Triumph with basket sidecar, and we took it by train as far as the railway goes. This is Havelion, a wayside station, which we reached at 7 o'clock one May morning, and having made a hearty breakfast in the train, we proceeded to load up at once. It was really wonderful what we contrived to stow away on that small vehicle: two passengers, a roll of bedding, tiffin basket, small suit case, a spare tyre, and that most necessary box of tools and spares, as well as two tins of petrol, a third being emptied into the tank prior to departure. It is impossible to procure petrol *en route*, and as the distance from Havelion to Srinagar is 167 miles, it is most necessary to take a sufficient supply.

We made a good start, the engine pulling well up some very steep hills. We passed Abbottabad, a pretty little station and the headquarters of several Gurkha regiments, but some way beyond this misfortune befell us. The road here was truly shocking; sharp stones and slabs of fallen rock were lying about in all directions, and there were wheel ruts six to ten inches deep. The unfortunate occupant of the sidecar got severely bumped, until finally came a loud report, and we discovered one of the sharp stones had mercilessly cut through the sidecar tyre.

(Top) Nearing Rampur, showing one of the many hairpin bends which have to be taken very slowly.

(Left) Road mending in Kashmir. A steam roller is just discernible in the background.

(Right) A stop for lunch. Note the luggage strapped on the carrier of the Triumph.

Motor Cycling in Northern India.—

All along the Kashmir road are small dak bungalows at intervals of about twenty miles or so, and at any of these one is always sure of a good meal and comfortable quarters for the night, and there is no need to announce one's arrival beforehand. Our first night we spent at Gurhi Hari-bullah, a small bungalow, situated high up above a rushing torrent of a river. Next day we found the road in better condition, and covered a distance of seventy-four miles. After heavy rain the road is frequently impassable, the bridges being washed away, and often great boulders come hurtling down from the high cliffs above. But we were lucky in our weather, and encountered no obstructions or landslips. Thirteen miles on we reached Domel, 2,100 feet, and here a toll of five rupees is due for motor cars, and two rupees for humbler vehicles.

Climbing to Snow-clad Mountains.

At this point the Abbottabad route we had come by joins the Murree road, and for the rest of the way there is only one narrow road. From now onward the gradient is very continuous, and pedalling was necessary to help the engine. The latter was working splendidly, for the load was indeed heavy—42 stone, including luggage, passengers, and bicycle. Towards evening the scenery got more mountainous, and we caught glimpses of snow-clad peaks in the distance.

We reached Rampur (4,300 feet) that night and found a charming new bungalow to put up at and an excellent dinner. It was very cold here, for we had been steadily climbing all day.

Next morning we left at seven o'clock, and expected to reach Srinagar about ten, but as far as achievement went we did not do it by a long way. The scenery on the next part of our journey was by far the prettiest we had come across yet. The river rushes along at a tremendous rate, over huge boulders, and the trees and foliage are beautiful, while away in the distance are the great snow mountains.

From Baramulla up to Srinagar the road is flat and ugly, and what view one might obtain of the mountains is shut out by rows of tall poplars, planted so close together that a fat man could not squeeze through in places. However, we were grateful enough for the shade they gave.

Hereabouts the hub gear came out of adjustment, and to remedy matters I proceeded to tighten up the adjustable gear rod nut, when, to my dismay, the rod snapped off. There seemed nothing to be done but traverse the remaining twenty miles on lowest gear. This was truly heart-breaking, as from here on to Srinagar the road is absolutely flat and straight and in excellent condition, and we had been looking forward to a really fast spin all the way. Thus we plodded along at ten miles an hour for some distance, and then decided to make one more effort to mend the rod. We tied the pieces up with string, and on operating the change lever, to our intense delight the gear suddenly slipped into second, and so the remaining distance into Srinagar was not so slow after all.

High Price of Petrol.

It is advisable for motorists to send on a supply of petrol to Srinagar, for prices there run very high, as much as 13s. 4d. being asked for a four-gallon drum.

There is an excellent engineering firm in Srinagar, and next day we took the bicycle there to have the gear rod repaired, which was accomplished most satisfactorily. After a thorough cleaning of the engine, the good old Triumph was all ready for the return journey, which, alas! was due to take place in a fortnight's time, leave in India being of very short duration this year owing to the war and consequent shortage of officers.

C.A.T.

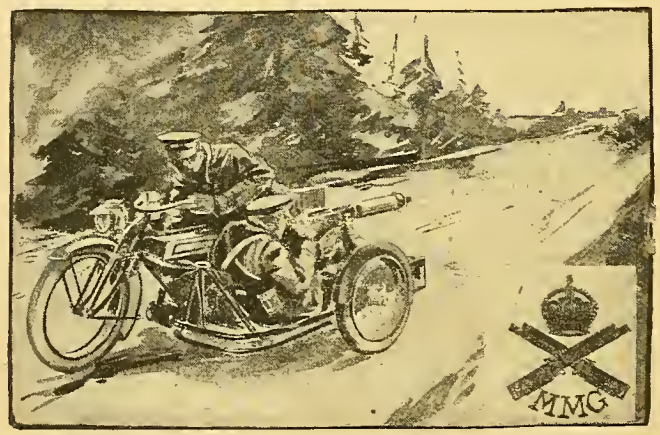
CHEPSTOW CASTLE, MONMOUTHSHIRE

In the foreground are two Matchless sidecar outfits

Bank Holiday Trial in County Wicklow.

THE Dublin and District Motor Cycle Club held a reliability trial on the Bank Holiday. The event was more or less of a holiday character, and the distance was under seventy miles, so as to avoid riding in darkness. The route lay for the most part in Co. Wicklow, and the crucial part of the trial was the crossing of the Wicklow mountains by Wicklow Gap. The ascent of the mountains from the eastern side was one of the two non-stop sections of the route, the other being the ascent of the Sugarloaf mountains from Kilmacanogue to Calary. Under ordinary conditions neither of these ascents would be regarded as serious tests for a motor cycle, but with the roads in a more than usually heavy state they proved very trying on Monday, and quite a number of penalties were registered against the competitors on both hills.

The start took place at ten o'clock from Donnybrook Bridge, the twelve competitors being despatched at one minute intervals. The outward journey was by Bray and Kilmacanogue, where the first open check was taken before entering on the non-stop section to the top of the Sugarloaf. It was no easy matter to maintain the scheduled speed of twenty miles an hour to Mountain Stage Tavern, and the extra allowance given to the low-powered passenger machines and the lightweights was needed by most of the riders of these machines. Afterwards it was easy going by Calary, Roundwood, Annamoe, and Laragh to Glendalough, where two hours were allowed for luncheon.



The drawing on the regimental Christmas card of the Motor Machine Gun Service. The Editor acknowledges with thanks receipt of several from different recruits.

Climbing the Mountains.

Immediately after the restart the crucial portion of the trial was entered upon. A sharp hairpin corner had to be tackled at the point where the main road was left, but all the competitors took it with caution, and there were no failures on the turn. As on the Sugarloaf, there was difficulty in keeping up to scheduled time, and although there were no stoppages on the hill, the variations from time at the Granabeg check should find a winner without the aid of a secret check that was taken on the last stage of the journey. The homeward route was by Hollywood, Poulaphuca, Brittas, and Tallaght to Terenure, where the following were checked in:

W. Fennell (4 h.p. Norton and sc.)
P. H. Hurse (4½ h.p. B.S.A.)
C. B. Franklin (7 h.p. Indian and sc.)
J. Clarke (5-6 h.p. Rudge).
T. W. Ladd (6 h.p. Bradbury and sc.)
S. Allen (3½ h.p. James).
J. Carter (7 h.p. American Excelsior).
J. Redmond (7 h.p. Indian).

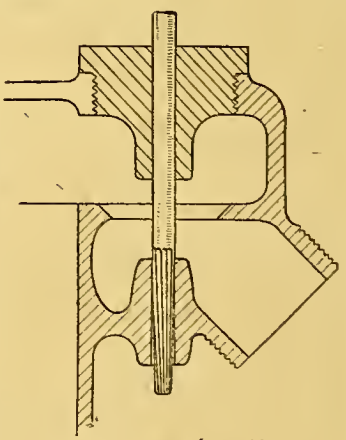
The other competitors were—G. Mayne (10 h.p. Calthorpe), who stopped at Glendalough; G. A. M. Curtis (7 h.p. Indian and sidecar), who stopped at Kilmacanogue; J. Cunningham (2¾ h.p. Douglas), who retired in Rocky Valley with magneto trouble; and R. Walsh (4¼ h.p. B.S.A.), who stopped at Mountain Stage Tavern.

MOTOR CYCLE TYRE REPAIRS.

WITHOUT wishing to detract in any way from the excellence of Mustikon patches, I may perhaps be allowed a small criticism of my colleague "Road Rider's" article on the subject of tyre repair. Taking his sketches in order: horizontal expansion must occur with Mustikon patches as with the ordinary variety, but this expansion should not be detrimental in any case, as the tube and patch expand together, and if the tube be a good fit the expansion will be but slight. Vertical or lifting strain will only occur with a properly fitting tube if it be inflated before being put into the cover; when in the cover the air pressure will force the tube and patch into close contact and assist adhesion. Mustikon patches are difficult to place in position, and do not readily adhere to the inside of a tube, though they stick well on the outside. Another point, too, occurs to me. How can a Mustikon patch be applied when the tyre is punctured through a similar patch already in position? Prepared patches are often very hard to remove, and the shank of a Mustikon is not long enough to reach through tube and patch.

AN AMERICAN TIP.

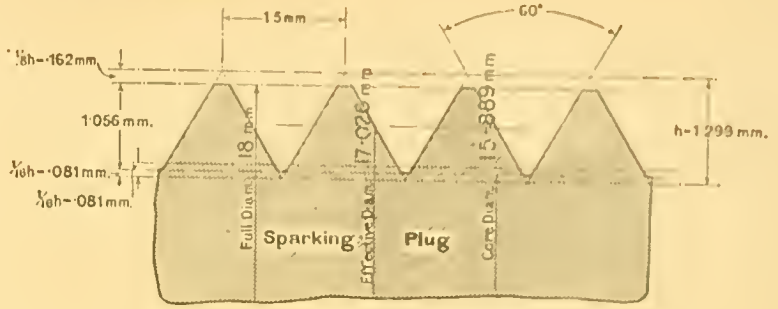
IN reamering out a valve guide, it is very essential to hold the reamer perfectly central and upright. This can be done by making a reamer guide such as is shown in the illustration herewith, which can be constructed of metal or hard wood. The threads, which should fit the inlet valve port or valve cap thread, in the case of side by side valves, should be turned on the lathe and the hole bored before the block is removed from the chuck; thus they can be cut perfectly true and will then hold the reamer correctly in position.



Reamering a valve guide.

THE STANDARDISATION OF SPARKING PLUGS.

STANDARDISATION of motor parts is always desirable, and, though sparking plug threads (with the exception of the American taper thread) have always been more or less uniform, we welcome the "interim report" by the Engineering Standards Committee giving all the dimensions which have been agreed upon and authorised by that body. The angle of the thread is 60°, and the pitch of the threads 1.5 mm. The effective diameter of a screw having a single thread is the length of a line drawn through the axis and at right angles to it, measured between the points where the line cuts the slopes of the thread. The other measurements will be readily understood on reference to the accompanying illustration.



The standard sparking plug thread adopted by the E.S.C.

OVERSEAS EVENTS

East London (S.A.) Club's Activities.

THE East London (S.A.) M.C.C. held a petrol consumption test on November 14th. The route was from East London to Mooiplaats and back, a distance of fifty-six miles, and the set speed was 18 m.p.h. There were thirty entries, and the results were as follow :

		oz.
1.	H. Feller (3½ Rover)	74
2.	W. Innes (3½ Triumph)	80
3.	E. C. Martin (3½ Triumph) ..	81½
4.	V. Snell (4 Triumph) . ..	82½
5.	F. Miles (3½ Triumph)	87

The winner's average was 121 m.p.g. The outward journey is mostly up hill, but on the return journey there was a very strong head wind, so strong that not one of the competitors could free engine down any of the hills, some of which were very stiff. The road is the best in the district, but is, nevertheless, none too good, there being some nasty patches of loose stones, stiff climbs, and sharp bends.

Racing on the New Brighton (N.Z.) Beach.

The Pioneer Motor and Sports Club, of Christchurch, held three races on the New Brighton Beach on October 30th. The beach was wet, and the riding consequently heavy. The singles will be seen to have performed well. Results :

FIVE-MILE MAIDEN HANDICAP.—F. N. Mantell (3½ Triumph), handicap 1m. 30s.; A. Moreland (4 Triumph), 1m. 15s.; E. Smith (9 Dayton), scratch. No times of this event were taken.

TWENTY-MILE SOLO HANDICAP.—F. V. Thomas (4½ B.S.A.), handicap 4m. 15s.; F. Haworth (4 Triumph), 4m. 15s.; W. Hollobon (4 Triumph), 4m. 45s. Winner's time, 20m. 38s. The winner made the fastest time.

TEN-MILE SIDECAR HANDICAP.—F. V. Thomas (4½ B.S.A.), handicap 2m. 10s., time 14m. 20s.; F. Haworth (4 Triumph), 2m. 10s., time 14m. 27½s.; G. B. Brown (4 Triumph), 1m. 45s., time 14m. 41⅗s. Brown made the fastest time.

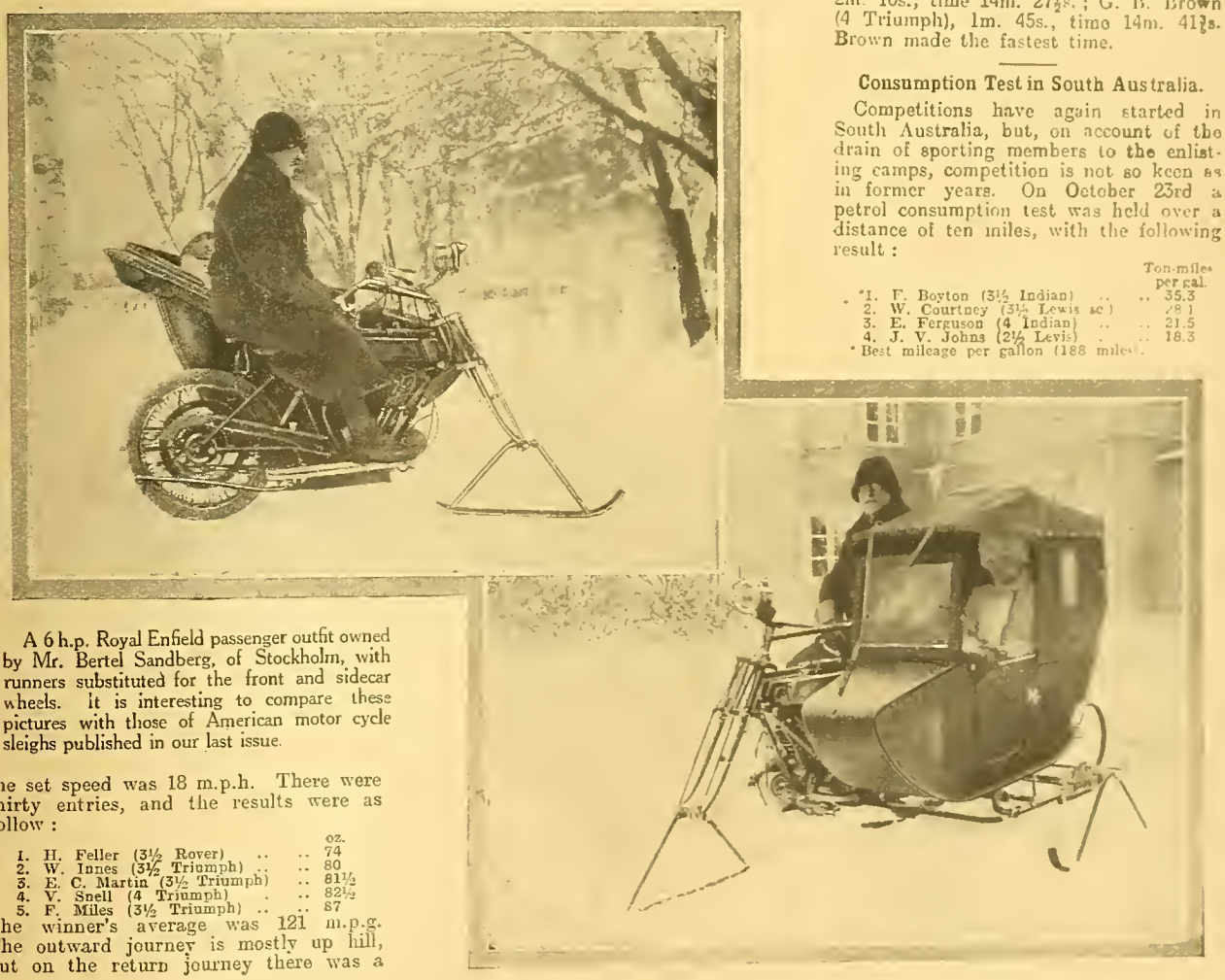
Consumption Test in South Australia.

Competitions have again started in South Australia, but, on account of the drain of sporting members to the enlisting camps, competition is not so keen as in former years. On October 23rd a petrol consumption test was held over a distance of ten miles, with the following result :

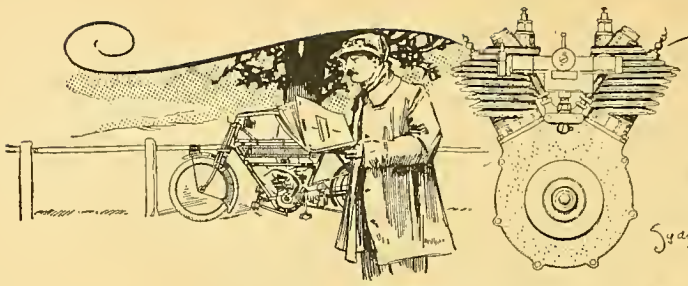
		Ton-miles per gal.
*1.	F. Boyton (3½ Indian)	35.3
2.	W. Courtney (3½ Lewis sc.)	28.1
3.	E. Ferguson (4 Indian)	21.5
4.	J. V. Johns (2½ Levis) . ..	18.3

* Best mileage per gallon (188 miles).

A SIDECAR OUTFIT ON RUNNERS.



A 6 h.p. Royal Enfield passenger outfit owned by Mr. Bertel Sandberg, of Stockholm, with runners substituted for the front and sidecar wheels. It is interesting to compare these pictures with those of American motor cycle sleighs published in our last issue.



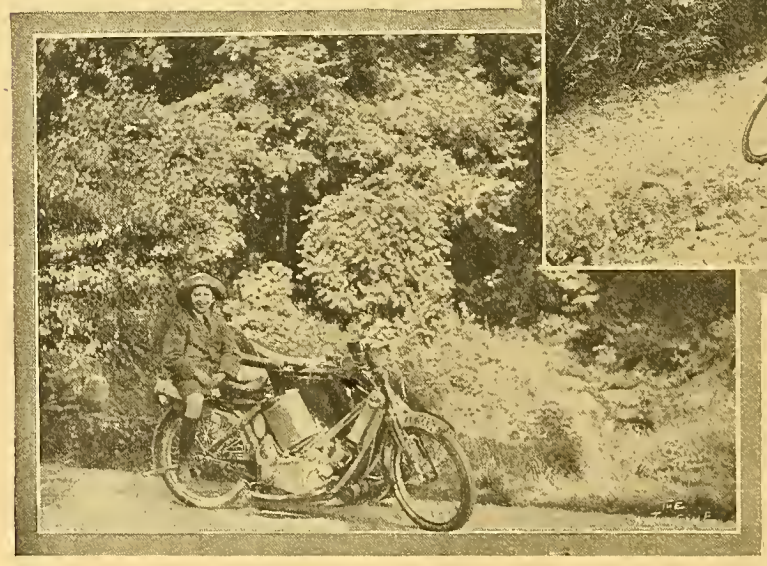
On the Road with a 3¾ h.p. Scott Sidecar Outfit.

THE IMPRESSIONS OF A COUNTRY RIDER.

I HAVE always possessed a distinct leaning towards the light sidecar outfit—*i.e.*, a 3½ h.p. single-cylinder machine with light sidecar attachment. This type of mount is far more sporting to ride in a mountainous district than the heavy twin outfit, which, with its low emergency gear, will literally climb a tree if judiciously handled.

It is just the possibility of "konking" out on a severe gradient, together with the necessity for careful handling, which adds so much to the sporting attractions of a ride over the ranges on a medium-powered outfit. I have long looked for one which, though sporting to handle on pleasure rambles through the hills, was capable of a high road speed on long main road journeys, the 3½ h.p. single falling somewhat short in this respect. Recently I have been riding a 3¾ h.p. Scott combination—by no means a new one, but one which has enjoyed decent usage, and this somewhat unconventional mount fills the bill exactly.

This year I have ridden several makes of passenger machines, and each has possessed its own little characteristics. Some were fast on hills, but comparatively slow on the level; others progressed uphill and down at the same monotonous purr, but none of them have proved so full of fireworks and the unexpected as the two-cylinder two-stroke I am now riding. The Scott sidecar, heavy though it be, makes practically no difference to the speed of the machine on the level. Given a good road it is quite as fast as an American 7-9 h.p. twin which I have been riding, but though fascinating to ride and sporting to handle it must not be imagined that the Scott can hold its own on hills with a big four-stroke twin. Considering its power this cannot be expected; it is slightly faster on hills than a good 3½ h.p. two-speed combination, but not so fast as a three-speed. On an open road it would leave either of the latter far behind, for the simple reason that one can let the engine "rev" downhill and on the level, without danger of overheating and without valve clatter. But over and above this the engine is capable of turning over at a terrific speed, and one acquires the habit of maintaining a higher road speed on a two-stroke water-cooled Scott than on any other machine of similar power I have handled.



A road test of a 3¾ h.p. Scott passenger machine. (Upper) Ascending a 1 in 5 gradient on a mountain path. (Lower) A halt in the woods.

The ability to permit the engine to "rev" without suffering discomfort, and without discolouring plated parts composing the power unit, is one of the great charms of riding a Scott. The machine is as comfortable at 48 m.p.h. on the dead level as it is at 30—in fact, more so, since the soft purr of the exhaust at high speeds is rather soothing. The absence of valves and the continuous clatter which these members create at high speeds is pleasant to experience. Very few four-stroke machines of correspond-

On the Road with a 3½ h.p. Scott Sidecar Outfit.—

ing power that I have ridden have proved comfortable at a speed exceeding 35 m.p.h. over long distances, but on the Scott it is merely a matter of seconds to attain this speed from a standing start, and vibration does not become excessive till a speed far above the requirements of safe touring is attained. One simply permits the engine to purr over at half throttle, adjusting the speed on corners by the half-compression release, and since the engine will "rev" indefinitely there is no need to cut out on ordinary down grades.

One is apt to form the impression that the Scott engine turns over very fast at normal road speeds, but as a matter of fact it is geared much higher than most four-strokes, the standard gears being 4⅛ and 7.6 to 1 for solo work, and 4.3 and 8 to 1 for sidecar.

Handling and Control.

Given a natural gift for handling motor cycles, the Scott is one of the most delightful machines to handle, though it is quite conceivable that the indifferent rider would find it rather difficult at first, and blame the system of control. The foot-controlled gear enables one to change from one gear to the other in an infinitesimal space of time, and it cannot be doubted that this feature has had much to do with the success of the machine in various speed tests. Having no weight of flywheel the engine picks up instantly in changing down, and for the same reason the high gear goes straight home, there being no konk or labouring with the even torque.

Skill in handling a Scott, however, is largely dependent on the rider's ability to use the right foot and the left hand in exact unison. One does not depend so much upon the carburetter controls as in the case of most four-strokes. The engine speed is governed largely by the half-compression, and, in traffic, much depends on the smartness in planting home the gear and releasing the half-compression lever at just the right moment.

To obtain the best results a Scott requires handling, and there are few machines which lend themselves so well to the expert rider. Once having acquired the art, one can slip through traffic and take certain liberties that one would probably not attempt with all machines, the quick acceleration and instantaneous action of the gears enabling one to slip in and out without risk. True that we do not all desire to perform circus tricks on the King's Highway, but we have most of us a sneaking pride in the manner in which we handle our machines through the crowded thoroughfares.

Maintenance.

As regards petrol consumption, this is not to be complained of considering the many advantages of an even torque. On a practical test with passenger, luggage and full equipment aboard, the machine I am riding does 54 m.p.g. over mountainous roads, including one or two freak gradients. The engine consumes about the same quantity of oil as a 5-7 h.p. twin. The wear on rear tyre is about the same as on a 3½ h.p. single. One might anticipate something better, but the foot-controlled gear is not conducive to the longevity of the rear tyre. All things considered, the question of maintenance is not one that need influence one's decision, for there are many medium-powered sidecar outfits more expensive to run than the Scott.

The Scott Sidecar.

The maker's sidecar is unquestionably designed on excellent lines, and those interested in sidecar design might do well to study its construction. The springing of the body is ingenious and effective, and the chassis design is splendidly thought out. I am rather inclined to think that the body is too well suspended, for, on pot-holey and tortuous roads, I note my passenger swinging in all directions and omitting grunts, while I, mounted comfortably on an Al'All saddle, remain comparatively stationary.

In justice to the makers, in whom I have no material interest, I cannot refrain from saying that there are very few machines which I have found so interesting and fascinating to handle as the machine under review.

H. MORTIMER BATTEN.

A MOTOR CYCLE CLUB OUTING IN BRAZIL.

Meet of the Rio Moto Club, the recent formation of which was announced in *The Motor Cycle*, in a forest on Tijuca Hill.

MILITARY NOTES.

Cheery New Year Messages from Motor Cyclists on Active Service.

LATEST DESPATCHES FROM THE FRONT.

SINCE our last issue went to press a few more messages were received from men at the Front, and so were, unfortunately, too late for inclusion in the "Christmas Despatches from Service Readers" published last week. There are two joint letters, each from two well-known men. The first is from Graeme Fenton and Philip Grout, whose message reads as follows:

"Graeme Fenton, Capt. A.S.C., and Philip Grout, Lieut. R.E., convey to all the old brigade at home their very best wishes for the New Year. May 1916 prove a record one in a way beneficial to all at home and elsewhere. To ensure 1916 being 'beneficial,' enter at once for the 'great trial'; entries close December 31st, 1915."

Sergts. J. Cocker and J. H. Pountney, both of the No. 5 Battery, M.M.G.S., on active service, write:

"You will be pleased to know that the No. 5 Battery is still going strong and doing some excellent work. As for the past nine months we have been living within two or three miles of the firing line, where cameras are unknown, a service snapshot is out of the question. Wishing you and all old friends a prosperous New Year."

It seems ages since we have heard of Lieut. F. A. McNab, of the R.N.V.R., who has been on patrol service off the north coast of Scotland. We have now had a New Year greeting from him from the South of England, which reads:

"The very best of luck in 1916 to all my old friends, and I hope and trust before it ends that we may all be back at dear old Brooklands again. What a day the first meeting at Brooklands will be after peace is declared! Wishing the good old *Motor Cycle* a still better New Year."

Flight.-Lieut. Victor Wilbertorce, who joined the R.N.A.S. before the outbreak of war. Previously he was a well-known competition rider of Douglas bicycles and G.W.K. cycle cars.

Despatch riders who were attached to the 1/1st Royal Wilts Yeomanry for fifteen months until that regiment left England for active service. Reading from left to right: Lance-Corporals Corders, Rose, Bolt, Corporal Palmer, Lance-Corporal Hopkins, Ambulance-Driver Sudweeks, Lance-Corporals Munday and Lockhead.

A lady motor cyclist has received from a member of the M.M.G.S. on active service a brooch made of a piece of a German shell.

"The motor cyclists of the 1st Canadian Motor Machine Gun Brigade wish all their comrades and fellow motor cyclists a prosperous New Year." —From Pte. J. Aldersley, 1st Canadian M.M.G. Brigade.

Sidney George, the Indian rider, has, we learn, joined the R.F.C. as a despatch rider.

ANOTHER DESPATCH RIDER KILLED.

CORPORAL JACOB GARSON, a despatch rider in France, and formerly an active member of the Newcastle and District M.C., has died in hospital at Boulogne from a wound received whilst carrying out his duties.

THE BROTHERS BASHALL.

VERY little has been heard of "Bizz" and Harry Bashall since the war began, though we knew that they were both "doing their bit" over in France. They are now attached to the 2nd Indian Cavalry Supply Column of the M.T., A.S.C., "Bizz" driving a Clyno sidecar and Harry a Sunbeam car. Like many others, they have not had leave yet, though both have seen over a year's service.

NO MOTOR CYCLES IN MACEDONIA.

A REPORT reaches us from a reliable source to the effect that no motor cycles are now being used in Macedonia on account of the very muddy condition of the country, as well as the absence of roads. Despatch riders are now using pedal cycles, and motor cyclist officers are mostly engaged upon signal work. Probably when the weather improves and roads of some sort are formed, motor cycles will be used again, for it is certain that where push cyclists can ride motor cyclists can follow.

Lieut. G. I. Francis sends a service postcard, with the words "A Happy New Year to All" written across it.

We understand that Gordon W. B. McKechnie, a member of the Motor Cycling Club, who received a commission some time ago in the M.M.G.S., and has seen active service, is being transferred to the R.F.C.

Corporal "Bizz" Bashall driving a Clyno outfit somewhere in France." Together with his brother Harry he is attached to the 2nd Indian Cavalry Supply Column of the A.S.C., M.T

The Editor does not hold himself responsible for the opinions of his correspondents.

All letters should be addressed to the Editor, "The Motor Cycle," Hertford Street, Coventry, and must be accompanied by the writer's name and address.

Tyre Repairs.

Sir,—I was much interested in your article on Mustikon inner tube patching, as indeed I am in most of the articles in *The Motor Cycle*. It has reminded me of the musiroom type of solid rubber plug used in the repair of the single tube tyres used long ago on pedal cycles, the head of the plug being passed through the puncture and the projecting end trimmed off flush with the tread of the tyre. Possibly these plugs could be used in the repair of holes in outer covers of motor cycle tyres if they could be obtained, at least as a temporary repair. I may add that most of my tyre troubles have been through punctures near the valve, which, I hope, will be capable of easy repair by the Mustikon process. BATITE.

Varying the Power of Electric Light.

Sir,—I think the cheapest and simplest way out of the difficulty is to use a small variable resistance (wire) in series with light and battery. This article costs about 1s. 6d., and can be purchased at any electrical stores. If used with a dynamo set, care should be taken to connect it between the light leads and not between dynamo and battery, as this would cause the dynamo voltage to drop (when charging), and therefore the voltage of battery being higher, it would try to run the dynamo as a motor. This would not improve the condition of the aforementioned articles. This would enable the lights to be varied at will from zero to full without involving the complications of double filament bulbs, or connecting an accumulator to a two-way switch to tap off two, four, or six volts as needed. Again, say on a run through country and town (especially in winter weather), one does not want to stop to substitute a bulb of higher voltage to get the desired light. X.Y.Z.

Motor Cycles in Gallipoli.

Sir,—Your readers may be interested to hear a little more about the motor cycles in Gallipoli. Though not very many are used for communications from the beaches to the firing lines, yet a good many are used in communications between the various beaches, and from G.H.Q. to various brigade headquarters. In the Krithia sector the machines are Douglases and countershaft three-speed Triumphs, the former used by the R.N.A.S. and the latter by the Army despatch riders.

On our beach there was a steep and precipitous path leading from the shore to the top of the 100 feet cliffs, and it was really wonderful to see the way the Triumphs climbed it. Starting only twenty yards from the foot of the climb, the average grade of which must have been at least 1 in 4, they would fairly roar up, accelerating all the way, in spite of dust and sand from 2in. to 6in. thick. The only trouble ever experienced with them was broken springs in the forks owing to the terribly rough roads.

The Douglases were not quite so good at climbing, but stood up to their work wonderfully. I met one as early as last May, being driven through the bed of a stream in the Saghir Dere, before ever the present road there was constructed. It was being bumped over rocks and holes, and was dripping with water, yet it hummed on as though on an English main road.

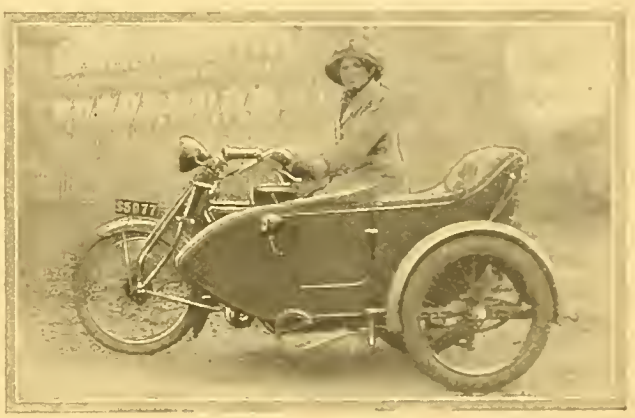
The only other machines I have seen were half a dozen B.S.A.'s at a depot at Suvla Bay. In that region one could enjoy (as much as shrapnel, etc., would allow) a blind of a couple of miles all out across the fairly level dried mud of the Salt Lake.

I have had your paper sent out to me every week, and both on the Peninsula and here in hospital there is always a rush for it as soon as it appears. I can truthfully say it is the only paper I ever read from cover to cover.

Malta. 1608, R.A.M.C.

Useful Hints on Dress to Lady Motor Cyclists.

Sir,—I am a constant reader of *The Motor Cycle*, and if you will allow me space I can give lady motor cyclists a few hints on how to make a very neat skirt for motoring. I took an old-fashioned skirt with eight gores and rather wide, and opened it up the left front and the left back and sewed it up like a divided skirt. I can go into any shop, or walk in it, and it never looks a bit divided, being so wide round the bottom, and it is heavy round the bottom and does not blow about. My coat is threequarter length, knitted of the same colour of wool. The first time I was out on the motor I felt the wind very much on my chest, so the next thing was what I call a chest protector, cut out of leather and covered with velvet coming up well to the neck; this I pen painted, and it just looks like the front of my blouse, and is quite warm on the coldest day. My hat is made to come down over the ears, but I can hear quite well; it is fastened under the chin with a ribbon and spring button.



Miss Jeanie Kerr, of Thornton, Fife, and her 7-9 h.p. Matchless sidecar. (See letter on this page.)

I enjoy motoring of all kinds, and can drive a motor car, motor lorry, or a motor cycle, but I use most a 1915 7-9 h.p. Matchless cycle and sidecar. I have had no trouble with it while doing long journeys. Sometimes I have one or two passengers in the sidecar and sometimes I am alone, but it is very easy to steer, only one must remember to have a bit of the road for the sidecar. It is fitted with all the newest patents and electric light. I have covered many miles on this cycle in all kinds of weather. One ride to be remembered by me was on a night of torrents of rain, thunder, and lightning, but weather does not trouble me with my sou'-wester hat and coat. All went well until I reached a street in K——, which was flooded. The lady in the sidecar wanted to turn, but on I went. Before I got far the water was up above the first rest, so I had to remove my foot to the second rest, and five minutes later we left that street behind, none the worse for our trip through the water.

JEANIE KERR.

Scott Lubrication.

Sir,—Capt. Dodds's letter and illustrations in reference to his 1913 Scott and sidecar are very interesting.

I think the Best and Lloyd twin feed which he has adopted quite good. At the same time I cannot very well understand why he should have experienced any difficulty in obtaining an equal share of oil to each cylinder with the single drip-feed and pressure pump (as fitted by the Scott Engineering Co.), provided the crank case suction is equal and lubricating pipes clear.

I have used the standard single drip-feed for the past two years, and have always found the level of oil in each crank case sump to be approximately the same; and I cannot say that I have experienced a semblance of a seizure. My mileage is approximately 12,000, and I frequently carry two passengers in the sidecar.

I notice Capt. Dodds's machine has not quite all the latest improvements, viz., front forks. I ride the same model as Capt. Dodds, and I find the 1916 forks a great improvement compared with the 1914 pattern. My petrol consumption is 52 to 60 m.p.g. with Binks three-jet carburetter.

I must endorse Capt. Dodds's remarks on the comfort experienced in riding a Scott, and, like himself, I have ridden a few other makes. I have toured from one end of England to the other with two passengers on two occasions with absolutely no mechanical trouble. For positive reliability these machines cannot surely be surpassed. I should say I am in no way interested in the Scott Engineering Co. other than being a satisfied rider of their machine.

C. B. THWAITE.

British Machines for British Riders.

Sir,—*The Motor Cycle* circulates pretty freely among despatch riders on this side, and five of us have just been discussing your big production of November 25th. It is a splendid effort, but do you not think that, considering the large circulation your publication enjoys, far too much publicity is given each week to American-made machines, for publicity usually results in sales? American manufacturers have pushed sales strongly in Great Britain at a time when our manufacturers are at a disadvantage, engaged as they mostly are on Government work.

Judging by the prominent and expensive advertisements, the American firms, or their agents, indulge in, they must be selling some machines in Great Britain, and where they have sold machines they will sell parts for subsequent replacements. Result, as our old friend Micawber would say, more money for the United States of America.

If British-made motor cycles were sold in the States we could, in normal times, afford to reciprocate by purchasing American-made motor cycles; but where in the United States, with the possible exception of the experimenting department of some of the motor cycle manufacturers, can one find British-made motor cycles? They are not to be seen on the roads, nor are the advertisements of British cycle firms to be found in the motor cycle publications in the U.S.A., for the tariff on motor cycles (50%, as far as the writer remembers) prohibits the British manufacturer from competing. The 33⅓% duty imposed on American machines and parts by Mr. McKenna should be the same as on British machines entering the States. At this time, however, when the British Empire is fighting for its very existence against an organisation largely created by money derived from profits on goods dumped into Free Trade Britain, and every sovereign, whether in the possession of the State or the individual, is of vital value to the Empire and civilisation, no one should be instrumental in allowing even the smallest sum of money to leave the country, unless it be in payment for some necessary article not procurable in the Empire, and, with the wide range of British models to choose from in Britain, the purchase of a foreign-made motor cycle at present should be considered unpatriotic.

CUCKOO (Despatch Rider).

1st Canadian Contingent B.E.F., France.

Mrs. Attwood and her lady's model Douglas. (See letter on this page.)

The Lady Motor Cyclist—A Protest.

Sir,—I wish to endorse the remarks of Miss Mary Reid in your issue of December 16th in regard to ladies' motor cycles. I may say I have ridden a lady's motor cycle for the last four years, and have disposed of my old motor cycle every year without any difficulty at all.

As regards speed capacity, I am certain it will travel as fast as anyone would desire.

Having this year disposed of my 1914 machine I waited six months for delivery of a new lady's Douglas in preference to riding a man's, although there was always one at my disposal. I think and hope that ladies will take to riding ladies' machines instead of men's, as it is much more becoming. As it is with ladies' push cycles, so it should be with motor cycles.

(Mrs.) R. H. ATTWOOD.

Sir,—"*Pro Bono Publico*," in your issue of the 9th inst., is amusingly illogical and unconsciously humorous.

It is safe to assume that "P.B.P." is a "he," because it is only a man who would make the distinctions in the three instances he gives—the first being an "elderly female," the second a "younger woman," and the third a "youthful rider."

He ridicules the "elderly female" for wearing a "waistless mackintosh" jacket, heavy boots, huge spectacles, and aggressively obtrusive headgear. The "younger woman" is guilty of wearing "an ordinary common (very common) peak cap anchored down by a skewer, and reminding him of washing day in the back kitchen." The "youthful rider of the Rudge" pleases him with her well-cut riding breeches, etc., but she evidently wears no headdress or "P.B.P." would give us his impression of it, as he did in the first two instances.

It is clear that the age of the ladies has distorted "P.B.P.'s" judgment, but unless the "elderly female's" headgear is so obtrusive as to brush "P.B.P." or others off their mount when passing, or so aggressive as to frighten horses; or the "younger woman's" "skewer" projects so much that "P.B.P." is in danger of being transfixed or losing an eye by it, he has no right to complain.

It is probable that neither the elderly female nor the younger woman can afford "well-cut riding breeches," but "P.B.P.'s" ethics make no allowance for this, and he reminds me of the Irish railway manager who separated his lady passengers in waiting rooms labelled as follows:

First and Second Class waiting room for Ladies.
Third Class waiting room for Females.

These inscriptions remained until ridicule had its effect on him. "P.B.P." would appear to be a reincarnation of this long departed railroad philosopher.

You print a photograph of a Miss Blackiston under "P.B.P.'s" letter, and I do not think any dress could be more efficient for motor cycling, nor any dress more pretty,

than this lady's. The first use of clothes is to keep in heat and keep out rain, and Miss Blakiston's will do both. What more is wanted? It was woman's vanity first put frills and fol-lols on her dress, and it was done to please the "lords of creation." She has floundered about too long in wind-catching, muscle-binding draperies, adopted merely to obtain graceful and pretty effects for her "lord's" approval.

The *fin mot* of "*Pro Bono Publico's*" reasoning is that when a lady motor cyclist is *young* it is immaterial what she wears on her head: when she is older she becomes a *woman*, and her headgear is subjected to biting criticism; but later on in life the poor lady becomes a *female*, whose headdress is not only distasteful, but absolutely dangerous; therefore, the only "way out" for the lady motor cyclist who wishes to adopt a rational dress is either to retain her youth *ad infinitum*, or to strengthen her mind to stand the storm of ridicule which the lords of creation will let loose on her.

LOGISTES.

Two-stroke Lightweights—A Criticism.

Sir,—I have recently been conducting some experiments with different makes of two-stroke machines, and have bought three well-known machines of different makes and engaged a really capable rider to test them. I have been really astonished by the reports sent in of the efficiency of the engines but of the absolute inefficiency of the machines in other respects.

The conclusions based upon the reports are that it is impossible to use any of these machines in the kind of weather we have been having lately. The mudguards are hopelessly inefficient, the result being that a stream of mud and water deluges the engine, carburetter, gear box, and belt. The result of this is that all the working joints get worn out in a week or two's riding, and that the machines cannot be driven on account of the belt slipping owing to the slush and water on it. On more than one occasion the driver has had to put the machine on the train as it was impossible to get on at all. In the case of a chain-driven machine the mud and wet getting under the chain caused it to break on several occasions.

The journeys referred to were all the same, namely, from Manchester to the Lake District and back. Two of these machines are fitted with rim brakes on the back wheel which are perfectly satisfactory; the other machine has band brakes, one of which actually wore the drum on which it worked clean through, on three journeys. To mitigate this trouble as far as possible I have had one of these machines fitted with a screen right underneath the power unit. This screen extends right back, and the belt runs in it. The effect of this arrangement is completely to revolutionise the running under these adverse conditions and improve the comfort immeasurably.

I enclose you an illustration of this machine, from which you will observe the top of the belt is unprotected, but this does not seem to matter, as the rider protects this. It is the bottom portion of the belt which seems to collect all the wet.

You will observe from the illustration that this machine is fitted with a hot air supply to the carburetter. In my opinion no two-stroke machines should be turned out unless they have a thoroughly efficient hot air service. This particular machine is fitted with one of my three-jet carburetters, and, under the very unsatisfactory road conditions, will average 130 to 140 miles per gallon with practically an absence of any four-stroking.

Take the hot air pipe and muff off and the mileage is 20 m.p.g. less, with nothing like such good running. Apparently, it would seem that to enable these modern lightweights to be ridden in really bad weather, very much more ample protection from the mud and rain is an absolute necessity.

C. BINKS, LTD.,
CHAS. BINKS, Managing Director.

Spring Frame Design.

Sir,—Lately I have noticed that in several new spring frames the inventors endeavour to coincide the pivot of the lower movable member with the axle of the gear box. Theoretically, they are right as regards the variation of distance between the axle of the wheel and the axle of the gear box; but, practically, it is preferable to place the pivot slightly behind the countershaft gear.

In the first place, the construction is more rigid and more simple; besides that, the variation of distance is so small that it can be neglected.

Consider an elastic frame allowing a movement of the wheel of 10 cm. Suppose that the distance from the axle

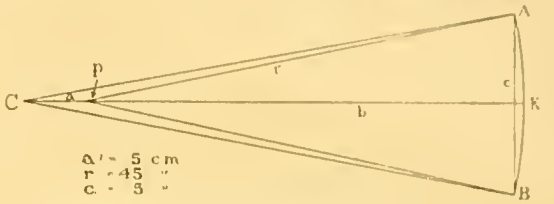


Diagram showing the variation in the distance between the driving centres of a spring frame.

of the gear box to the axle of the wheel be 50 cm., and from the pivot P to the wheel 45 cm., the variation will be at a minimum in so far that P is situated on the bisection of the angle A C B, the arc A B representing the movement of the wheel.

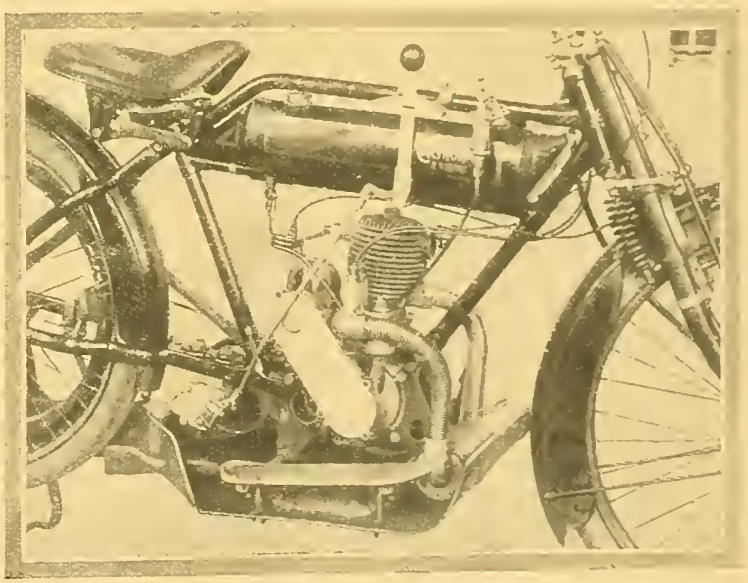
Then if PA = r = 45
CP = a = 5
PD = b
AD = c = 5
AC = R_1
CK = R = 50

The variation of distance is—

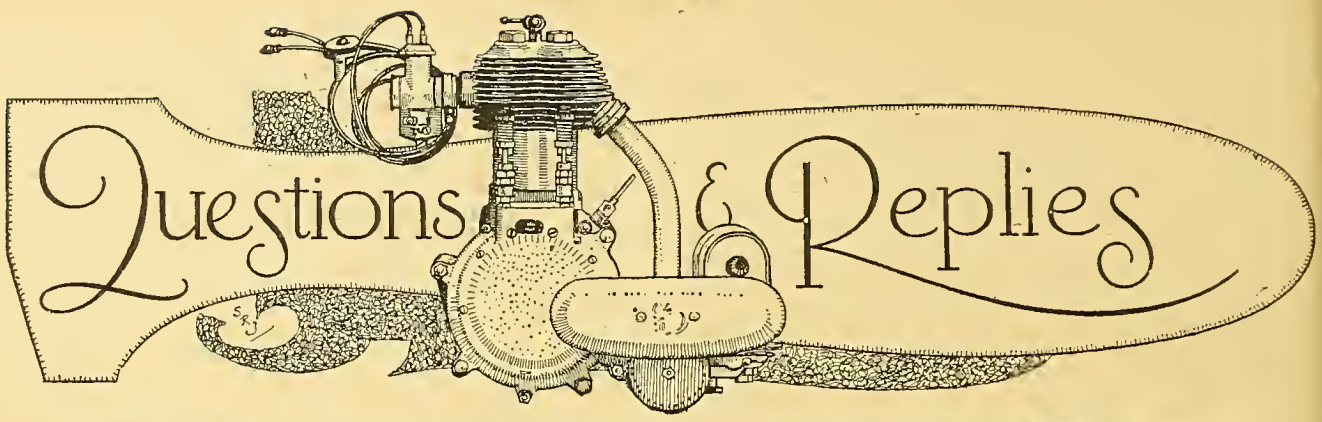
$$R - R_1 = R - \sqrt{(a+b)^2 + c^2}$$
$$= R - \sqrt{(a + \sqrt{r^2 - c^2})^2 + c^2}$$
$$= 50 - \sqrt{(5 + \sqrt{45^2 - 5^2})^2 + 5^2}$$
$$= .028 \text{ cm.}$$

that is to say, about eleven thousandths of an inch. Thus, one sees that this variation is practically nil when the pivot P is placed on the bisection of the angle A C B.

M. VAN GEERT.



A two-stroke lightweight, improved (as described in the letter from Mr. C. Binks on this page) by the addition of an underscreen and a hot air intake to the carburetter.



A selection of questions of general interest received from readers and our replies thereto. All questions should be addressed to the Editor, "The Motor Cycle," 20, Tudor Street, London, E.C., and whether intended for publication or not **must be accompanied by a stamped addressed envelope for reply.** Correspondents are urged to write clearly and on one side of the paper only, numbering each query separately, and keeping a copy, for ease of reference. Letters containing legal questions should be marked "Legal" in the left-hand corner of envelope, and should be kept distinct from questions bearing on technical subjects.

Fitting a Brake.

I have just taken my machine to pieces, and am about to put it back again, but am doubtful whether to put the brake to pull on the top side of belt rim or not; it was on the under side before. Does not the top side grip better? I notice most makers fit the brake shoe on the under side. Is there any undue strain caused by fitting it on top?—J.S.L.

You had better fit the brake so as to pull on the under side as it was before. If you have the brake shoe to fit on the top side it would probably have a greater jamming action, whereas on the under side it would provide sufficient braking power and yet would not be liable to skid the wheel.

A Leaky Float.

(1.) I find there is some petrol in the float of my carburetter, and when it is immersed in *hot* water bubbles slowly appear from a joint. Will this make any difference to the petrol consumption? If so, how can it be got out? (2.) Would it be possible for me to fit a chain drive to my 2¼ h.p. two-stroke, as I find the belt drive such a trouble owing to the small diameter of the driving pulley?—G.E.G.

(1.) Boil all the petrol out (this should be done by submerging the float in very hot water), and then solder up the joint where the leak is, as shown by the bubbles which appear. Otherwise the carburetter will always be flooding. This will increase the consumption, and will eventually stop the engine. (2.) It would be possible to fit chain drive to this machine, but it would be a difficult and rather expensive matter. Belt drive should be quite satisfactory if the pulleys are of the correct size. You might try using a flexible leather belt, but a leather belt is more messy and rather more troublesome than a rubber belt. Still, it grips well round a small pulley, and is better than a rubber belt in wet weather.

Gear Ratio.

(1.) Is a 6½ to 1 top gear too low for a 3½ h.p. Minerva fitted with a light coachbuilt sidecar, as I am only able to get about 17 m.p.h. out of the machine? The low gear has a 45% reduction. (2.) Is oil or grease the more suitable for a Toroga gear box, ball clutch type?—V.M.

(1.) We should think a 6 to 1 gear about right for this machine when propelling a sidecar, but your engine obviously requires tuning up. You must be contented with low speeds, otherwise you will cause the engine to overheat. (2.) Thick gear oil is usual with sliding type gears.

A Loose Bearing.

(1.) On taking my engine down for cleaning I find that the bush in the big end of the connecting rod is loose. It moves round, but not up and down. Should this be fixed? (2.) I also see that the small end is tight, but there is a very slight up-and-down play in the gudgeon pin itself. Will this cause the engine to rattle, or what will it do? (3.) The agents tell me that my engine has a high compression, and it is awkward to turn the engine over; in fact, I cannot do it unless I inject paraffin, and then it is quite easy, and when it is warm I only push the pedal down and away it goes. I have tried several brands of oil. Could you make any suggestion as to this? I give the engine one pumpful every five miles. Is this correct? (4.) I have the offer of some oil which is used for steam engine and generator combined. It looks just the same as motor oil. Do you think it is worth trying? (5.) I thought of putting some baffle plates in my silencer, as the engine is rather noisy. Would they make it quieter, or would they cause any back pressure?—W.H.T.

(1.) The bush should be fixed in the connecting rod. It should be a driving fit, and is frequently pinned in addition. (2.) If the up-and-down play is only very slight you can probably run the engine for a time without having this bush secured. If, however, it causes excessive noise it is time it should be seen to; in fact, it would perhaps be wise to have it fixed at once. (3.) You should inject paraffin or petrol before starting in cold weather, as the oil becomes congealed, so causing the engine to be stiff to rotate. Half a pumpful every five miles should be enough. (4.) Only use good oil suitable for air-cooled engines. The oil suitable for steam engines would hardly be suitable. (5.) Probably extra baffle plates would cause back-pressure in the silencer. What you want is a fairly large expansion chamber, and a reasonably long exit pipe with a flattened end.

Contact Breaker Adjustment.

I have a single-cylinder motor cycle fitted with a Bosch DA2 magneto, which I have just had completely renovated, and when refitted to my motor cycle I found it would only spark from full retard to half advance. I examined the contact breaker, and found the new platinum points breaking nearly ⅛in. apart. I adjusted them until they parted 1 mm., and now I get a splendid spark from half to full advance, but a poor spark at full retard, and that only when turning over fast. I also find that the platinum points only remain open for about one-thirtieth of a revolution now, whereas before they remained open for one-third of a revolution. (1.) How long should they remain apart? (2.) How can I reduce the gear? I have an adjustable pulley giving gears from 3½ to 1 to 5¼ to 1. I want a lower gear, say 6 to 1.—B.M.S.

(1.) We should recommend you to adjust the points so as to break .4 mm., which is, roughly, that of a visiting card. The magneto spanner contains a gauge of this thickness. The points should remain open during the whole period that the fibre heel of the rocking arm is resting upon the cam. (2.) The only way of reducing the gear further is to fit a larger belt rim.

SPECIAL NOTICE.—*Copies of "The Motor Cycle" may only be sent to neutral European countries if posted direct from the offices of the publishers, or by newsagents who have obtained permission from the War Office for this purpose. The publishers of "The Motor Cycle" have obtained the necessary permission, and, consequently, can send subscribers' copies as usual. Before sending through newsagents it is important to enquire if permission has been obtained, as otherwise copies intended for neutral European countries will not be forwarded by the Post Office.*

Broken High Tension Wire.

[?] If the H.T. wire which joins the magneto to the sparking plug is *partly* severed, will the machine continue to fire at all? One day as I was out with my brother, we stopped, and, on restarting, the machine would fire about five times and then stop, and eventually refused to fire at all. After a great deal of trouble we discovered that, although the rubber covering of the wire was not even cracked, the wire itself was severed. After joining it up the machine fired again with all its old vigour. Just before it stopped completely it was firing perfectly regularly.—R.E.L.

Yes, as long as there is a strand of wire the engine will continue to fire, or even if the wire were broken and there was a gap of ⅛in. the spark would jump the gap and the engine would still fire. In a case like that quoted in your letter it is obvious that there was a break in the wire, and probably the break was insulated by a piece of rubber between the severed strands, otherwise the high tension current would easily jump the gap.

Difficult Starting.

[?] (1.) I have considerable difficulty at times in starting up my 3½ h.p. single-cylinder from cold without injecting a considerable quantity of petrol. (2.) The petrol consumption is also very high, only 60 to 70 m.p.g. of No. 2, although the engine does not overheat and I can climb quite steep hills easily solo on top gear. (3.) After the engine has been running well for several miles it suddenly misfires for a few yards, then fires regularly for a few minutes, when it will stop altogether. I have cleared the petrol pipe and the carburetter and found no trace of dirt nor any air lock. There also does not appear to be sufficient acceleration when the magneto is fully advanced, although the timing is in accordance with the accepted theory—points of magneto just breaking with piston on top and the lever set half-way between full advance and full retard. The valve timing also appears to be correct.—D.B.H.

(1.) Difficult starting is nearly always due to too much air reaching the carburetter at slow speeds. This may be caused by too small a jet, a worn throttle slide, or a worn inlet valve guide, or to an air leak at the induction pipe union. (2.) The petrol consumption is certainly rather high, but if you try and economise it is quite possible that you will upset the running of the engine. (3.) Be sure and use a sparking plug of the single point type made by a first-class manufacturer. The possible trouble is pre-ignition, caused by an unsuitable plug.

A Formula for Horse-power.

[?] Would you kindly give me the particulars for calculating the approximate horse-power of a motor cycle engine?—W.H.T.

There are several formulæ for calculating the horse-power of a motor cycle engine. None of these, however, is particularly satisfactory. A good idea of what we mean can be obtained on referring to page 154 of the current edition of "Motor Cycles and How to Manage Them" (which can be obtained from these offices, price 1s. 3d. post free, or from any bookstall). It will be seen that the horse-power by formula of a 3½ h.p. engine varies from 3.83 to 6.36. A 500 c.c. engine is called 3½ h.p., but as much as 5 h.p., if not more, can be got out of it. Perhaps one of the best formulæ is the Hospitalier, $\frac{R^2 S N \text{ revs.}}{75{,}000}$ R = radius of cylinder, S = stroke (both in cm.), N = number of cylinders, revs. = revs. per minute. A simpler method is to reckon 1 h.p. for every 100 c.c. of capacity.

READERS' REPLIES.

Easy Starting.

I have noticed each week in your valued journal, letters complaining of difficulty in starting engine, and I will relate my experience. I own a big 5-6 h.p. almost new single-cylinder outfit, carrying about 32 stones, and I had great difficulty in starting. There was fitted a decompressor, through which I could inject petrol. The trouble I attributed to the oil in cylinder. I tried for days to find a way of getting over the trouble, without much success. At last I came across a K.W. sparking plug, which is fitted with a tap for injecting petrol. By injecting petrol in plug and decompresser I now have no trouble. While writing you, I would mention that I have been looking out for a coachbuilt tandem side car, but can find none to suit me. One firm is making one with two separate doors, and this is a move in the right direction. But the trouble is the length. All firms appear to make the body 6ft. This looks too cumbersome. I consider 5ft. plenty, and am looking for one of this length. I recently fitted a spring attachment to my wicker pillion seat, and my passenger finds this a great comfort. On the tyre question, all my three tyres are 650×65 mm. Belts I discarded for all chain drive years ago. The improvements I desire to my present mount are: (*a*) Three detachable, interchangeable wheels; (*b*) engine cylinder that can be dismounted without taking engine out of frame.—G.E.

EXPERIENCES WANTED.

"D.L." (Glasgow).—Junior Triumph. Reliability, speed, and general running.

"Douglas" (Paisley).—Philipson pulley on 2¾ h.p. T.T. Douglas. Also suitable sidecar for same machine.

"H.M.H." (Halstead).—Cowey trip speedometer. Accuracy (both speed and mileage record), steadiness of indicating hand, and general reliability.

RECOMMENDED ROUTES.

LONDON TO MORETON-IN-THE-MARSH (avoiding Oxford).—P.G.T.P.

London, Uxbridge, Gerrard's Cross, High Wycombe, Weatley, Islip, Bletchington, Chipping Norton, Moreton-in-the-Marsh.

LARKHALL TO BATH.—J.R.

Larkhall, Abington Inn, Beattock, Lockerbie, Ecclefechan, Carlisle, Penrith, Kendal, Lancaster, Garstang, Preston, Wigan, Warrington, Tarporley, Whitchurch, Wellington, Bridgnorth, Kidderminster, Worcester, Gloucester Painswick, Stroud, Nailsworth, Bath.

CHATHAM TO TAUNTON.—W.M.H.

Chatham, Aylesford, Wrotham Heath, Ightham, Seal, Westerham, Redhill, Reigate, Dorking, Guildford, Hog's Back, Farnham, Alton, East Tisted, West Meon, Bishop's Waltham, Botley, West End, Totton, Cadnam, Ringwood, Wimborne, Blandford, Newton, Sherborne, Marston Magna, Langport, Curry Rivel, Taunton

SOME RUSSIAN DESPATCH RIDERS. The men shown are attached to a squadron in which there are sixty machines, all Indians, and they have been in use on the Eastern Front for over a year.

Bowden Wire's New Address.

We understand that the head offices of Messrs. Bowden Wire, Ltd., have now been removed to their new factory at Victoria Road, Willesden Junction, N.W.

What War Means.

We have received a Christmas card from R. W. Coan, 219, Goswell Road, E.C., the well-known aluminium founder, regretting that owing to scarcity of aluminium he is unable to send the usual artistic aluminium souvenirs which it has been his custom to send out to his clients in the past.

Blumfield Engines.

At present Blumfields, Ltd., are so busy on munitions as to be unable to pay much attention to the manufacture of motor cycle engines. Fortunately, however, they are still in a position to supply a limited number of their single-cylinder 80 mm. × 95 mm. engines.

20,000 Miles on One Tyre.

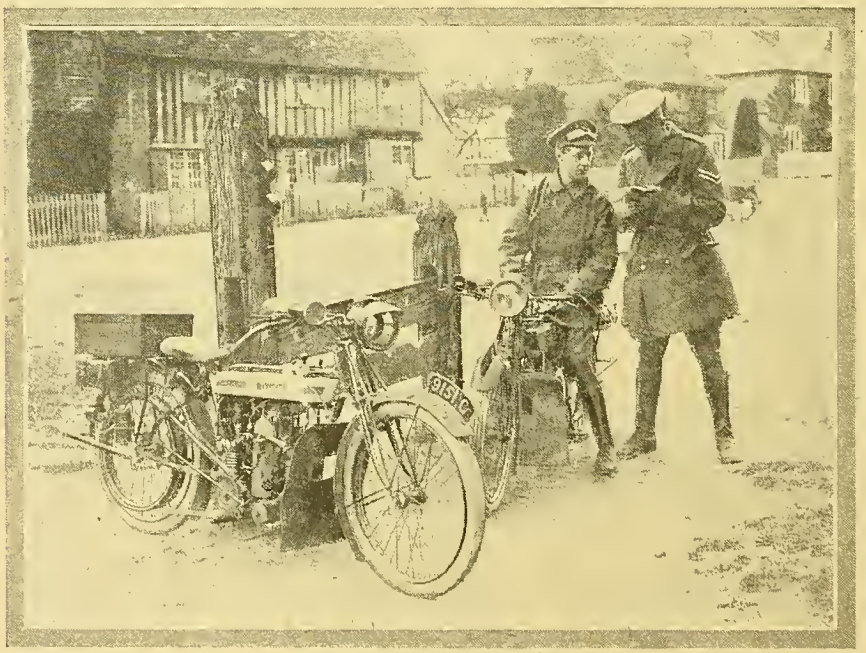
We recently had the opportunity of examining a J.P. motor cycle tyre which, guaranteed for 3,000 miles, and supplied in 1912, had just come to grief after having been used for 20,000 miles, according to the owner's statement. The tread of the tyre was in remarkably good condition before it burst.

Catalogues Received.

"Ariel Spare Parts." Ariel Works, Ltd., Bournbrook, Birmingham A new catalogue of spare parts and replacements, copies of which may be had on application to the makers. It is very complete, and every part is illustrated and numbered to facilitate quick reference.

We are in receipt of a booklet entitled "The Villiers Two-stroke Motor Cycle Engine," from the Villiers Engineering Co., Ltd., Blakenhall, Wolverhampton. One of the chief features of the book is the spare parts list. As the engine is a two-stroke there are not many working parts, but all of these are illustrated, described, numbered, and priced, enabling the spare part to be ordered without any possibility of error.

We are in receipt of a catalogue from Messrs. John Piggott, Ltd., 117, Cheapside, E.C., entitled "For the Services and Civilians: What they want and where to get it." It contains many articles of motor cycle clothing which are eminently suitable for wear by soldiers and sailors. For instance, many leather waistcoats, thick gloves, and other articles formerly used chiefly by motor cyclists are now bought in large numbers by members of the sister services.



ANCIENT AND MODERN.

Despatch riders in training studying the map by the side of the old stocks at Aldbury.

F.N. Repairs.

Those desirous of having repairs carried out to F.N. motor cycles, or who desire to order spare parts for these machines, should address their enquiries to the Efenmo Works, Kimberley Road, Willesden Lane, N.W.

Increase of Prices.

On and after January 1st all Norton models will be increased in price by 5%. At present this applies to only a few machines, but in consequence of still further increases in the cost of raw material the 5% advance will be extended to all as from the date mentioned.

War Funds Subscriptions of the B.S.A. Employees.

Soon after the outbreak of war the employees of the B.S.A. Co. organised the B.S.A. Employees War Fund, and the amount subscribed for the first twelve months, as shown by the balance-sheet recently issued, is practically £7,000.

In Aid of the Red Cross.

We are in receipt of a handsome almanac for 1916, issued by Messrs. Abdulla and Co., the cigarette specialists of 60, New Bond Street, W. The page for each month is beautifully illustrated by means of the reproduction of a painting by some well-known artist. Copies are to be sold at 1s. each by Messrs. Abdulla and Co. for the benefit of the British Red Cross Society.

Armstrong Gears.

Some difficulty has been experienced in the past by many riders in finding a firm who can supply spare parts of Armstrong gears or undertake repairs thereto. It is, therefore, interesting to announce an addition to the short list of firms able to do such work. The firm is Messrs. W. B. James and Co., Leyland Terrace, School Lane, Leyland, Lancashire.

Reviews.

"The Maintenance and Repair of Motor Cars." (Iliffe and Sons Ltd. 2s. 6d., 2s. 9d. post free.) A useful handbook written by a motorist of many years' experience, who is an owner-driver. A careful study of this book will enable anyone with an average mechanical knowledge to master the details of a motor vehicle, and take entire charge of it with confidence. Each chapter of the book deals with a separate portion of the car, such as the engine, lubrication, ignition, transmission, tyres, etc.; consequently the information contained can be easily assimilated without the least possible trouble, and wherever possible doubtful points are illustrated. This book is of almost as much interest to the motor cyclist as to the car driver.

MOTOR CYCLES FOR SALE.

B.S.A.

B.S.A., 1916 models in stock for immediate delivery; 4¼h.p., 3-speed countershaft gear, chain and belt drive, model K, £62; model H, all-chain drive, £64; liberal exchange or extended payment terms.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0597

Calthorpe.

CALTHORPE Junior, 2h.p., 2-speed; 16 gns., lowest, spot cash.—Potter, Cama View, Gosport Rd., Fareham, Hants. [X7878

1915 Calthorpe-Jap, 2-speed, shop-soiled; 28 gns.; very great bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X4886

CALTHORPE, Latest 2-speed lightweight models in stock; cash or exchange; no waiting.—Eagles and Co., High St., Acton, W. [X7913

CALTHORPE, latest 2-stroke, 2-speed, just arrived from works; immediate delivery; £31/7.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7943

1915 Calthorpe Junior, 2 speede, new, £21, offers, or sidecar, N.S.U. 2-speed gear, and speedometer as part.—Morley, 11, Grindell St., Hedon Rd., Hull. [X7874

CALTHORPE, latest J.A.P., Enfield 2-speed, just arrived from works; immediate delivery; £36/15.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7942

CALTHORPE-J.A.P., 1915, Enfield 2-speed gear, £29/10, Lucas accessories; deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7969

CALTHORPE Junior, 1914, 2-speed, excellent condition and running order; £17.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [7621

Campion.

1916 Campion Combination, 6h.p. J.A.P., 4-speed Jardine chain-cum-belt, 650×65 tyres, all black and gold-line finish, fitted up superb, Lucas lamp set, gas or electric same lamp, Lucas sidecar lamp set, electric rear light, Stewart car horn, Stuart speedometer, Walbro sidecar, screen completely covers passenger, wind cuffs for handle-bars, luggage and petrol grid, mascots, etc., all as new; smartest combination on the road; £85, cost £108; photo and particulars.—Walbro Motor Co., Ely, Cambs. [X7835

Chater-Lea.

1915 Chater-Lea, 2-stroke, 2 speeds, small mileage, like new; cost £40, accept £31.—Thompson and Edwards, West Hartlepool. [X7680

5-6h.p. Chater-Lea, twin, P. and H. lamp, tyres 26in.×2½in., new pulley, less mag., slight repairs wanted; price £8.—21, Alexandra Rd., Leyton, N.E. [7960

Chater-Lea-Jap.

CHATER-LEA, 1911, 6h.p. twin J.A.P., 2-speed P. and M. gear, with large 2-seater coachbuilt sidecar; a bargain, £27/10.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, High Rd., Tottenham, N. [7620

Chater-Lea-Minerva.

1914½ 2¾h.p. 3-speed Chater-Minerva, specially built, everything the best; £30; only illness compels sale.—Box L343, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7931

Clyno.

CLYNO 6h.p. Coachbuilt Combination, countershaft gear, kick-start, smart turnout; £28.—Speechley, 45, Church Rd., Acton. [X7945

CLYNO Combination, 1913¾, 3-speed, clutch, spare wheel, Binks, recently overhauled, spares, lamps, horn, etc.; £52.—White, 31, Shakespeare St., Southport. [X8021

CLYNO Motor Cycle and coachbuilt sidecar; officer at the Front wishes to dispose of his, spare wheel, lamps, screen, all complete, and in good condition; £70.—To be seen from 9 to 4 at 27, Merton Rd., Kensington. [7925

Dayton.

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DOUGLAS, War Office model, Watford speedometer, P. and H. lamp, Stewart horn, etc.; £48, a bargain; new September; cost £62.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7952

DOUGLAS, 1915, 2¾h.p., 3-speed gear, only run 300 miles, in absolutely new condition; £46; exchanges entertained.—Tuke and Bell, Ltd., Motor Dept., Carlton Engineering Works, 699, High Rd., Tottenham, London, N. [7054

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LATE 1915 5h.p. Indian, 3-speed, model E, in absolutely new condition, and very little used; £58, no offers.—Alexander's, 115, Lothian Rd., Edinburgh. [6997

1915 Indian, 5h.p., 3-speed, new tyres, specially tuned, in beautiful condition; 44 gns.—Julian, Central Garage, Broad St., Reading. 'Phone: 1024. [X7637

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1915½ Indian, 7h.p. model C, 3-speed, with luxurious Indian coachbuilt sidecar, complete electric equipment, and speedometer, only used 3 days; owner at Front. Who wants a bargain at £85 for this splendid new outfit?—Alexander's, 115, Lothian Rd., Edinburgh. [6998

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SUN-VILLIERS, 2½ h.p., single-speed	£29 10
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JAMES, 2½ h.p., 2-speed	£38 11
NEW RYDER, 2½ h.p., single-speed	£28 13
NEW RYDER, 2½ h.p., 2-sp. J.A.P.	£33 12
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B.S.A., 4½ h.p., ditto, chain-cum-belt	£62 0
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1910 3½ h.p. Tourist **TRIUMPH**	£22 10
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5½ h.p. Magneto **REX,** spring forks	£12 10
M.M C., 3 h.p., magneto	£11 10
N.S.U., Twin, 2-speed, spring forks	£15 10
REX, 3½ h.p., magneto, spring forks	£14 10
DOUGLAS, 2¾ h.p., Twin, spring forks	£16 10
SCOTT, W.C., 2-speed, chain drive	£22 10
TRIUMPH, 3½ h.p., specially good	£19 10

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The last word in light car values; 10 h.p. 4-cylinder, mechanical lubrication, electric horn and lighting, hood, screen, tools; luxuriously sprung, and a grand top gear car. Deliveries from stock.
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1913 6 h.p. 2-speed F.E. **REX,** chain drive, smart coach Sidecar	£43 10
1913 **RUDGE** Multi and Sidecar	£38 10
1912 **RUDGE,** 3½ h.p., 2-speed, and Sidecar	£29 10
1912 **RUDGE** Multi and Sidecar	£34 10
ROVER, 3½ h.p., 3-speed Combination	£43 10
1912 6 h.p. 2-speed **REX** and Sidecar	£34 10
1911 3½ h.p. **N.S.U.,** 2 speeds and Sidecar	£19 19
1910 3½ h.p. 2-speed **REX** and Sidecar	£24 10
6 h.p. 2-speed **V.S.** and Sidecar	£23 10
Brand New 6 h.p. 2-speed **REX** Sidette	£69 10

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MORGAN, 1914, Sporting, hood, screen, etc.	£79 10
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Triumph Pattern Horns	5/9, 6/9
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IMPERIAL-J.A.P., light tourist, 2¼h.p., Dunlops, 2-speed, latest model; £36/16; just arrived; immediate delivery.—Wilkins, Simpson, and Co., 11, Hammersmith Rd., London. [7948

Norton.

1912 Big 4 Norton, 2-speed, free engine, new cylinder, piston, new Senepray carburetter, perfect condition; bargain; owner no time to ride.—5, Crescent Rd., Sheffield. [X7917

NORTON, 3½h.p., 3-speed, clutch, countershaft, picked engine, very fast, 1915, mileage 300, perfect condition, T.T. bars, all accessories, lamps, horn, speedometer, watch, mirror; owner giving up riding; bargain, £60, or nearest offer.—Thornton, 31, Beaconsfield Rd., St. Albans. [X7905

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O.K. Junior, 1915, 2-speed, in splendid condition, very little used; original price £33/10, to be cleared at 21 gns., very great bargain.—Julian, Broad St., Reading. 'Phone: 1024. [X2346

P. and M.

P. and M., 1913½, 2-speed, kick starter, Lucas accessories, fine condition; 40 gns.; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow. [7976

3½ h.p. P. and M. and wicker sidecar, waterproof cover, 2 speeds, free engine, chain drive, head lamp and generator, rear lamp on sidecar, horn, many spares; £30.—Bridgwater Motor Co., Eastover, Bridgwater. [7922

Premier.

3½h.p. Premier, 3 speeds, as good as new; £30, with P.H. lamp and horn.—The Garage, Whitland, S. Wales. [X6149

CAPT. HUNTBACH'S 1913 T.T. model Premier, winner Brooklands recently, with new Philipson, large tank, etc., equipped for touring; £30.—Motor Machine Gun Service, Bisley, Surrey. [X7903

PREMIER, 1914, 3-speed countershaft, spares, accessories, £12/12 coach sidecar, £49/10; a 3½h.p. that really climbs like a 6h.p.; exchange lightweight part, will separate.—Hanson, Moorfield St., Halifax. [X7672

Quadrant.

4½h.p. Quadrant and sidecar, fast and powerful, spring forks, adjustable pulley, new belt, and butt-ended tubes, lamps, horn, tools, etc.; £13.—7, Hitchen Hatch Lane, Sevenoaks. [7937

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6h.p. Twin Rex Combination, motor cycle and sidecar, done about 5,000 miles, in perfect condition throughout, all accessories, 2-speed, with clutch, tyres all in good condition; £50, or near offer. Oakley, Ltd., 85, Regency St., London, S.W. [0755

Rover.

ROVER, 1915, 3½h.p., 3-speed countershaft gear, practically new condition throughout; £52/10.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0491

1913 T.T. Rover 3½h.p. Motor Cycle, fitted with Lucas head lamp, horn, speedometer, tools, etc., in splendid condition, tyres nearly new; £30.—F. E. Wootten, 55, High St., Oxford. [7854

ROVER, 1913, 3½h.p., 3 speeds, Senspray, Dunlops, lamp, horn, speedometer, complete set tools, and all necessary spares, a very fine machine; photo; £35, no offers.—Box L342, *The Motor Cycle* Offices, 20, Tudor St., E.C. [7930

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RUDGE Multi, just arrived from works, 3½h.p. roadster; £58/15.—D. J. Shepherd and Co., Enfield Highway, N. [X7898

1914 5-6h.p. Rudge Multi and Swan sidecar, Miller lamp; £42, or near offer; fine condition.—The Garage, Whitland, S. Wales. [X6148

RUDGE Multi and cane sidecar, in fine order; £38/10; deferred payments.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7979

3½h.p. Rudge Multi, 1913, bought new January, 1914, belt, tyres, everything good condition, lamp, horn, Senspray, Rudge-Runthardt mag.; £30, no reasonable offer refused.—Taylor, Agents, Kettering. [7917

Scott.

SCOTT, 1914, in excellent condition; bargain, £45.—O. Butcher, Derby Rd., Nottingham. [X7879

1915½ Scott, semi T.T., coachbuilt sidecar, Palmer tyres, Lucas lamp, gong, accessories, B. and B., all practically new; £69.—Hartridge, 12, Grey Friars, Leicester. [X7171

1913 3¾h.p. Scott, 2 speeds, clutch, and kick starter, new tyres, good condition, just overhauled; £28.—Dunn, Plumber, Market Place, Bedlington, Northumberland. [7927

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SHEFFIELD Minors.—Immediate delivery of this exceptionally fine 2½h.p. 2-stroke single-speed, 28 gns.; 2-speed, 33 gns., including 1916 improvements.—Colmore Depot, 31, Colmore Row, Birmingham. [X2340

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The following are actually in stock.

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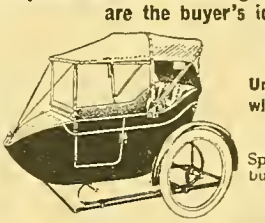

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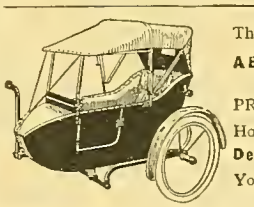

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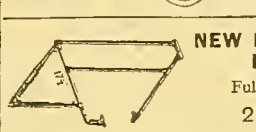

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SUN-VILLIERS, 1914, countershaft 2-speed, completely equipped, tyres practically unsoiled; £22. —Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [7987

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SUNBEAMS, 1916, 3½h.p., T.T. and standard models, with sidecars, in stock.—Moss, Wem. [X8009

FOR Sale, 1916 3½h.p. Sunbeam motor cycle, just delivered; 70 gns.—Arthur Dyas, 81, Grimsby Rd., Grimsby. [7996

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SUNBEAM, 3½h.p., 1916, the ideal single-cylinder sidecar machine, delivery from stock. Recognised agents. Exchanges.—Tel.: 388. T.A.: Bicycles.—Robinson's Garage, Green St., Cambridge. [6867

A BARGAIN.—1914 3½h.p. Sunbeam motor cycle, in perfect condition, tyres new, speed indicator, Binks carburetter; any expert examination; 50 gns.—Arthur Dyas, 81, Grimsby Rd., Grimsby. [7997

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TRIUMPH, 1908, new tyres, belt, piston, etc.; £18/10. —Asquith, Shawell, Rugby. [X7881

1912 Free Engine Triumph, N.S.U. 2-speed; £25 for quick sale; bought car.—Gilley, St. Denis, Torquay. [7985

TRIUMPH, 1911, free engine, fine machine; £24, or near offer.—Williams, Head Master, Blaenffos, Pembs. [X8049

1908 Triumph, good going order, tyres, belt good; accept £12/10, bargain.—Thompson and Edwards, Bishop Auckland. [X7681

TRIUMPH, 1914, 3-speed, Lucas accessories; £49/10. —Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7978

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TRIUMPH, 3½h.p., speedometer, lamps, tools, new tyres, sidecar, perfect running order.—Write, Thew, 17, Eynella Rd., Dulwich Park. [7920

TRIUMPH, 1914, 4h.p., 3-speed and clutch, semi-T.T. Roadster, large P. and H. lamp set, horn, splendid order; £43/10.—Below.

TRIUMPH, 1914, 4h.p., 3 speeds and clutch, Gloria cane sidecar, guaranteed sound; £50, complete.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0492

1912 3½h.p. Triumph, free engine model, with lamp and horn, new Dunlop tyre and belt, fine machine; £24.—The Garage, Whitland, S. Wales. [X6150

TRIUMPH, 1916, Junior model, just received; £44/2; immediate delivery from stock.—Elce and Co., 15-16, Bishopsgate Av., Camomile St., E.C. [0480

TRIUMPH, 1914, 3-speed, clutch, 14 gn. Millford Empress sidecar, excellent condition; 55 gns.—W. Banwell Home Farm, East Harptree, Bristol. [7994

TRIUMPH, 3½h.p., 1910, new tyres and practically new engine, perfect running order; bargain, £20. —Holman Steddy, Sarre, Birchington-on-Sea. [X8067

1913 3½h.p. 3-speed Triumph, with Canoelet coach-built sidecar; £50, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0734

1913 3-speed Triumph, with brand new 17 gn. Gloria sidecar, luggage rail, all accessories, perfect; £50, cash or easy terms.—R. E. Jones (Garages), Ltd., Swansea, London, Cardiff. [0720

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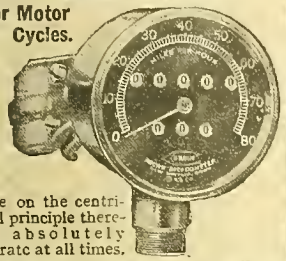

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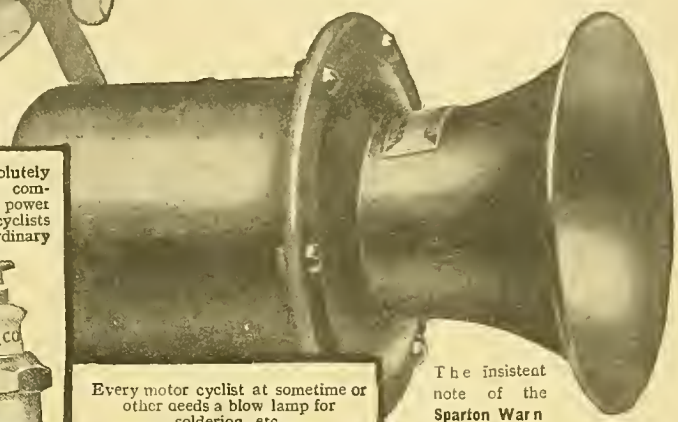

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ARE gas-tight — under all conditions. Do not continue to run your motor cycle another day with a leaky plug. Get satisfactory service NOW. Put an AC CICO PLUG in your engine and notice the big difference.

PRICE 2/- each.

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Although small in size, is quite as efficient as a large Blow Lamp. Will heat or solder anything, and is indispensable where quick, clean, cheap, and intense heat is desired. Produces a perfect Bunsen flame of over 2,000 degrees Fahrenheit.

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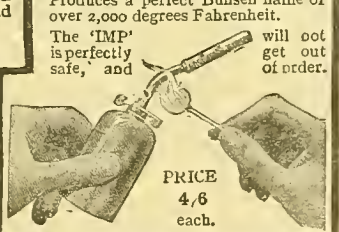

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Starts with a match, is entirely Automatic, and burns two hours on one filling.

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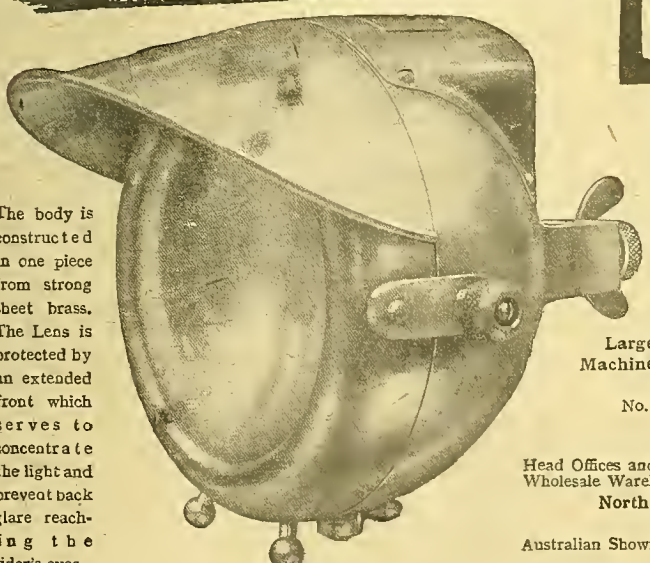

The body is constructed in one piece from strong sheet brass. The Lens is protected by an extended front which serves to concentrate the light and prevent back glare reaching the rider's eyes.

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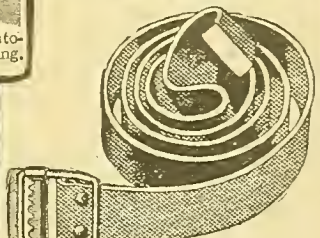
Small size suitable for Lightweight Machines.

No. L60/2, Black Plated, 55/- each.

Large size for Heavyweight Machines or Sidecars, with fork bracket fitting.

No. L60/6 .. 87/6 each.

"Challenge" Waterproof Fabric Straps.



Will outlast, and are much stronger than, the ordinary leather straps. Remain flexible and keep their colour under all weather conditions. Suitable for use with tyre carriers and luggage grids. Supplied in various widths and lengths.

Price from 6d. each.

Descriptive pamphlet on request.

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North of England Depot: 267-273, DEANSGATE, MANCHESTER.

Showrooms: 15, Newman Street, W., and at Paris.

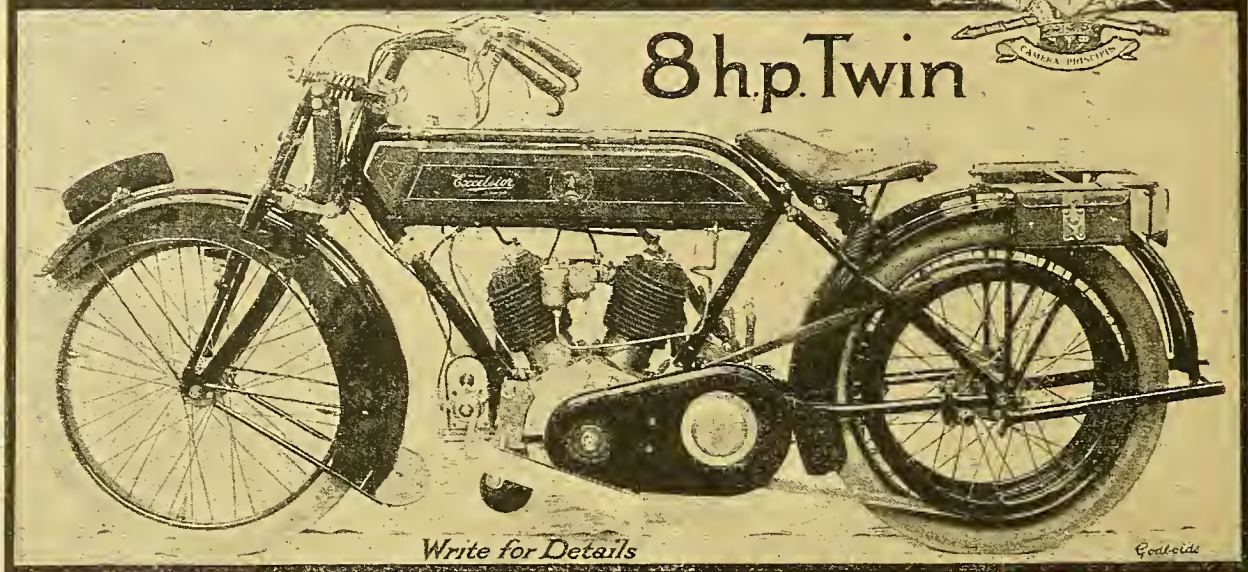
Australian Showrooms: 328, Flinders Street, Melbourne. South African Representative: E. G. Higginson, P.O. Box 1269, Johannesburg.

In answering this advertisement it is desirable to mention "The Motor Cycle." A1

The 1916 BRITISH

"EXCELSIOR"

8 h.p. Twin



Write for Details

BAYLISS, THOMAS & CO., EXCELSIOR WORKS, Founded 1874. **COVENTRY.**

Sole London Agents—H. TAYLOR & CO., Store Street, W.C.

"JAMES"

The JAMES Lightweight

—the junior member of the famous JAMES family—is, like all other JAMES models, essentially a "Quality" machine.

Distinguished both in outline and finish, it is without a serious rival for Town riding, Business or Professional use.
Its low position ensures absolute immunity from skid—it is simple in control and very economical in upkeep—climbs all reasonable hills on top gear and has a speed of 4 to 40 m.p.h.

The 1916 JAMES Range includes—

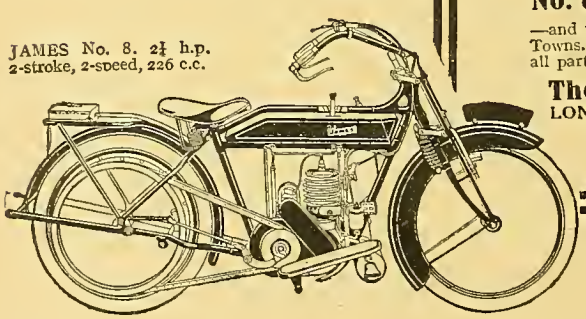
No. 6, 4¼ h.p. "Big Single," 3-sp. For Sidecar £66-5
or complete with JAMES-CANOELET Sidecar, £14-10 extra.

No. 7. 3½ h.p. Twin, 3-sp., Hand-controlled Clutch. Solo, £66-5

No. 8. 2¼ h.p. Two-stroke, 2-sp., Lightweight, £38-12-6

—and these may all be inspected at the JAMES Agencies to be found in all principal Towns. Don't buy YOUR Lightweight before inspecting the JAMES—catalogue gives all particulars. Send for copy—NOW.

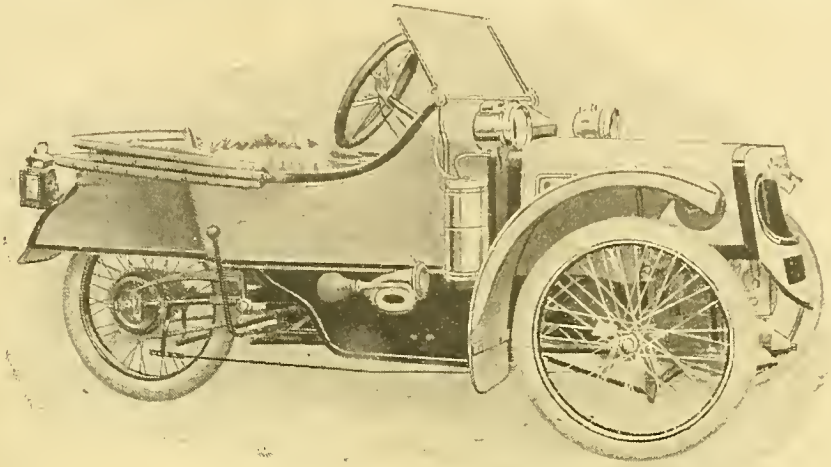
The JAMES CYCLE Co., Ltd., Greet, BIRMINGHAM.
LONDON DEPOT: 22, Holb. Via. B'HAM: Broad St. Corner.



JAMES No. 8. 2¼ h.p. 2-stroke, 2-speed, 226 c.c.

R.H.S.

Even more reliable than the Sidecar.



. . . THE . . .

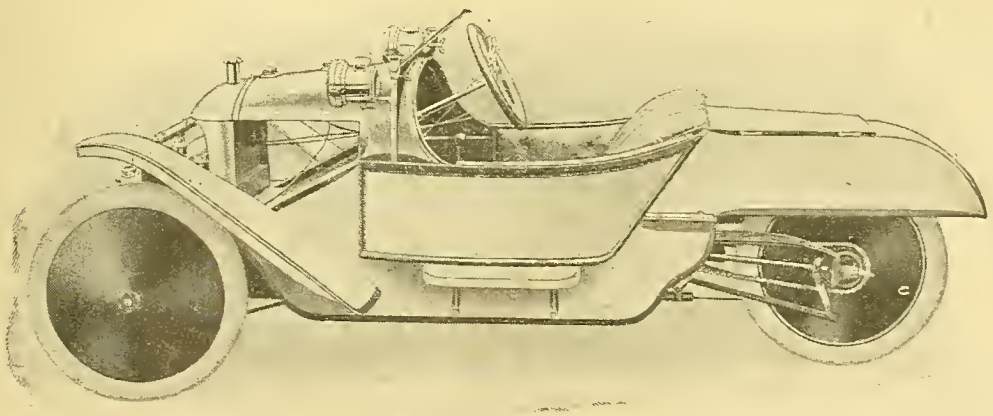
MORGAN RUNABOUT

won the Gold Medal 3 Years in succession in the English Six Days Trials,

and the

Grand Prix for Sidecars and Cycle Cars

in which no Sidecar survived.



Prices from £100.

Morgan Motor Co., Ltd., Malvern Link.

A·J·S

As the designers and builders of the famous A.J.S. we KNOW that OUR machine is far superior in all the multifarious points which together go to make IDEAL Service, but —

From the Prospective Buyer's standpoint, the first-hand evidence of the actual A.J.S. owner will naturally afford the strongest and most conclusive proof of A.J.S. supremacy, hence we suggest —

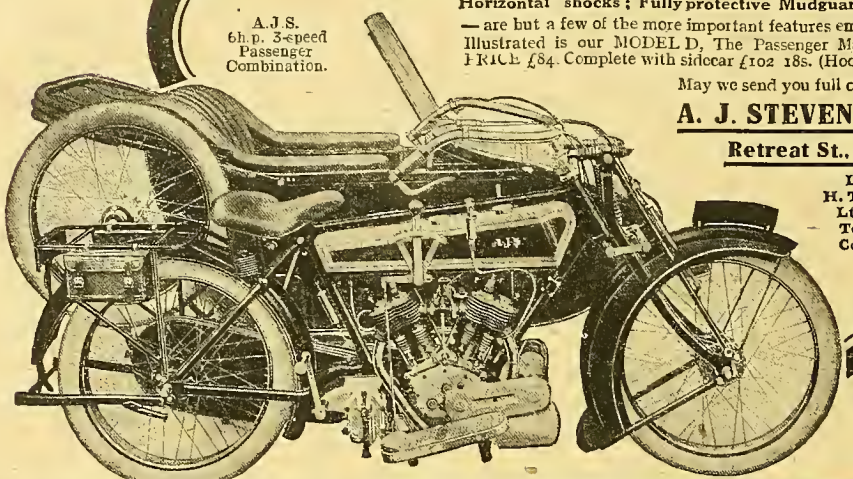
Just "ask the man who OWNS one" what HE thinks of his Mount

A.J.S. Perfected Engine; Interchangeable Detachable Wheels; All-enclosed Weatherproof Chain Transmission: Three-speed Countershaft Gear; Scientific "Straight Tube" Frame; Patent Spring Forks (incorporating wide mudguards) absorbing Vertical and Horizontal shocks; Fully protective Mudguards and A.J.S. Weatherproof Finish.

— are but a few of the more important features embodied in the A.J.S. for 1916.

Illustrated is our MODEL D, The Passenger Machine, 6 h.p. twin cyl., 750 c.c., 3-speed PRICE £84. Complete with sidecar £102 18s. (Hood, Windscreen, and Spare Wheel extra).

A.J.S. 6h.p. 3-speed Passenger Combination.



May we send you full catalogue? It deals with every model.

A. J. STEVENS & Co. (1914), Ld.

Retreat St., Wolverhampton.

London Agent: H. TAYLOR & Co., Ltd., Store St., Tottenham Court Rd.

THE BELT FOR RUDGE, ZENITH, PHILIPSON, GRADO, BRAMPTON, or ANY GRADUAL GEAR.

THE "ZILLA" BELT
LEATHER & RUBBER.

GREAT XMAS OFFER!

WE WILL SUPPLY A FURTHER 200 BELTS, ANY SECTION UP TO 8′ 0″ LONG, FOR £1-0-0 EACH.

— ECONOMY —

is the question of the hour! WHY not study this in connection with your TRANSMISSION?

Now is the time you require an

ALL-WEATHER BELT

THEREFORE WRITE US NOW AND

SAVE MONEY.

Address all communications to—

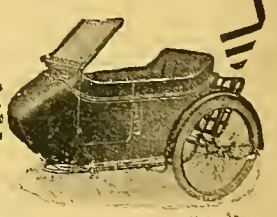
The ZILLA PATENT BELT COMPANY, Ltd., 101, Great Western Street, MANCHESTER.

CONVINCING COMMENTS

NO. 3.

"I promised to write you after I had given your De Luxe Model Sidecar a testing. I fitted it to a Chater-Lea No. 7, 8 h.p. J.A.P. I have now done 3,050 miles, and have never had to put a spanner on it since fitting same. "I get nothing but praise from the passengers I have taken out respecting the comfort of it, and the finish and smartness are always remarked on. "I can honestly say the sidecar has given me satisfaction in every way."

Original may be seen at our offices.



Catalogue free from MEAD & DEAKIN, TYSELEY, BIRMINGHAM

In the Service of the King

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TWENTY-FIVE PER CENT. of the skilled workmeo employed in the manufacture of "SPHINX" Plugs are serving in the Fighting Line with wounds and honour. Those who remain behind are serving with equal honour in the daily supply of thousands of "SPHINX" Plugs required by His Majesty's Forces. BECAUSE there is no other firm in the British Empire who for over ten years have made the manufacture of sparking plugs their sole speciality, THEREFORE is their plant, their experience, their organisation, and expert knowledge required n the Service of the King.

SPHINX

THE SPHINX MFG COMPANY, BIRMINGHAM

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READERS of "The Motor Cycle" wishing to insure a motor cycle, sidecar, or light car, can obtain quotations for suitable policies by filling in the attached form and forwarding it to:

The Manager, Insurance Dept.,
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SPECIAL .. NOTE...

A copy of

THE MOTOR CYCLE

is supplied by post each week for twelve months with all policies upon which the premium is not less than

£2 : 7s. : 6d.

ENQUIRY FORM

(To be sent to above address).

Make of Machine.	H.P.	Date of Manufacture.	Present Value.	Registered Number.

Will machine be driven solely by owner?.....

" " " " " for pleasure?.....

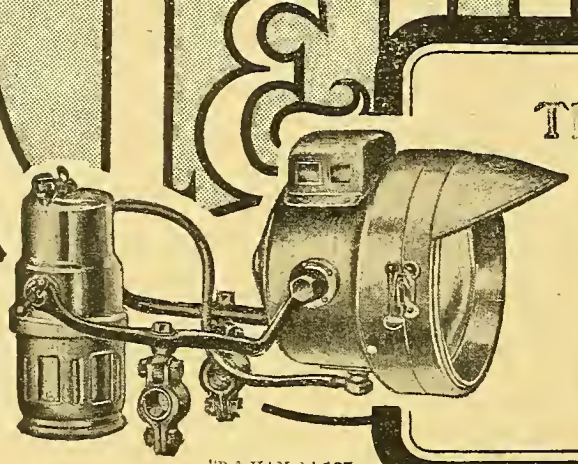
Will passenger be carried on luggage carrier or pillion of motor cycle?.....

Name .....

Address.....

.....

Ask for "P & H"



"P & H" Model 127 (HB.) for handle bar.

The SAFEST way

when buying a Lamp—THE fitment on which so much depends—is to select a make that's widely known and widely used—one, in fact, that has a universal reputation for Quality and Dependability.

The SAFEST way when buying a Lamp is to refuse to speculate, but rather—to ask for "P & H."

Every "P & H" model offered for the 1916 Season will worthily uphold the "P & H" reputation—give the maximum of light—and wear both long and well

When YOU buy, accept no "second best"—no substitute—but choose the SAFEST way and straightway "Ask for P & H."

All Agents stock—Catalogue gives full details of all models, and is free.

Powell & Hanmer, Ltd., Chester Street, Birmingham.

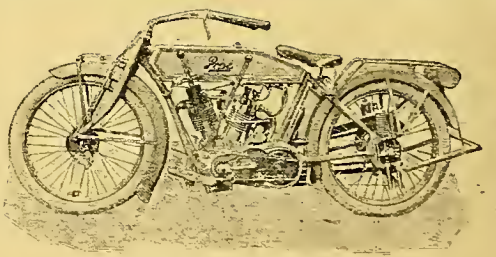
R.H.S.

Pope Motor Cycles

FOR SPEED, COMFORT, AND RELIABILITY

THESE MACHINES SMILE AT HILLS AND POT-HOLE ROADS.

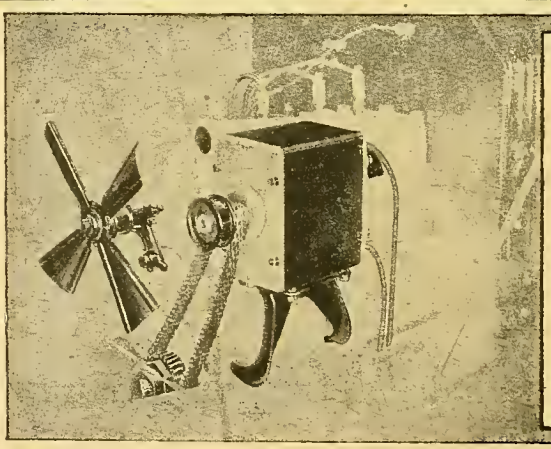
Send or call for prices and particulars.



THE BIG TWIN.

THE POPE MOTOR CYCLE AGENCY,

Telephone—London Wall 1137. **55, BANNER ST., E.C.** Telegrams—"Acarobox, London."



Fit Your Ford

with a Starting and Lighting Unit

Specially designed for Ford Cars. Equip it with the SPLITDORF-APELCO STARTING AND LIGHTING SYSTEM for Ford Cars—a self-contained electric starting and lighting set of extreme efficiency, which is inexpensive to buy and can be easily fitted within 48 hours. It is the most compact and most serviceable system for the Ford owner.

Price £19 : 19 : 0

Your Garage man can fit it for you. Complete details from

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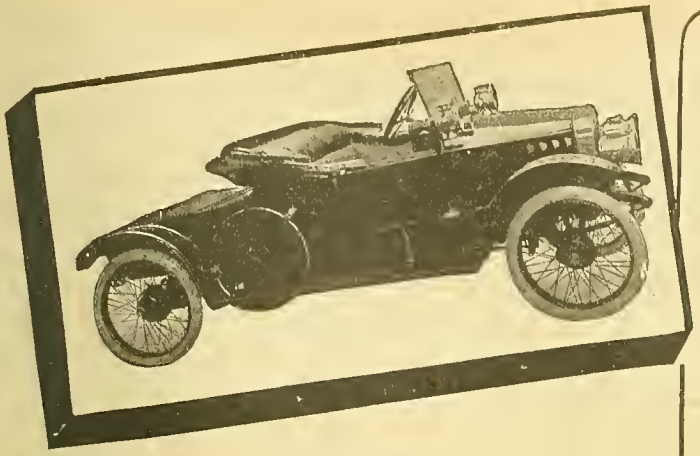
Direct British and European Representatives for Splitdorf Electrical Co., Newark, U.S.A.



STANDARD MODEL:

2-cyl. engine, water-cooled; friction drive, variable speeds and reverse, hood, screen, five detachable wheels (four with tyres), lamps, and all tools, etc.

179 GUINEAS.

G.W.K. LIMITED,

Cordwalles Works, Maidenhead.

Telegrams—"Cars, Maidenhead."
Telephone—562, Maidenhead.

A Famous MotorCyclist and the G·W·K·

It is a significant fact that many motor cyclists, when making the change from their old mount to a light car, select a G.W.K. "The latest convert," says the "Light Car and Cyclecar," Nov. 15th, "is Mr. Hugh Gibson, one of the most prominent figures in the motor cycling world." The choice of a G.W.K. is always well-merited, by reason of its reliability and trustworthiness under all conditions.

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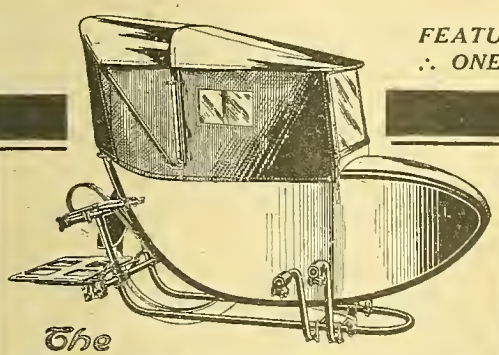


The

HERCULES

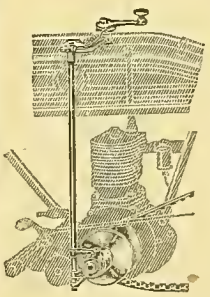
CHASSIS

This unconventional picture shows you in the best possible manner the wonderfully simple yet efficient and strong chassis of the Hercules Sidecar. This chassis responds more readily to the movements of the motor cycle, thus eliminating the risk of accident, simplifying steering—especially round left-hand corners—and minimising side strain. The quality of material and correctness of design render this chassis strong beyond all possible requirements and fracture proof. Full details in the art catalogue from

The Hercules Cycle & Motor Co., Ltd., Conybere Street, Birmingham.

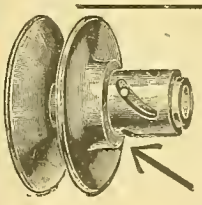
The "GRADO" MULTI-PULLEY

with Free Engine.



- Starts your machine like a car!
- Takes your machine and sidecar up hills impossible without!
- Gets you safely through thickest traffic!
- Ensures safety over greasiest roads!
- In fact, it turns work and danger into a pleasure!
- Just half a turn of the handle on top tube changes from top gear to free engine!

Fitted in two hours to Triumph, Bradbury, B.S.A., Rudge, Precision, T.D.C., Rex, Singer, Premier, etc.



Price - - £3:3:0

for Engines up to 6 h.p. 10/- extra to suit Engines with crank bosses, like J A.P,, old Rex, etc.

Lightweight Model £2 10 0

Here is the curved slot which ensures the belt never slipping on the lowest gear.

Delivery from Stock. Write us to-day for further details. See "Motor Cycling," 23rd Feb.

Beware of Imitations and Infringements

The Grado Manufacturing Co., Pershore St., Birmingham.

Where the battle rages

—there you'll find the CLYNO

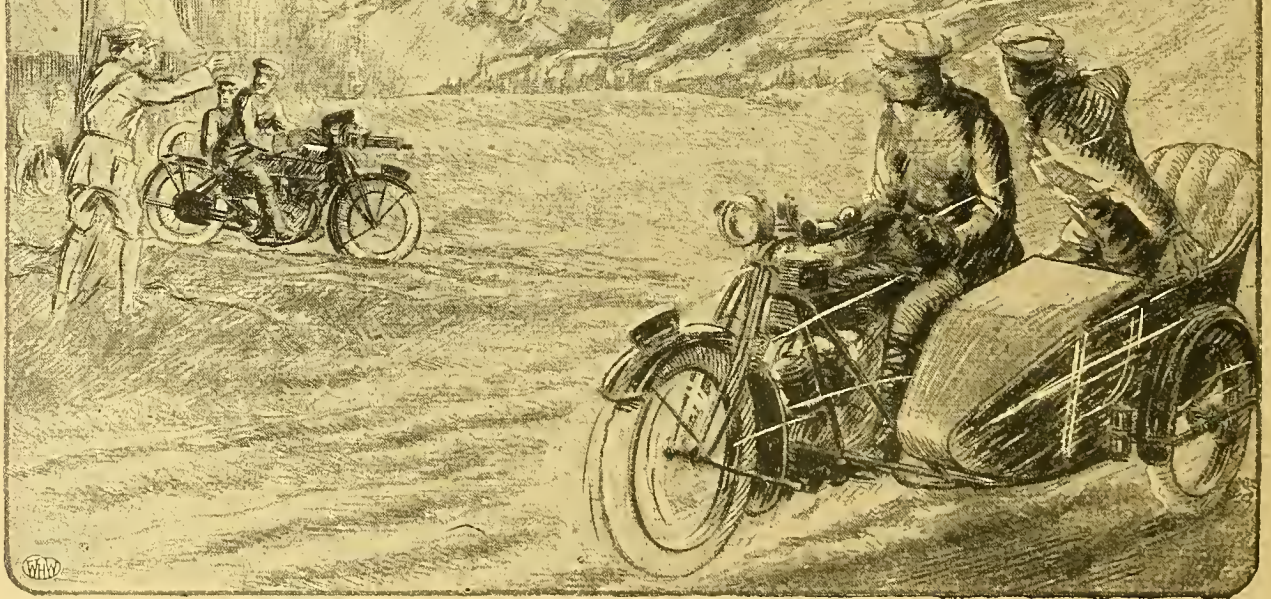
—playing its part nobly in the Allies' fight for freedom—daily demonstrating its exceptional efficiency—and by its wonderful war service making a name to be remembered.

AND—while the CLYNO is needed in the theatre of war—while we concentrate all our resources on meeting Government demands for the Clyno Military Combination — other needs must wait.

BUT—after the War—when we CAN supply you with a CLYNO, it will be even a better machine than hitherto, for it will embody the results of the Clyno's war service experience, and—you will then realise that the CLYNO was indeed *worth waiting for.*

CLYNO ENGINEERING CO., WOLVERHAMPTON.

Telephone: 992 Wolverhampton.
Telegrams: "CLYNO, Wolverhampton."



MOTOR CYCLES FOR SALE.

Williamson.

WILLIAMSON, late 1914, 8h.p., water cooled, coach combination, hardly used, as new; 65 gns., including £10 accessories.—205, Battersea Park Rd., S.W. [7771

1913 Williamson, water-cooled, engine overhauled, kick starter, coachbuilt sidecar, electric and acetylene lamps, spares; £50.—Weldon, c/o Barrett's Garage, St. Peter's Rd., Canterbury. [7921

Wolf.

WOLF 4¼h.p. Combination, 50 gns.; scarcely used; deferred payments, exchanges.—Lamb's, 151, High St., Walthamstow, and 50, High Rd., Wood Green. [7980

WOLF, 2¾h.p., 1916 model, just delivered, 2-speed, 2-stroke, kick-starter, hand-controlled clutch; £36/19/6; exchanges or deferred payments.—Eagles and Co., High St., Acton, W. [X7914

Zenith.

ZENITH-GRADUA Gear, 8h.p. J.A.P., 1913¾, clutch, kick start, Swan de Luxe sidecar, D.A. lighting, 3 Lucas lamps, speedometer, accessories, spare tyre, tube; £47, bargain.—Turner, 7, Princes Sq., Bayswater [7918

1914 6h.p. Zenith, standard model, with Montgomery sporting sidecar, colour grey, lined black, whole outfit re-enamelled and overhauled by makers, Lucas lamps, Watford speedometer, horn, spare belt and tube case, decompressors, new tyres, guaranteed in perfect condition; 48 gns.; can be seen at The South Essex Motor Co., High St., Ilford, or write 2nd. Lieut. M. B. Elliot, M.M.G.S., Bisley Camp, Brookwood. [0745

Ladies' Machines.

HOBART, 2½h.p., 1912, 3-speed, Whittle belt, excellent tyres, just overhauled; £20, or offer.—Greystones, Oakwood, Hexham. [6980

ROYAL Ruby, lady's model, J.A.P. 2½h.p., countershaft 2-speed, semi-automatic lubrication, just delivered from works; £38/5.—Hucklebridge, 133, Sloane St., London, S.W. [X7511

NEW Imperial, lady's, J.A.P. 2½h.p., counter-shaft 2-speed gear, kick-starter, hand-controlled clutch, just delivered from works; £45/3.—Hucklebridge, 133, Sloane St., London, S.W. [X7513

Miscellaneous.

WANDSWORTH Motor Exchange.—Easy payment system quarter down, balance 12 monthly payments.

WANDSWORTH.—American Excelsior, 1914½, magnificent coach combination, 7-9h.p., speedometer, lamps; 49 gns.; exchanges.

WANDSWORTH.—Zenith, 1913, with Gloria £30 sidecar, 8h.p. J.A.P., beauty; offers; exchanges.

WANDSWORTH.—James, 1915, 2½h.p., 2-stroke, mag., 2 speeds, practically new; £36/10; exchanges.

WANDSWORTH.—B.S.A., 1916 model K, just delivered, countershaft 3 speeds; £62; exchanges.

WANDSWORTH.—Hobart (brand new), 2-stroke, just delivered, mag., must sell; £28/10; exchanges.

WANDSWORTH.—Williamson 1913-14 coach combination, 8h.p., water-cooled, 2 speeds, Cowey; £53/10; exchanges.

WANDSWORTH.—Bradbury 1913 coach combination, 4h.p., Bosch, 2 speeds; special, £33/10; exchanges.

WANDSWORTH.—Rudge, 1915 (new), 3½-4h.p., mag., 3 speeds; greatest bargain, 48 gns.; exchanges.

WANDSWORTH.—Premier, 1915, 3½-4h.p., mag., 3 speeds, kick, almost new; £45; exchanges.

WANDSWORTH.—Motosacoche, 1913, 2½h.p., mag., fine little machine; £14/10; exchanges.

WANDSWORTH.—F.N., 5-6h.p., 4-cyl., mag., very fast, runs well; £12/15; exchanges.

WANDSWORTH.—Wolf lightweight, 1½h.p., mag., nearly new tyres; very cheap; exchanges.

WANDSWORTH.—Vindec Special, 5-6h.p. twin, mag., free engine, clutch; only £14/10; exchanges.

WANDSWORTH.—Triumph, 1911, with sidecar, 3½-4h.p., mag., 2 speeds; bargain, £24/10; exchanges.

WANDSWORTH.—Humber, 1913, 3½-4h.p., mag., 2 speeds, like new; £33/10; exchanges.

WANDSWORTH.—Royal Enfield, 1911, 2¾h.p. twin, mag., nice order; £18/18; exchanges.

WANDSWORTH.—Easy terms.—Wandsworth Motor Exchange, Elmer St., Wandsworth Town Station. 'Phone: Battersea 327. [X7942

IF You Want Bargains in second-hand motor cycles you can get them at Wauchope's, 9, Shoe Lane, Fleet St., London. [5624

BARGAINS: Must Clear.—1915 Enfield combinations, practically new, £70; 1915 Harley-Davidson twin, 3-speed, almost new, £55; sidecar, 35/-; 1914 Auto-wheel, almost new, £8/8; 6h.p. 4-cyl. bicycle, m.o.i.v., clutch, low, battery ignition, £10; good 3½h.p. 1911 2-speed Humber, £17/10; see Cycle Cars); please call.—Liquidator, 10c, Waylett Place, West Norwood, S.E. [X8018

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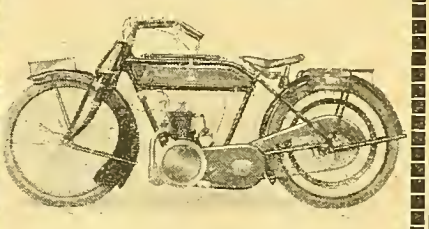
Sole London and District Agents for A.J.S. & British Excelsiors.

Sole District Agents for Calthorpes.

Contracting Agents for all other Makes.

Terms: Cash, Exchange, or Extended Payments.



1916 2¾h.p. 2-stroke **EXCELSIOR** 2-sp. and clutch £44 2 0
Coach-built Sidecar for same £10 10 0
Ideal for solo or sidecar work. At a minimum purchasing and running cost. Delivery from stock.

OTHER 1916 MODELS IN STOCK.

6 h.p. 3-speed **A.J.S.** Combination de Luxe, with Lucas dynamo lighting —
4 h.p. 3-speed **A.J.S.** Combination £93 17 0
8 h.p. British **EXCELSIOR,** 3-speed .. £78 15 0
2¾ h.p. **ALLONS,** 2-speed £42 0 0

Further selections.

NEW MACHINES.

	Usual Price. £ s.	Sale Price. £ s. d.
7-9 h.p. **HARLEY-DAVIDSON,** Model F	—	78 0 0
7-9 h.p. **HARLEY-DAVIDSON,** Model J	—	85 13 0
1915 2¾ h.p. **CALTHORPE-J.A.P.,** 2-speed, soiled	36 15	34 15 0
1915 2¾ h.p. **CALTHORPE,** 2-stroke, 2-sp., variable ignition	32 10	30 10 0
1915 2¼ h.p. **EXCELSIOR,** 2-stroke, shop-soiled	30 16	28 10 0
1915 5-6 h.p. **EXCELSIOR,** 3-speed, countershaft	71 8	66 10 0
MILLFORD Empress for H.-D. machines, new, latest model.	—	18 15 0
ROVER Coach-built Sidecar, with brake, shop-soiled	17 17	15 15 0

SECOND-HAND BARGAINS.

1915 3½ h.p. Lady's **BROUGH,** 3-speed, nearly new £53 0 0
1914 2-stroke **LEVIS,** 2-speed, fully equipped £32 10 0
1915 4-5 h.p. **ZENITH,** countershaft, nearly new £48 10 0
1913 6 h.p. **ZENITH** and Coach-built Sidecar £42 0 0
1913 5-6 h.p. **A.C. SOCIABLE,** hood and screen £37 10 0
1914 8 h.p. **ZENITH,** countershaft, and Bramble coach Sidecar £65 0 0
1911 **KERRY-ABINGDON** £20 0 0

Sole London and District Agents:

H. TAYLOR & CO., LIMITED,

21a, STORE STREET, TOTTENHAM COURT RD., LONDON, W.C.

Wholesale.....38, ALFRED PLACE,

Telephone: Museum 1240.
Telegrams: "Dynametro."

MOTOR CYCLES FOR SALE.

Miscellaneous.

PALMER'S Garage, Tooting.—The pre-eminent place for purchasing. Auctions fortnightly.

PALMER'S Garage, Tooting.—Write for illustrated dual catalogue. More interesting to motorists than a sixpenny magazine.

PALMER'S Garage, Tooting.—2¾h.p. Douglas, 2 speeds, clutch, kick starter; £32/10.

PALMER'S Garage, Tooting.—6h.p. 1912-13 Clyno, 2-speed, clutch, £25; one also with sidecar, £32/10.

PALMER'S Garage, Tooting.—3½h.p. Ariel and sidecar, variable gear, grand lot; £20.

PALMER'S Garage, Tooting.—1h.p. Auto-Wheel, late model, nice order; £7/10.

PALMER'S Garage, Tooting.—4h.p. T.T. James, very fast; great bargain, £18.

PALMER'S Garage, Tooting.—2½h.p. Royal Ruby, 2-speed J.A.P., reliable; £25.

PALMER'S Garage, Tooting.—2¾h.p. Sunbeam, Revere 2-stroke, 1915 model, as new; £25.

PALMER'S Garage, Tooting.—7-9h.p. Quadraat 1914 combination, countershaft gear; £40.

PALMER'S Garage, Tooting.—2h.p. Moto-Reve lightweight, £12; 2½h.p. Premier, £18; 2¾h.p. Royal Enfield, £18; 5-7h.p. Indian, £25; 2¾h.p. Torpedo Precision, £15; 2½h.p. O.K.-J.A.P., 1915, £26.

PALMER'S Garage, Tooting.—Next auction sale 5th January, at 2 o'clock. Catalogues free. Entries invited.—Sole address, Palmer's Garage and Motor Auction Rooms, 183, 185, 187, 189, High St., Tooting. 'Buses, trams pass doors. Railway stations, Wimbledon (L. and S.W. Rly.), only 20 minutes Victoria via Balham (L.B. and S.C. Rly.) [7990

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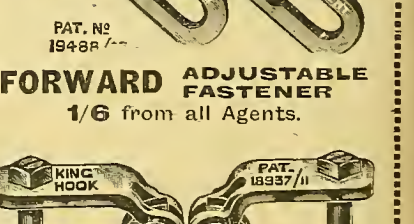

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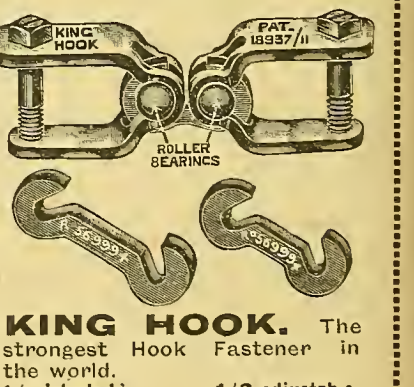

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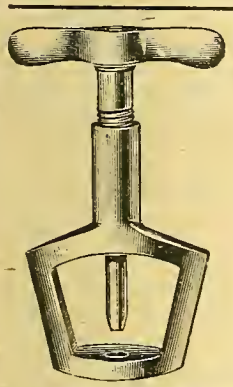

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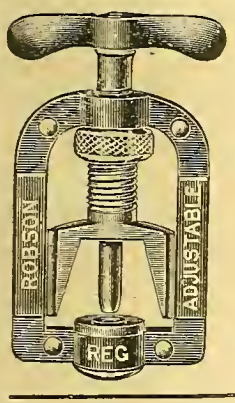

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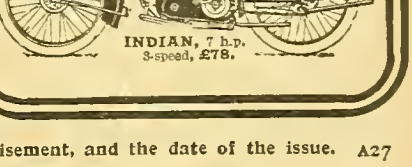

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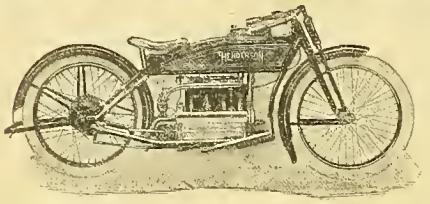

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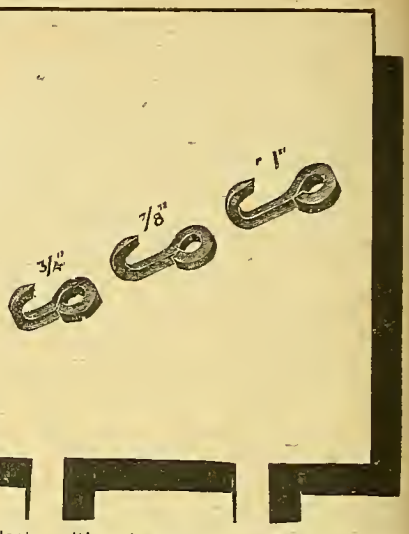

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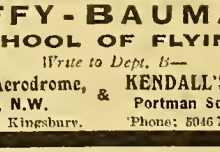

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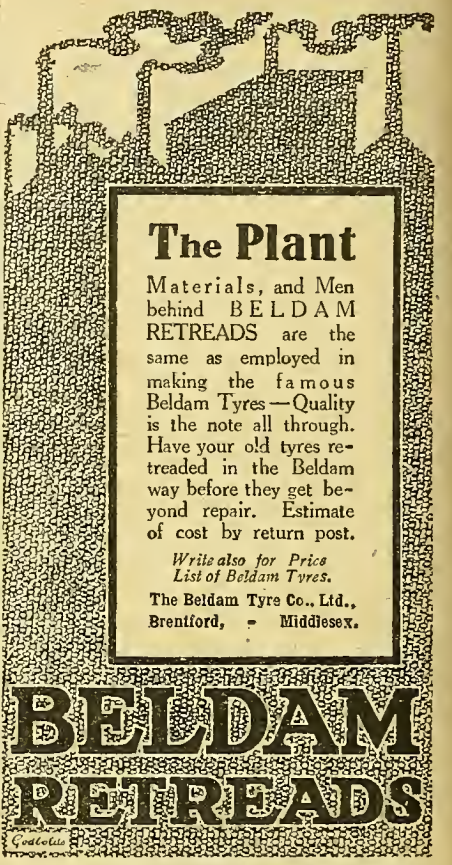
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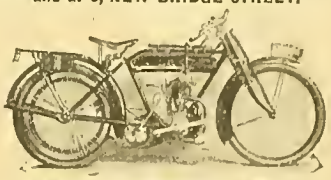

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All-British Lightweight Motor Cycle, for Solo or Sidecar.

ENGINE—3 h.p. Dalm, 2-stroke, 314 c.c. **GEAR**—2-speed Alb'on countershaft. **TRANSMISSION**—Dunlop ¾in. belt-cum-chain drive. **FRAME**—Specially constructed, very low saddle position. **FORKS**—Druid. **IGNITION**—E.I.C. variable. **TYRES**—Dunlop rubber-studded. **BRAKES**—Bowden front rim and foot-operated on back belt rim. **FOOTBOARDS**—Comfortable and strong aluminium. **SADDLE**—Lycett's Pan seat. **TOOLBAG**—Pannier style, fitted to back carrier. **STAND**—Swing back type, and clips on back mudguard. **CARRIER**—Tubular, very strong, and correctly fitted. **CARBURETTER**—Amac. **SILENCER**—Very large, fitted with two outlet pipes, giving no back pressure.

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Please compare with other makes at 40 Guineas.

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Ft. Ft. Ft.	£	s.	d.
6 x 4 x 6 high	2	1	0
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Wide double doors 2/6 extra.

These houses are made in sections to bolt together. Easily fixed. Made of well-seasoned ¾in. T. and G. and V-jointed Matchboards, and complete with floor and window. Roof felted with Patent Vulcanite Roofing. New illustrated Catalogue with prices of other houses post free.

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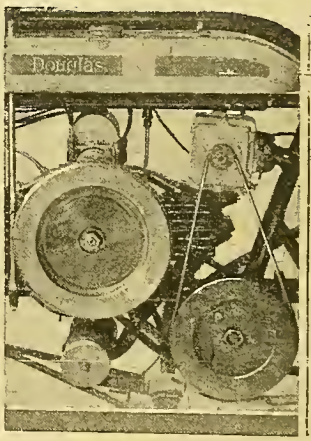

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ASK YOUR DEALER -

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Because

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The Pilot Jet,

Fitted to thousands of carburetters of all types during the last three years, has proved conclusively that a pilot jet is essential for—

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Send for interesting booklet on carburation; you will soon send for the By-pass, and add another to my splendid collection of testimonials.

PRICE 10/6. NO SUCCESS, NO PAY.

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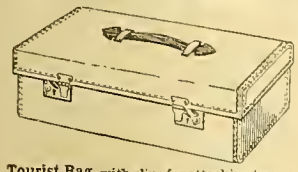
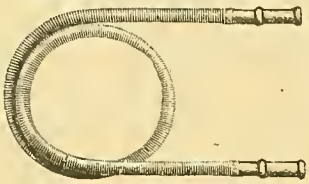


Tourist Bag, with clips for attaching to rear carrier. Well and strongly made, fitted with two English lever locks. Size 16 × 10 × 6in. No. B1/7. Brown waterproof canvas covered, each **12/6**



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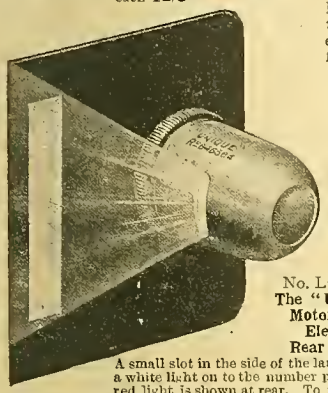

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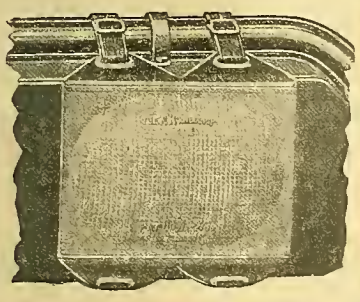
A small slot in the side of the lamp directs a white light on to the number plate, and a red light is shown at rear. To fix, drill a ¼in. round hole in the top right hand corner of the number plate and fasten with nuts provided. Price each **3/-** (less bulb). Bulbs extra **7d.**



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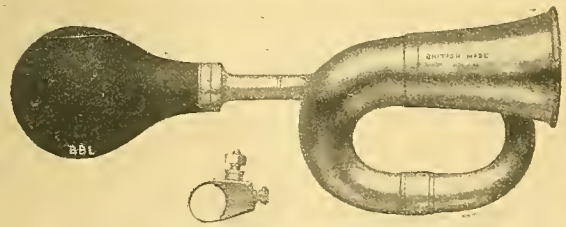

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Black ,, .. ,, **12/6**

No. 7 Swivel Brackets extra, **-/6**, as illustration.

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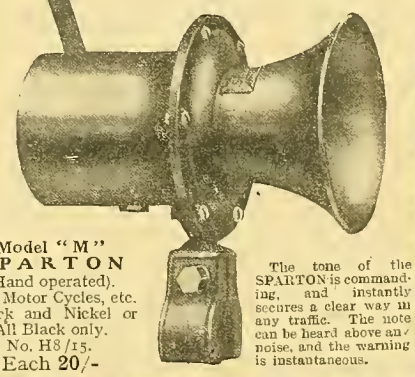

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(Hand operated).
For Motor Cycles, etc.
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The tone of the SPARTON is commanding, and instantly secures a clear way in any traffic. The note can be heard above any noise, and the warning is instantaneous.

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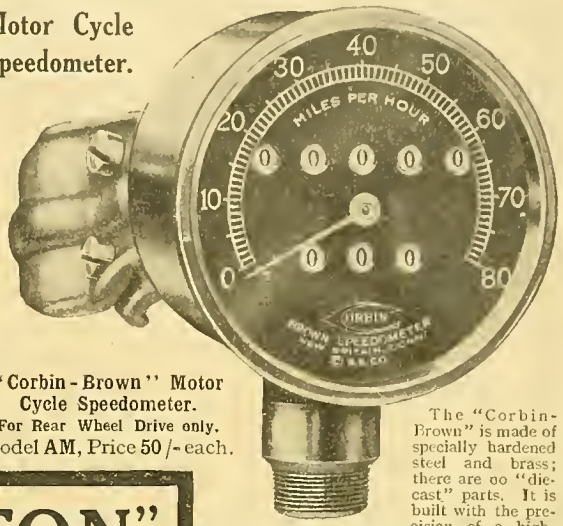
Motor Cycle Speedometer.



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Model **AM**, Price **50/-** each.

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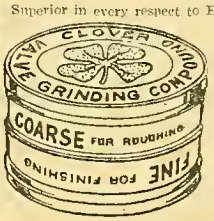
CLOVER Valve Grinding Compound.

Superior in every respect to Emery and other Abrasives.



Cuts quickly and smoothly. Clean to use. Very economical. Clover compound is supplied in the form of paste in tins. Always moist and ready for immediate use. Sold in **1/-** duplex tins. Of all Garages and Motor Dealers.

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British Manufacture.

An entirely new pattern of wire wheel cleaning brush, registered design. Made of the finest quality bristle, tapered shape. The point of the brush is specially finished off with a tuft of very stiff bristle, to get into corners. The brush throughout is well made and finished. No. B28/17 Motor cycle size, each **2/6**

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"Flash" cleans the hands and everything better and quicker than soap; it leaves the skin absolutely clean and free from injurious and unhealthy matter. "Flash" is thoroughly antiseptic, beneficial to the skin, and may be used with hard, soft, hot, cold, or salt water.

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SECOND-HAND.

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Special purchase of Nickel-plated Hand-operating Mechanical **Horns,** most effective road clearer. Each **15/-**

Pigskin **Tool Roll** with adjustable strap down centre, **6/6** With two adjustable straps, **7/9**

Cleaning Roll, made from Cotton Waste, 50 yards double width. A roll **5/6**

Pigskin **Tool Bags,** handbag shape, each **8/-**

Spare **Tube Cases** of Nut Brown Leather each **5/-**

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Motor Cycle **Tool Bag** for fixing on back carrier, 8 x 3½ x 4½ in., in Nut Brown Leather, each **6/6** (size 9½ x 5 x 6 in., each **7/9**).

SELFRIDGE'S

Motor Cycle Section

(Between Men's Annex & Main Building).

SELFRIDGE & Co., Ltd., Oxford St., W.

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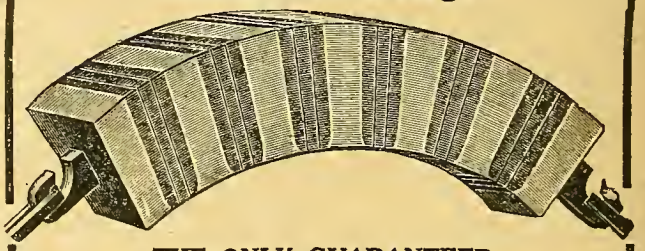
Rubber and Leather.

Guaranteed mileage.



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We are desirous of extending our special offer to readers of "The Motor Cycle" **Abroad,** and as it takes some time to get answers to advertisements, we have decided also to give **Home Readers** a further 14 days during which they may purchase our belts at the following special prices :—

7/8"	1"	1⅛"	1¼"	
28/-	30/-	34/-	36/-	USUAL PRICE for 8ft.
22/-	**23/-**	**24/-**	**25/-**	**SPECIAL PRICE** for any length up to 8ft.

WHAT USERS SAY:

124, North End Road,
West Kensiogton, W.

Gentlemen,

Re the belt supplied to me early this year, I am more than delighted with it. I have done 2,126 miles so far with my Rudge Multi and sidecar. It has never given any trouble yet; it **will** not slip, and has a great advantage over any rubber belt, as it is **unbreakable** under all conditions. My belt is still good for another **3,000 miles at least.**

Yours truly,
H. RIDGWELL.

22, Parkfield Street, Rusholme.

To the Zilla Belt Co., Ltd., Manchester.

Dear Sirs,—Kindly forward at once one of your Zilla Belts. I have run same on my Rudge-Multi over 2,000 miles; it is still in PERFECT CONDITION. I find it very satisfactory, having no trouble with slipping, etc., and should certainly not think of using any other. A friend of mine whom I got to try one, says he would go miles out of his way to get a Zilla Belt.

Wishing you every success,
Yours respectfully, A. F. HOLDEN.

Perfect drive for **POWERFUL COMBINATIONS.**
Equal in wear to 4 or 5 Rubber Belts.
Requires NO Fastener.
Finest All-weather Belt.
Excellent Belt for Variable Pulley Gears.
Consider it the finest Belt on the Market.
Transmission without loss of power.

The "ZILLA" is the ONLY PERFECT Belt.
Get a "ZILLA" and end all your Belt troubles.

Don't delay, send to-day Postal Order or Cheque to:

THE ZILLA PATENT BELT Co., Ltd.,
101, Gt. Western Street, MANCHESTER.

The Holidays are coming.

By far the most delightful holiday can be obtained on an

Alldays Allon (Regd) Two-Stroke

the machine that is not only free from trouble, but includes so many special features. Here are just a few:

Engine (Patented). All working parts easily detached for cleaning or inspection. Long bearings. All independently fed with oil by semi-automatic drip feed. Inside fly-wheels. All parts machined.

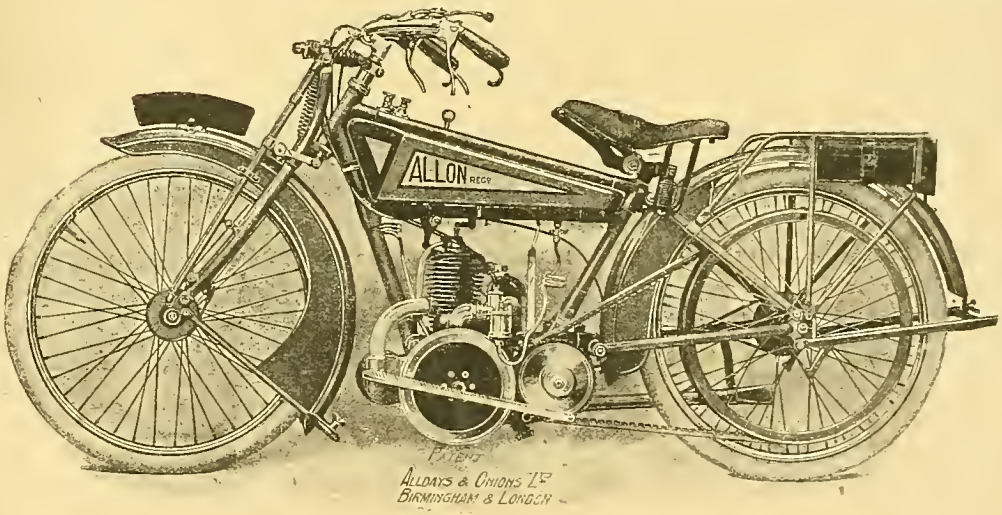
Simple. Few working parts. No valves or springs.

Economical: Over 100 miles to the gallon.

Speedy and comfortable.

Frame: Designed to give low position.

Well mudguarded. Comfortable Saddle. Countershaft Drive.



Price: Single-speed, £30 plus 5% advance. Two-speed, £37 plus 5% advance. Two-speed, hand-controlled clutch, £40 plus 5% advance.

There are other features enumerated in the free Booklet. Send for it now.

Alldays & Onions (Pneumatic Engineering) Co., Ltd.,
Established 1650.
Matchless Works .. .. .. Birmingham.
London ... ... 58, Holborn Viaduct, E.C.
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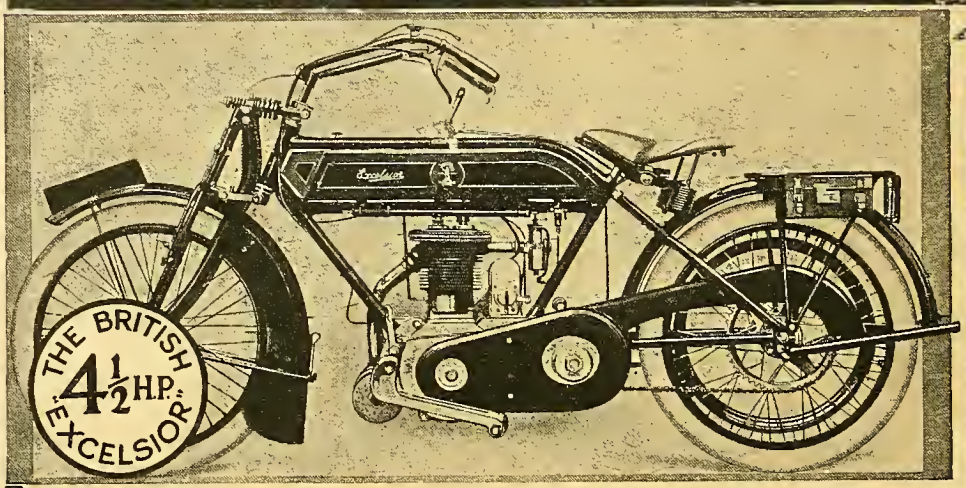
The BRITISH "EXCELSIOR"



Good Value.

The British "Excelsior" 4½ h.p. is a fine solidly built machine—good all through, and as reliable as it is possible for a motor cycle to be. "Excelsior" Motor Cycles have been famous for 15 years for high efficiency and low maintenance costs. You cannot buy better value.

PRICE.

With chain-drive counter shaft three speed gear .. **£64**

With Sturmey-Archer three speed gear and belt **£58**

Above prices subject to an advance of 5 per cent.

Complete details in New Catalogue, sent post free.

Bayliss Thomas & Co., Excelsior Works (Founded 1874), Coventry.

Agents: **London**—H. Taylor & Co., Store St., W.C. (Sole Agents). **Birmingham**—C. Hefford, 156, Ladypool Rd. **Northampton**—G. Loveday and Co., 2, Kingsley Park Terrace. **Bedford**—E. Bristowe & Co., 47, St. Peter's. **Manchester**—Reynolds Bros., 33, Downing St., Ardwick. **Liverpool**—Hill & Bascombe, 165, Duke St. **York**—Reg. Smith & Co., 138, Micklegate. **Sheffield**—H. Eggington, 9, Commonside. **Hull**—Mehew & Bailey 38, Charlotte St. **Gloucester**—C. Healey & Son, Ltd. **Lancaster**—B. Townley, Townley's Garage. **Plymouth**—B. Hearley, 70, Ebrington St. **Blackburn**—J. McLellan, 27, Boland St. **Glasgow**—W. Scott & Son, 156, North St.

Godbolds.

Buy a G.W.K. Light Car—and SAVE MONEY.

Low petrol consumption, long life of tyres, simplicity of design, and durability of working parts mean low running costs. Because the G.W.K. possesses, in an unequalled degree, all these features, it has the lowest upkeep of any light car in the world. Ask a friend who owns one, or write for users' opinions.

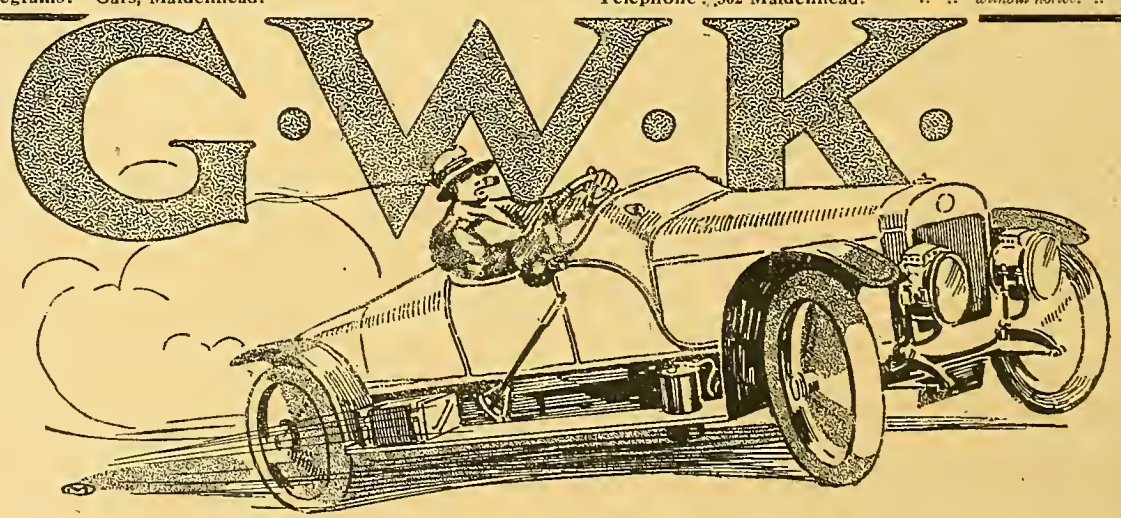
Standard Model, 2-cyl., water-cooled engine, friction drive, variable speeds and reverse, hood, screen, five detachable wheels with tyres, lamps, tools, etc.

170 Gns.

Price is subject to alteration without notice.

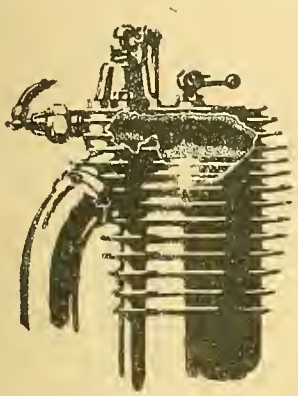
G.W.K. LIMITED, CORDWALLES WORKS, MAIDENHEAD.

Telegrams: "Cars, Maidenhead." Telephone: 562 Maidenhead.



CARBON DEPOSIT

What causes it. How it can be avoided.



Of all the puzzling problems you face in motor-cycling, none is more confusing than—Carbon Deposit.

Barring mechanical troubles, faulty carburation and ignition, carbon deposit from lubricating oil may be summed up as follows:—

Carbon Deposit is caused by excess lubricating oil burning in the combustion chambers.

Prevent the presence of excess oil and you avoid undue carbon in your combustion chambers.

In some motors, the piston stroke will, by suction, draw a light oil too freely to the piston heads. In other motors a heavy oil will work to the piston heads.

In either case excess carbon will be deposited.

The remedy is obvious.

Keep excess oil from your combustion chambers by using an oil whose body and quality fit the mechanical conditions of your motor.

Every day it is being demonstrated that Gargoyle Mobiloils give remarkable freedom from carbon deposit.

Why? Not because Gargoyle Mobiloils are entirely free from carbon-giving properties. Such oils cannot be produced.

Simply because there is a grade of Gargoyle Mobiloil fully suited to the mechanical conditions of each type of motor.

The correct grade of Gargoyle Mobiloil will not reach the combustion chambers in excess quantities.

If the oil is not there to burn, it naturally cannot give carbon deposit.

It is sometimes said that the body of an oil indicates the amount of carbon it will deposit. Such advice is incorrect.

In many motors a light-bodied oil will deposit far more carbon than a heavy oil, due to the excessive quantity that works past the piston rings.

Oils have sometimes been put forward as "containing no carbon." All petroleum oils are chemical compounds, consisting almost entirely of hydrogen and carbon. To remove the carbon in chemical combination would destroy the oil. Free carbon and other impurities are easily removed.

Your safeguard against undue carbon deposit is to use the grade of Gargoyle Mobiloil especially suited to the mechanical conditions of your engine.

Gargoyle Mobiloils are sold by dealers everywhere.

GARGOYLE

Mobiloils

A grade for each type of motor.

WRITE TO-DAY

Send particulars of your machine, and we will tell you the correct grade of Gargoyle Mobiloil for efficient lubrication.

Booklet free on request.

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—the ORIGINAL All-enclosed Chain Driven Motor Cycle with Countershaft 3-speed Gear is The

"JAMES"

—and, when selecting, let that fact influence you to INVEST in the famous JAMES—the mount which was chosen for Military purposes by the

English, Belgian, French, & Russian Governments.

The JAMES full range of models is as under:

No. 6. 4¼ h.p. "Big Single" 3-speed, for Sidecar 60 Gns.
or complete with James Canoelet Sidecar, 13 Gns. extra.
No. 7. 3½ h.p. Twin, 3-sp., with hand-controlled clutch, Solo, 60 Gns.
No. 8. 2½ h.p. 2-stroke, 2-speed, Lightweight .. .. .. 35 Gns.

Our Sole Agents in all the principal Towns have the JAMES Models on view—you should call and inspect them WITHOUT DELAY. In any case, ask us for Catalogue, which describes all our machines fully—a Post Card will bring you copy.

The JAMES CYCLE Co., Ld., Greet, B'ham.
London Depot: 22, Holborn Via., E.C. B'HAM: 9, Broad St. Corner.

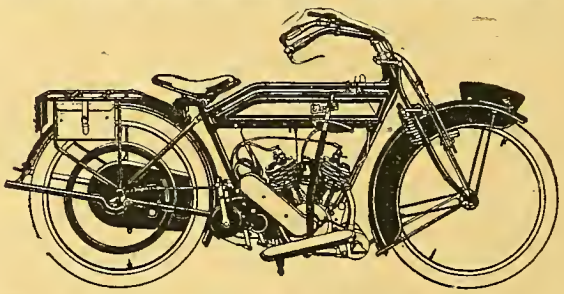

Illustration of the JAMES No. 7 3½ h.p. Twin, 3-speed, 500 c.c.—a fast, powerful, comfortable, economical mount—ideal for Solo Touring purposes. It incorporates all the many well-known features so long associated with the JAMES name. **PRICE 60 GUINEAS.**

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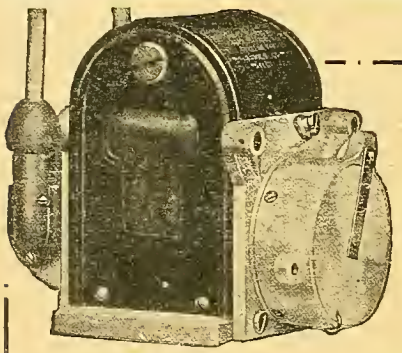

Dixie 20.

A new type high-tension Magneto suitable for light-weight twin Motor Cycle engines. Gives a very hot spark at very low speed, and of same intensity whether advanced or retarded. Dixie 10 is a similar model, suitable for light-weight singles.

For Easiest Starting

at lowest speeds—for highest Efficiency at top speed—no possible drain on the battery—no nursing of the advance or retard—just ideal ignition, sturdy and steady, and GUARANTEED, there is nothing to equal the

DIXIE 20TH CENTURY MAGNETO

SPARES Always in stock in London. Any part sent by return.

AMERICAN SUPPLIES Co., Ltd.,
Direct British and European Representatives for Splitdorf Electrical Co., Newark, U.S.A.
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Wind—
Rain—
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—any sudden change in the weather may come—even these fine days. Be prepared—protect your passenger by having a Hercules Sidecar with the unique all-weather equipment. Hercules fittings are worthy of the famous
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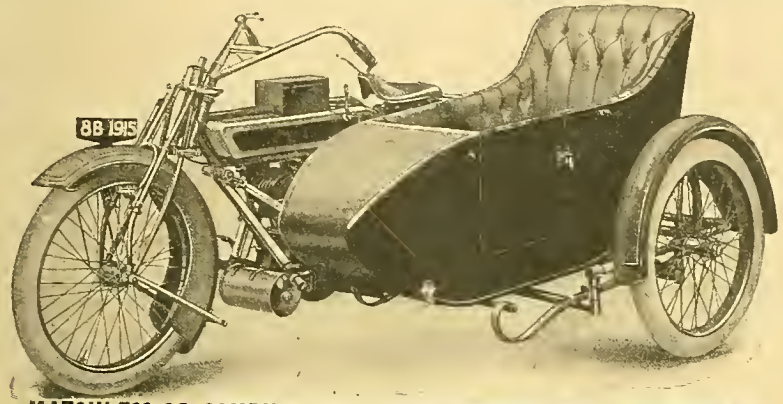
and are made in our own factory especially for our own sidecars from the very finest materials. The Hood is as rigid, waterproof, and strong as any big car hood, and the Windscreen is perfectly fitted to the sidecar "dash," free from rattle, and out of the way of the door which opens independently. Further particulars in the Illustrated Catalogue from—
HERCULES CYCLE AND MOTOR CO., LTD., CONYBERE ST. BIRMINGHAM.

Matchless



MATCHLESS 8B COMBINATION. Powerful, Reliable, Silent, and Distinctive.

Owing to Government requirements, it is absolutely impossible for us to keep pace with orders for Matchless sidecar combinations, and we appeal to the Patriotism of disappointed clients to excuse the non-delivery.

H. COLLIER & SONS, LTD. PLUMSTEAD. S.E. CAM.

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READERS of "The Motor Cycle" wishing to insure a motor cycle, sidecar, cycle car, or light car, can obtain quotations for suitable policies by filling in the attached form and forwarding it to:

The Manager, Insurance Dept.,
"THE MOTOR CYCLE" Offices, Coventry.

SPECIAL . NOTE. .

A copy of

THE MOTOR CYCLE

is supplied by post each week for twelve months with all policies upon which the premium is not less than

£2 : 7s. : 6d.

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Make of Machine.	H.P.	Date of Manufacture.	Present Value.	Registered Number.

Will machine be driven solely by owner? .....

" " " " " for pleasure? .....

Will passenger be carried on luggage carrier or pillion of motor cycle? .....

Name .....

Address .....

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A Monthly Competition

for

Despatch Riders at the Front,

or otherwise connected with the Allied Forces.

INTERESTING LETTERS.

The best letter relating to the doings of the Rudge

Each Month - - £5

The 5 next best letters

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The most interesting letter making reference to the Rudge received during the War, whether having previously won a prize or not

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CONDITIONS.

Photographs may be any size, may be unmounted, or the negatives may be sent in undeveloped, in which case the package must be clearly marked on the outside "**Undeveloped Negatives.**"

Competitions received by us on or before the last day of each month will be adjudged for that month, and must be addressed **Rudge-Whitworth, Ltd., Coventry,** writing in the top left corner of the envelope the word "Competition."

Competitors must be prepared to obtain verification of information from a superior officer should it be desired.

The decision of the Directors of Rudge-Whitworth, Ltd., is final.

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ECONOMIC.—Retreading Specialists.

ECONOMIC.—Dunlop 1913 Clearance Lozenge Covers, 26×2¼, 19/6; 26×2 rubber studded, heavy, 15/-; 26×2, three-rib, 14/-; best English make.

ECONOMIC.—650×65 Pillions, 18/-; 26×2½ extra heavy lozenge, 18/-; best English make.

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ECONOMIC.—Kempshall 1915 clearance non-skids, 26×2¼ 35/-, 26×2⅜ 38/-, 26×2½ 40/-, 650×65 50/-, 26×3 52/6, 28×3 55/-; anti-skid, 28×3, 30/-.

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ECONOMIC.—Kempshall, 700×80, steel studs in fibre, 60/-; Continental, 700×80, plain, 30/-; tubes, 8/-, for 650×65 rims.

ECONOMIC.—Goodyear very heavy safety tread, 26×2¼ covers 19/-, listed 32/3; 26×2⅜ oversize for 26×2¼ 23/-, listed 40/6.

ECONOMIC.—Continental brand new 1915 pattern Model de Course, 26×2¼ 17/6, listed 30/-; 26×2⅜ 19/6, listed 31/3; 26×2½×2¼ 20/-; 26×2½ 20/-, listed 33/3.

ECONOMIC.—Continental Model de Course, 28×2½, 19/-; Continental basket pattern, 26×2¼, 18/6; 24×2, 15/-; 24×2 heavy rubber studded, 15/-.

ECONOMIC.—Pirelli very heavy ribbed covers, 26×2½ 25/-, listed 45/-; rubber-studded 18/6.

ECONOMIC.—Wood-Milne 26×2½, few at 15/- to clear; 26×3 butt-ended tubes, 7/6.

ECONOMIC.—Midland Britannic heavy rubber studded, 26×2½, 17/6; Michelin, 26×2, 10/-; 28×3 tubes, 8/3, guaranteed.

ECONOMIC.—Shamrock-Gloria 26×2⅜ extra heavy oversize fluted covers for 26×2¼ rims, 20/-.

ECONOMIC.—Miracle 6-ply very heavy covers, 26×2⅜, oversize, for 26×2½, suitable for 5-6h.p. sidecar machines, 35/-, listed 53/-.

ECONOMIC.—Continental 1915 Belting, ¾ 11d., ⅞ 1/-, 1in. 1/3, 1⅛ 1/4; fastener free all belts.

ECONOMIC.—Avon Belting, brand new, 1914 pattern, ⅝ 10d., ¾ 11d., ⅞ 1/3; Clincher Flexis belting, 7ft. 6×⅞ 7/6.

ECONOMIC.—7/6 allowance for old tyre off practically all 1915 makes; Palmer, Avon, Dunlop, and Kempshalls in stock.

ECONOMIC Tyre Co., 137, Lewisham High Rd., New Cross. Special clearance lines. [8014

BASTONE'S.—New Clearance covers and tubes as below:

BASTONE'S present to purchasers of Goodyear, Stelastic, and Continental covers only a 3/- repair outfit.

BASTONE'S.—Goodyear rubber-studded 26×2¼ 19/- (list 32/3), 26×2⅜, for 2¼ rims, 23/- (list 40/6), 26×2½ 25/- (list 41/3).

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BASTONE'S.—Stelastic extra heavy covers, 26×2½ 27/6.

BASTONE'S.—Peter Union heavy covers, 26×2 12/-, 26×2¼ 15/-, 26×2½ 17/-, 28×2 15/-.

BASTONE'S. — Hutchinson Brooklands rubber-studded, 24×2 12/-, 26×2 12/-.

BASTONE'S.—Hutchinson Passenger, 26×2¼ 25/-, 26×2½ 25/-.

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BASTONE'S.—Guaranteed red tubes, 26×2 4/6, 26×2¼ 4/9, 26×2½ 6/-, 26×3 7/3, 28×2½ 7/3.

BASTONE'S, 228, Pentonville Rd., King's Cross, London, N. [8037

BRAND New Tyre for Auto-Wheel, not used; 9/-.—18, Bellevue Gardens, Clapham. [X9764

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TWO 28×2¼ Beaded Palmer and two Continental covers, as new; 7/6 each, tubes 4/- each, not repaired.—95, Hancock Rd., Saltley, Birmingham. [X9945

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"ERIC S. MYERS,"

Scott Specialist.

The most luxurious combination on the road:

A "Scott" and "Myers" Sidecar.

MYERS SIDECARS, coach-built, £17 10 0

Write for Illustrated Booklet.

NEW MACHINES,

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1915 3¾ h.p. **SCOTT,** 2-speed, kick start ... £65 0
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"NO WORRY" DEPOT,

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NEW 26×2¼ Heavy Dunlop Tyres, 16/-; 650×65, 19/- each, fit 26×2¼ wheels; tubes, genuine 650×65 Clinchers, 7/6 each.—Motor Tyre Stores, 447, Richmond Bridge Parade, Twickenham. [7433

SHOP-SOILED Clearance Covers, 1915, extra heavy, 26×2¾ Dunlop 25/-, 26×2½ 27/6, 26×3 (fit 2½) 28/6, 26×2¼ extra heavy Bates 25/-, 26in. tubes 4/6, best known rubber belts, 8ft. 1in. 9/6, 8ft.×⅞in. 8/6; on approval against cash.—Albert L. Pitts, Redditch. Tel.: 91. [X9862

SPECIAL Tyre Bargains.—Heavy 3-ribbed, press moulded, all sizes, 21/-; heavy rubber studded, 17/6; lightweight rubber studded, 12/6; we have only a limited number, so send at once. Also a few rubber belts at bargain prices. Money returned willingly if dissatisfied.—The Shamrock Co., Rochdale. [4945

CONTINENTAL Brand New Unsoiled Tyres, not clearance; a great opportunity; 26×2 standard 13/3, rubber-studded 15/6, Model De Course 20/9, 26×2¼ standard 18/-, T.T. basket pattern 21/3, rubber skid 17/-, 26×2½ standard 20/-, Model De Course 26/6, sidecar 14/9; ditto tubes, 2in. 5/3, 2¼in. 6/-, 2½in. 6/9; heavy grooved Sirdar 650×65, 30/-.—Armstrong and Co., 17, Goldhawk Rd., London, W. [7993

A MOTOR Cyclist's Never-ending Requirement is Tyres, and a matchless couple are Moseley and Clincher; Moseley for trustworthiness and economy—regular prices, and Clincher of never-waning popularity and outstanding merit at prices unapproachable elsewhere. Clincher clearance motor covers, perfect and unsoiled, all sizes, rubber-studded, beaded, and oversizes, Dreadnought 29/-, De Luxe 22/6; Hutchinson Tourist Trophy, 23/-; inner tubes, guaranteed, 5/6. Agents all regular lines, all makes, sent by return over England, Wales, Ireland, and Scotland; 5/- allowed for old covers when regular lines purchased.—Scottish Autocar Co., 17-21, Slateford Rd., Edinburgh. [X9395

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HENRY SKERRETT, Chartered Patent Agent, 24, Temple Row, Birmingham.—Patents, trade marks, and designs. Motor patents a speciality. [0636

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REX MUNDY, after 8 years' successful competition riding, offers unbiassed expert advice on selection of motor cycles, light cars, etc.; second-hand machines examined; tuition; moderate fees.—Write, 19, Grafton Mews, Warren St., W. [7083

INSURANCE.

FOR Insurances of all kinds (speciality motor), apply, Ernest J. Bass, Insurance Broker, Bishops Stortford. [0693

GARAGES.

GARAGE Accommodation, cycles 4/- monthly, motor cycles 8/- monthly, motor cycles with sidecars 10/- monthly, tricars and parcel cars 13/- monthly, cycle cars 20/- monthly; written application preferred.—Villiers Street Garage, Charing Cross, London. [7669

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WANTED, motor cycle mechanic, overhauling and testing.—Apply, Wauchope's, 9, Shoe Lane, London. [X9802

WANTED, good all-round motor cycle mechanic; only those ineligible for the army need apply.—Godfrey's, 208, Gt. Portland St., London, W. [X9833

PERSONAL.

REWARD Offered.—The Adelaide Motor Co., 84, Chalk Farm Rd., N.W., have, since starting business, lost a customer. Finder should call at above address, or 'phone 6058 Hampstead. [7984

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SPARES.—Morgan and Maxwell, Streatham. [X7877

1914 Triumphs, good price given.—Bunting, Harrow. [7942

WANTED, 2 or 3-speed gear, to fit Bradbury.—Small, Grocer, Cannock. [X9414

WANTED, N.S.U. gear, fit Rex; cheap.—C. F. Lumbard, Ashbourne. [7983

MOTOR Cycle 2 or 3-speed Hub.—Johnston, 8, Ardgreenan Drive, Belfast. [X9931

N.S.U. 2-speed Gear, for Rex, 1913, belt drive.—40, Albion St., Earby, Colne. [X9932

WANTED, Old Pattern 60° N.S.U. Engine or parts. —Barker's Garage, Hanwell. [7945

WANTED, wired-on covers, 26×2¼.—Blaik, 160, Appin Crescent, Dunfermline. [7923

WANTED, light motor cycle, 1913, 1914, 2-speed.—15, Lansdowne Grove, Neasden. [7761

LADY'S Machine, any condition, cheap.—Winifred Gowdey, 895, Fulham Rd., S.W. [7951

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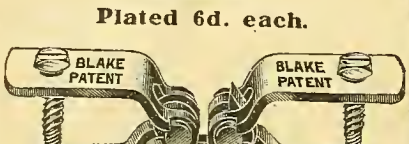

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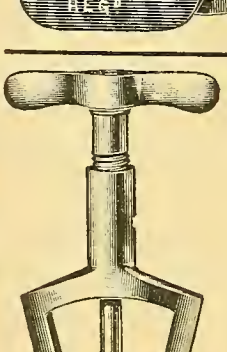

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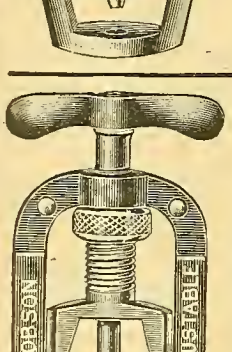

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A.B.C., 1913-14, 6r 3½h.p. Indian.—H. W. Thornton Jones, Borthwen, Menai Bridge. [X9842

WANTED, 1915 Calthorpe-Jap. — Percival, The Pyghtle, Northcourt Av., Reading. [8011

3½h.p. Engine, Minerva, with mag.; cheap for cash.—37, Kidderminster Rd., Croydon. [7925

SMART Modern 4-seat. Car wanted in exchange for landaulet.—Palmer's Garage, Tooting. [8044

WANTED, good offer of 1914-1915 B.S.A. sidecar.—Bateman, Milnthorpe, Westmorland. [X9420

J.A.P. Engine, twin, 5h.p., 654cc., with magneto.—Sampson, The Rath, Milford Haven. [7774

SPRING Forks, Druid or Saxon, heavyweight.—2, Booth Lane, Blackley, Manchester. [X9869

WANTED, good combination; cash or land; no dealers.—14, Viaduct St., London. [7899

LIGHT Sidecar, for T.T. Triumph; cheap.—9, The Crescent, Burlington Lane, Chiswick. [7991

WANTED, sidecar combination, 1913, 1914 for cash.—H.C., 43, Essex St., Strand. [7999

AUTO-WHEEL, any condition, cheap for cash.—Taylor, 177, Yorkshire St., Rochdale. [X9376

TRIUMPH Free Engine Wheel, with or without back stays.—Missin, Cottingham, Hull. [X9875

BACK Wheel. 26×2½in., beaded, 20in. belt rim, 2¾in. projection.—37, Alpine, Redhill, Surrey. [7810

100 Motor Cycles Wanted; spot cash paid.—Bring or send, Palmer's Garage, Tooting. [8043

WANTED, 1914-15 6h.p. combination; cash.—Warr, 275, North Woolwich Rd., Silvertown. [7929

WANTED, lady's modern 2-speed motor cycle.—R. Williams, The Heath, Edenbridge, Kent. [7798

BACK Wheel, free engine or fixed, 1in. belt rim, with or without tyre.—Bunting, Harrow. [7944

WANTED, 3½h.p. motor cycle, Triumph preferred, about £20.—18, Foster Hill Rd., Bedford. [7854

WANTED, 2-stroke Lightweight; give £10 and Singer mag. lightweight.—Briggs, Whitby. [7946

DOUGLAS 2-speed wanted, good, cheap for cash.—Write, J., 54a, Redcliffe Sq., Earl's Court. [X9851

WANTED, multi pulley, with free engine, for L.M.C. —Williams, Glyn, Llanbedrgoch, Anglesea. [X9695

DOUGLAS, 1912, wanted; £16 cash waiting.—Particulars, Ottley, 52, Church Rd., Guildford. [7932

WANTED, B.S.A., James, or Swan sidecar, 1914-1915.—Bateman, Milnthorpe, Westmorland. [X9421

REX Rear Cylinder, etc., a.o.v., perfect.—Walker, Bridge St., Cannock Rd., Wolverhampton. [X9897

1913 3½h.p. Rudge Multi, good condition, for cash; appointment.—Dawson, Oundle, Northants. [X9847

COMBINATION, powerful, 1913, or later; cash waiting.—Particulars, Gill, 3, Primet Hill, Colne. [X9964

WANTED, Douglas, 2 speeds, free engine; cheap. —Bailey, Wellington St., Ripley, Derbyshire. [X9792

DOUGLAS, 2¾h.p., 1913 to 1915, must be perfect condition.—Frank Maddison, St. Neots, Hunts. [7906

2-SPEED 2-stroke Calthorpe wanted; give £24 cash.—1, Heath Gardens, Twickenham, London. [7902

RIFLE, Lee Enfield, few Morris tubes, Martini, and bayonets; cheap.—7, Wilton Rd., Handsworth, Staffs. [X9698

WANTED, magneto carburetter, tyres, lamp set, speedometer.—Burr, 2, Wakefield Rd., Tottenham. [7883

WANTED, motor cycles; spot cash.—Wandsworth Motor Exchange, Ebner St., Wandsworth, Town Station. [X3126

JUNIOR Triumph or Clyno, 1914 or 1915, 2-stroke, must be sound condition.—Leycester's Lodge, Kenilworth. [X9672

SPEEDOMETER, 5-65, repeat, complete, perfect; cheap.—30, Grimshaw Lane, Newton Heath, Manchester. [X9714

WANTED, 1914 Morgan; will give 1914 Douglas part payment.—Daines, Old Station Rd., Newmarket. [7767

WANTED, Hendee Red Indian, sidecar; state lowest on approval.—2, Egton Ter., Birtley, Durham [X9927

MODERN Motor Cycles; good prices paid. 'Phone: 169, Walthamstow.—Lamb's, 151, High St., Walthamstow. [7833

WANTED, good combination; full particulars, lowest cash price.—80, Ruby St., Old Kent Rd., London. [7886

N.S.U. 2-speed Gear or similar, to fit Triumph.—Particulars, W. Marshall, 21, Bellfield Lane, Portobello. [X9975

WANTED, motor cycle and sidecar on hire 2 weeks in July.—Write terms, 41, Harborough Rd., Streatham. [7780

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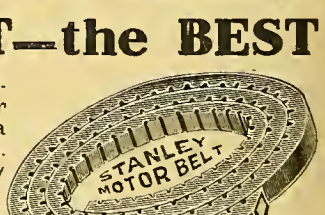

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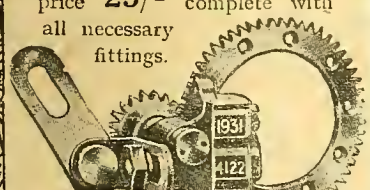

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MAGNETO, anti, for 3h.p. single, in good condition; approval, deposit.—Simmons, 4, Eden Grove, Byfleet, Surrey. [7697

WANTED, 1913 or 1914 Douglas, for cash; must be good and cheap; no dealers need apply.—2, Belmont Rd., Luton. [7990

SMALL 2-seater, must be good; exchange for new motor cycles, Indian, Enfield, etc., or larger car.—Bunting, Harrow. [7943

WANTED, magnetos, any size or condition; motor goods, any kind.—Grove, 224, Fore St., Upper Edmonton, London. [7917

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F.N., 4-cyl., clutch model, 2-speed preferred; state age, condition, price.—Box No. 7,929, *The Motor Cycle* Offices, Coventry. [X9785

SECOND-HAND Motor Cycles purchased for cash. Send particulars and lowest prices.—Service Co., 292, High Holborn, W.C. [0679

WANTED, good solo mount, Douglas preferred; full particulars, lowest cash price.—I, Bowles Rd., Old Kent Rd., London. [7885

DOUGLAS, 2¾h.p., T.T., new condition, other known make considered.—Particulars to C. Tarraut, 21, Market Place, New Malden. [7778

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WANTED, 1914 combination; fullest particulars, lowest cash price.—Corporal Dungey, A.S.C., Cambridge Cottages, Woolwich. [7898

WANTED, motor cycle, clutch or speeds, not earlier 1912; London district.—Box L806, *The Motor Cycle* Offices, 20, Tudor St., E.C. [8032

WANTED, Douglas, late model, or 1913 3½h.p. 3-speed Triumph, must be in good order; cash waiting.—Tollady, Bicester, near Oxford. [X9905

WANTED, twin Precision, 8-10h.p., new or second-hand, must be in good condition, air or water-cooled.—191, Sweetman St., Wolverhampton. [X9760

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BACK Frame, for 1911 Speed King Rex, to take Armstrong gear, or N.S.U. pulley, suitable for the above.—2, Ellesmere Rd., Stockton Heath, Warrington. [7749

WANTED, B.S.A. combination, or Morgan, Model de Luxe, late model; must be cheap.—Hunter, Central Fruit Stores, Cape Hill, Smethwick, Birmingham. [X9767

WANTED, front cylinder, piston, induction pipe, tank, all for 1913 twin Rex; B.B. carburetter, saddle, oil and petrol pipes, 2½ tyres.—Hole, 129, Park Lane, Carshalton. [X9881

WANTED, frame, Zenith-Gradua preferred, suit 6h.p. J.A.P. twin; sell or exchange 1912 F.E. Rudge, complete, perfect order, £25.—Butterfield, Biggar Bank, Barrow-in-Furness. [X9903

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MOTOR Cycles of any good make wanted; good cash price paid on the spot. Write, and send full particulars and price, or call with the machine if possible.—Colmore Depot, 31, Colmore Row, Birmingham. [X8595

WANTED, second-hand solo or sidecar combinations, for cash, or exchanged for 1915 models. 30 new models in stock ready for delivery. Best terms quoted.—Elce and Co., 15, Bishopsgate Av., Camomile St., E.C. [0597

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WILL Give £20 Cash and 2-speed Bat-Jap Combination for Humberette or good cycle car.—Palmer's Garage, Tooting. [8046

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SANDERSON Camera (Junior), tripod, etc., £6/10; exchange new Jones speedometer, or sell £2/15. —Police Station, Fulwood, Preston. (D) [X9789

EXCHANGE N.S.U. and Sidecar, mag., 2-speed, and free engine, for cycle and cash; sell £10.—Blackburn, Albert Hall Buildings, Brighouse. [X9942

12h.p. Darracq, 4-seater, 5 lamps, hood, screen, Stepney; any trial; exchange good combination, or sell £45.—H. Bristow, Kinross, Cremorne Rd., Chelsea. [X9748

6h.p. 1913 Sparkbrook Combination, 1914 gear box, splendid condition; exchange for lower power outfit and cash.—Nixon, Brampton, Cumberland. [X9815

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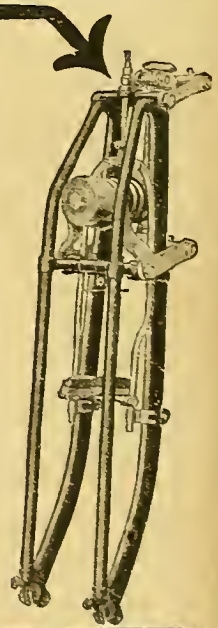

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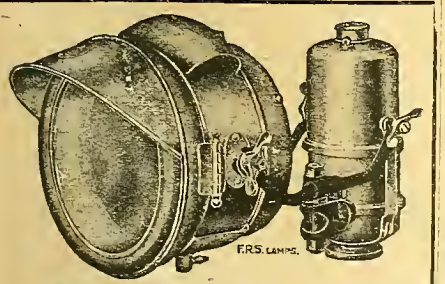

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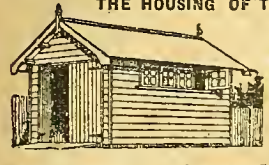

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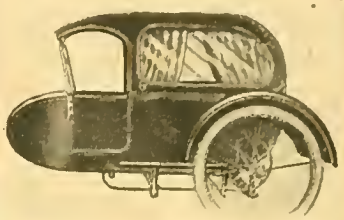

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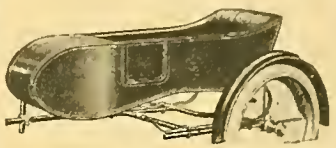

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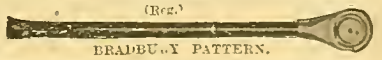

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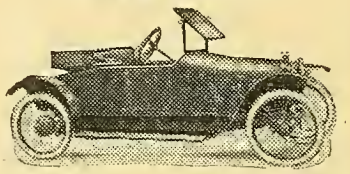

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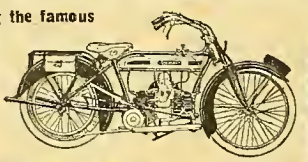

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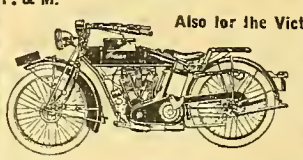

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GRADO Multi Pulley as new, fit Triumph; 37/6.—19, Butcher Row, Beverley. [X9357

GRADO Gear, fit Triumph, brand new; £2.—5, Chandos Av., Chingford Rd., Walthamstow. [7936

GRADO Gear, Triumph or Precision, almost new; 30/-.—15, Cambridge St., Wellingborough. [X9745

NEW 1914 Douglas Carburetter for sale, 10/6.—Jefferson, 21, Frizinghall Old Rd., Bradford. [X9697

N.S.U. Gear (latest), adjustable pulley, practically new, fits Rover; £5.—Sinclair, East Molesey. [X9333

GRADO Gear, off 1913 Triumph, equal new; nearest offer £2 secures.—Hepburn, 3, Hanover St., Fraserburgh [X9778

TWO Davison Lightweight Brass Torpedo Tanks (petrol and oil); 8/-.—Nugent, Kingsgate House, Winchester. [X9967

MABON Adjustable F.E. Pulley, h.b.c., fit Premier, etc., perfect; 15/-.—Rogers, Victoria Rd., Pinxton, Alfreton. [7728

GRADO Multi Pulley, free engine, guaranteed as new; 45/-, or nearest offer.—Lowndes, Eton College, Windsor. [7760

SAVE Money on tyres, belts, rubber sundries, re-treads; list free.—C. Hulme, John Bright St., Birmingham. [X8045

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MOTOR.—Graham's 1915 reduced list, everything from spoke to complete sets cycle sidecar.—Vine St., Birmingham. [0659

DUNLOP Belt, fair condition, 3/-; Triumph carburetter, 1912, good, 8/-.—Warner, 29, Harley St., Stoke, Coventry. [X9784

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MISCELLANEOUS.

AMAC Carburetter, suit twin, Roberts band, 3½ Brown variable pulley; offers lot, or sell separate. —David Ray, Larbert. [X9762

SIDECAR Sliding Extension Hoods, 32/6; folding wind screens, 22/6.—Lang and Webb, 1, Jackson Rd., Holloway, London. [7862

STRONG Frame, forks, tank, wheels, handle-bars, mud-guards, in good condition; 25/-.—179, Earlsfield Rd., Wandsworth, S.W. [7758

FOR Sale, N.S.U. 2-speed F.E. Gear, in perfect condition; a bargain, £3/5.—G. Pullen, Green Dragon Yard, Stockton-on-Tees. [7873

BOSCH Magneto, waterproof, type ZEI, perfect, 55/-; also h.b. Bowden control for same, 5/-.—Warner, 29, Hanley St., Stoke, Coventry. [X9782

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LUKIN Automatic Carburetter, 17/6; new 26×2¼ Euglebert beaded cover, 12/9.—Adelaide Motor Co., 84, Chalk Farm Rd., N.W. [7983

STEWART Speedometer, 39/6; mirror, 3/6; 750×80 new Dunlop grooved tyre, 35/-; Goodrich, 29/6; tube, 8/6.—H.C., 43, Essex St., Strand. [8000

TRIUMPH Head Light, large, 7/6; Narona ditto, 6/6; wanted, offer for 1913 4h.p. Campion-Jap, 2-speed.—143, Evington Rd., Leicester. [7977

BOOTS.—Save nearly 50% buying from factory direct. Agents wanted. Write for list, particulars.—British Boot Co., 274, Portland Sq., Bristol. [6610

WATERPROOF Motor Cycle Outfit, jacket, and overalls, nearly new; cost 56/6, accept 36/-.—Rowlands, 11, Alba Gardens, Golder's Green. [X9751

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U.H. Lightweight Magneto, unused, anti-clock, 52/6; Pillion seat, unused, cost 30/-, 19/6; new 1914 lightweight carburetters, B. and B. 19/6, Senspray 20/6, Amac 20/6, Binks 2-jet 18/6; pannier bag, 3/6 pair; good spare belts, 3/- each; A.K. knee grips, 3/-. Write me for all accessories, lamp sets, carburetters, seats, etc.; exchanges.—Syd. Pearson, 66, St. Patrick's Rd., Coventry. [X9973

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THE MOTOR CYCLE

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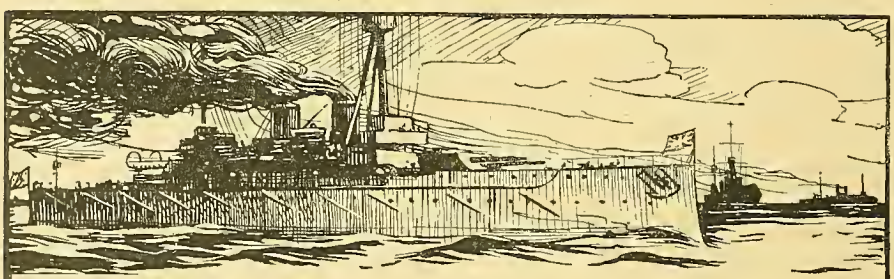

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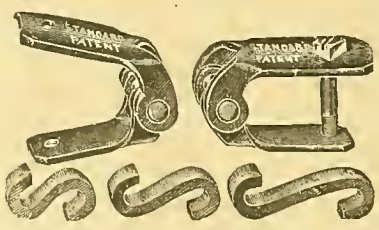

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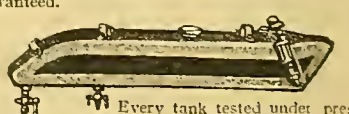

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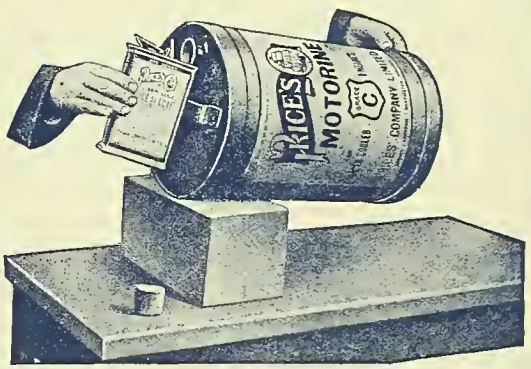

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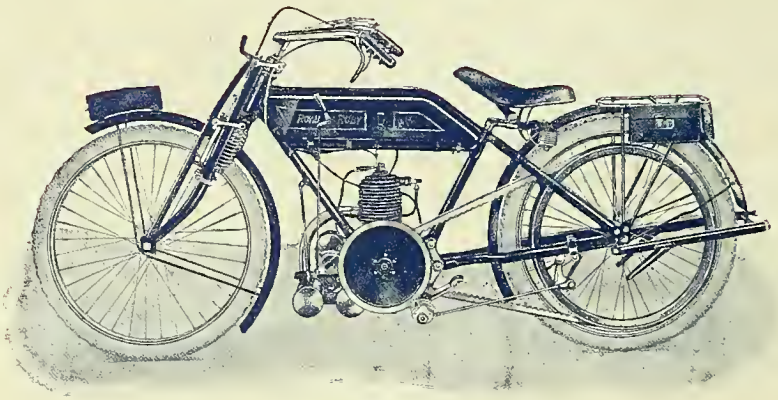

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